



OREGON STATE SYSTEM  
OF HIGHER EDUCATION

# Oregon State College Bulletin

CORVALLIS • OREGON

CATALOG  
I S S U E  
1957-58

# Oregon State College B U L L E T I N

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Number 62

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# Oregon State College CATALOG

1957-58



Corvallis, Oregon

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## State Board of Higher Education\*

	<i>Term Expires</i>
HERMAN OLIVER, John Day.....	1958
LEIF S. FINSETH, Dallas.....	1958
R. E. KLEINSORGE, Silverton.....	1959
WILLIAM E. WALSH, Coos Bay.....	1959
HENRY F. CABELL, Portland.....	1960
CHARLES R. HOLLOWAY, JR., Portland.....	1961
A. S. GRANT, Baker.....	1962
CHERYL S. MACNAUGHTON, Portland.....	1963
J. W. FORRESTER, JR., Pendleton.....	1963

### Officers

R. E. KLEINSORGE.....	President
HENRY F. CABELL.....	Vice President
LEIF S. FINSETH.....	Member Executive Committee

---

JOHN R. RICHARDS, Ph.D., Chancellor

EARL M. PALLETT, Ph.D., Secretary of Board

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Office of the State Board of Higher Education  
Post Office Box 5175  
Eugene, Oregon

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\* Board members are appointed to six-year terms by the Governor of Oregon with confirmation by the State Senate.

## Oregon State System of Higher Education

The Oregon State System of Higher Education, as organized in 1932 by the State Board of Higher Education following a survey of higher education in Oregon by the U.S. Office of Education, includes all the State-supported institutions of higher education. The several institutions are elements of an articulated system, parts of an integrated whole. The educational program is so organized as to distribute as widely as possible throughout the State the opportunities for general education and to center on a particular campus specialized, technical, and professional curricula closely related to one another.

The institutions of the State System of Higher Education are the University of Oregon at Eugene, Oregon State College at Corvallis, Portland State College at Portland, Oregon College of Education at Monmouth, Southern Oregon College at Ashland, and Eastern Oregon College at La Grande. The Medical and Dental Schools of the University of Oregon are located in Portland. The General Extension Division, representing all the institutions, has headquarters in Portland and offices in Eugene and Corvallis.

Each of the institutions provides the general studies fundamental to a well-rounded education. At the three colleges of education and Portland State College, students may complete major work in teacher education or general studies or enroll in a preprofessional program.

At the University and the State College two years of unspecialized work in liberal arts and sciences are provided on a parallel basis in the lower division. Major curricula, both liberal and professional, are grouped on either campus in accordance with the distinctive functions of the respective institutions in the unified State System of Higher Education.

An interinstitutional booklet, *Your Education*, which outlines the curricula of the several institutions and contains other information, is available. For a copy, write to Division of Information, P.O. Box 5175, Board of Higher Education, Eugene, Oregon.

# Oregon State System of Higher Education

JOHN R. RICHARDS, Ph.D., Chancellor

AUGUST L. STRAND, Ph.D.  
President, Oregon State College

O. MEREDITH WILSON, Ph.D.  
President, University of Oregon

ROY E. LIEUALLEN, Ed.D.  
President, Oregon College of Education

DAVID W. E. BAIRD, M.D., LL.D.  
Dean, Medical School

FRANK B. BENNETT, Ed.D.  
President, Eastern Oregon College

HAROLD J. NOYES, D.D.S., M.D.  
Dean, Dental School

ELMO N. STEVENSON, Ed.D.  
President, Southern Oregon College

JOHN F. CRAMER, D.Ed.  
President, Portland State College

JAMES W. SHERBURNE, Ph.D.  
Dean, General Extension Division

HERBERT A. BORK, M.S., C.P.A.....Comptroller and Bursar

RICHARD L. COLLINS, M.A., C.P.A.....Budget Director

WILLIAM H. CARLSON, M.A.....Director of Libraries

EARL M. PALLETT, Ph.D.....Chairman  
High School-College Relations Committee

FRANCIS B. NICKERSON, M.S.....Executive Secretary  
High School-College Relations Committee

## Former Chancellors Oregon State System of Higher Education

WILLIAM J. KERR, D.Sc., LL.D.....1932-1935

FREDERICK M. HUNTER, Ed.D., LL.D.....1935-1946

PAUL C. PACKER, Ph.D., LL.D.....1946-1950

CHARLES D. BYRNE, Ed.D.....1950-1955



# Oregon State System of Higher Education

- JOHN REESE RICHARDS, Ph.D., Chancellor State System of Higher Education; Professor.  
B.A. (1929), M.S. (1931), Pennsylvania State; Ph.D. (1936), Chicago. With System since 1953, chancellor since 1955.
- 
- DAVID W. E. BAIRD, M.D., LL.D., Dean of Medical School; Professor of Medicine.  
M.D. (1926), Oregon; LL.D. (1946), Portland. With System since 1927, dean, Medical School, since 1943.
- FRANK BROWN BENNETT, Ed.D., President, Eastern Oregon College; Professor.  
B.A. (1921), Willamette; M.A. (1933), Oregon; Ed.D. (1948), Willamette. With System since 1952, president, Eastern Oregon, since 1952.
- HERBERT ARNOLD BORK, M.S., C.P.A., Comptroller and Bursar, State System of Higher Education; Dean; Professor.  
B.A. (1924), Wisconsin; C.P.A. (1926); M.S. (1940), Oregon State. With System since 1934, comptroller since 1934.
- RICHARD LYLE COLLINS, M.A., C.P.A., Budget Director, State System of Higher Education; Professor.  
B.B.A. (1927), Oregon; C.P.A. (1931); M.A. (1940), Columbia. With System 1927-29 and since 1932, budget director since 1948.
- JOHN FRANCIS CRAMER, D.Ed., President, Portland State College, Professor.  
A.B. (1920), Willamette; A.M. (1921), M.Ed. (1932), D.Ed. (1937), Oregon. With System since 1944, president, Portland State, since 1955.
- (WILLIAM) TRAVIS CROSS, B.A., Assistant to the Chancellor and Director of Information; Associate Professor.  
B.A. (1949), Stanford. With System since 1950, assistant to chancellor since 1953.
- ROY ELWAYNE LIEUALLEN, Ed.D., President, Oregon College of Education; Professor.  
B.S. (1940), Pacific; M.S. (1947), Oregon; Ed.D. (1955), Stanford. With System since 1946, president, Oregon College of Education, since 1955.
- HAROLD J. NOYES, D.D.S., M.D., Dean of Dental School; Professor of Dentistry.  
Ph.B. (1923), M.D. (1933), Chicago; B.S. (1928), D.D.S. (1928), Illinois. With System since 1946, dean, Dental School, since 1946.
- EARL M. PALLET, Ph.D., Secretary of Board and Chairman, High School-College Relations Committee; Professor.  
B.S. (1921), M.S. (1922), Wisconsin; Ph.D. (1931), Oregon. With System since 1927, Secretary of Board since 1955.
- JAMES WILSON SHERBURNE, Ph.D., Dean, General Extension Division, Professor.  
A.B. (1927), Greenville College; M.A. (1928), Michigan; Ph.D. (1938), Ohio State. With System since 1938; dean, Extension Division, since 1956.
- ELMO NALL STEVENSON, Ed.D., President, Southern Oregon College; Professor.  
A.B. (1927), San Jose State; A.M. (1929), Ed.D. (1938), Stanford. With System since 1929, president, Southern Oregon, since 1945.
- AUGUST LEROY STRAND, Ph.D., President, Oregon State College; Professor.  
B.S. (1917), Montana State; M.S. (1925), Ph.D. (1928), Minnesota. With System since 1942, president, Oregon State, since 1942.
- O. MEREDITH WILSON, Ph.D., President, University of Oregon; Professor.  
B.A. (1934), Brigham Young; Ph.D. (1943), California. With System since 1954, president, University, since 1954.

# Oregon State College Calendar

## Summer Session, 1957

June 17, <i>Monday</i> .....	Registration
June 18, <i>Tuesday</i> .....	Classes begin
July 4, <i>Thursday</i> .....	Independence Day—Holiday
August 8-9, <i>Thursday-Friday</i> .....	Final examinations
August 9, <i>Friday</i> .....	End of summer session

## Fall Term 1957

September 19, <i>Thursday</i> .....	Faculty Day
September 22-28, <i>Sunday-Saturday</i> .....	New Student Week
September 27-28, <i>Friday-Saturday</i> .....	Registration
September 30, <i>Monday</i> .....	Classes begin
October 12, <i>Saturday</i> .....	Latest day for registering or adding courses
October 26, <i>Saturday</i> .....	End of fourth week (reports of unsatisfactory progress)
November 9, <i>Saturday</i> .....	Latest day to drop a course without responsibility for grade
November 23, <i>Saturday</i> .....	End of eighth week
November 23, <i>Saturday</i> .....	Latest day to drop a course
November 23, <i>Saturday</i> .....	Latest day to withdraw from college without responsibility for grades
November 28-Dec. 1, <i>Thursday-Sunday</i> .....	Thanksgiving vacation
December 14, <i>Saturday</i> .....	Classes end
December 16-21, <i>Monday-Saturday</i> .....	Final examinations
December 21, <i>Saturday</i> .....	End of fall term

## Winter Term 1958

January 6-7, <i>Monday-Tuesday a.m.</i> .....	Registration
January 7, <i>Tuesday, 1:00 p.m.</i> .....	Classes begin
January 20, <i>Monday</i> .....	Latest day for registering or adding courses
February 3, <i>Monday</i> .....	End of fourth week (reports of unsatisfactory progress)

June 1957							July 1957							August 1957							September 1957						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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2	3	4	5	6	7	8	7	8	9	10	11	12	13	4	5	6	7	8	9	10	8	9	10	11	12	13	14
9	10	11	12	13	14	15	14	15	16	17	18	19	20	11	12	13	14	15	16	17	15	16	17	18	19	20	21
16	17	18	19	20	21	22	21	22	23	24	25	26	27	18	19	20	21	22	23	24	22	23	24	25	26	27	28
23	24	25	26	27	28	29	28	29	30	31	---	---	---	25	26	27	28	29	30	31	29	30	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

October 1957							November 1957							December 1957							January 1958						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
---	---	---	---	---	---	---	---	---	---	---	---	1	2	1	2	3	4	5	6	7	---	---	---	---	---	---	---
6	7	8	9	10	11	12	3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
13	14	15	16	17	18	19	10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
20	21	22	23	24	25	26	17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
27	28	29	30	31	---	---	24	25	26	27	28	29	30	29	30	31	---	---	---	---	26	27	28	29	30	31	---



# Charter of Oregon State College

## FEDERAL LAND-GRANT ACT (FIRST MORRILL ACT), JULY 2, 1862

*... Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there be granted to the several States, for the purposes hereinafter mentioned, an amount of public land, to be apportioned to each State . . . And be it further enacted, That all moneys derived from the sale of lands aforesaid, by the States . . . shall constitute a perpetual fund . . . the interest of which shall be inviolably appropriated by each State . . . to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislatures of the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life. . . . No State shall be entitled to the benefit of this act unless it shall express its acceptance thereof by its Legislature, within two years from the date of its approval by the President. . . .*

## MORRILL ACT PROVISIONS IRREVOCABLY ACCEPTED BY OREGON LEGISLATURE, OCTOBER 9, 1862

*... each and all of the propositions in said act of Congress offered to the State of Oregon are hereby irrevocably adopted, with all the conditions and obligations therein contained. . . .*

## CORVALLIS COLLEGE INCORPORATED AUGUST 22, 1868

*The name . . . Corvallis College . . . is not limited in duration . . . The object of this incorporation is to . . . endow, build up, and maintain an institution for educational purposes and to confer all such honors, distinctions, and degrees usual in colleges . . . provided such college shall be strictly a literary institution.*

## CORVALLIS COLLEGE (OREGON STATE COLLEGE) DESIGNATED THE LAND-GRANT INSTITUTION OF OREGON, OCTOBER 27, 1868

*Be it enacted by the Legislative Assembly of the State of Oregon: That J. F. Miller, J. H. Douthit and Joseph C. Avery are hereby constituted a board of commissioners with power . . . To locate all the lands to which the state is entitled by act of congress for the purpose of establishing an agricultural college . . . That, until other provision can be made, the Corvallis college is hereby designated and adopted as the agricultural college, in which all students sent under the provisions of this title shall be instructed in all the arts, sciences, and other studies, in accordance with the requirements of the acts of congress making such donation. . . .*

## OCTOBER 27, 1868 ACTION MADE PERMANENT, OCTOBER 1870

*Be it enacted by the Legislative Assembly of the State of Oregon: That Corvallis College, in Benton County, is hereby designated and permanently adopted as the Agricultural College of the State of Oregon, in which all students sent under the provisions of law shall be instructed in accordance with the requirements of the Act of Congress, approved on the second day of July, 1862, granting public lands to the several States and Territories, which might provide colleges for the benefit of Agriculture and the Mechanic Arts, and the acts amendatory thereof. . . .*

# Oregon State College

## THE ADMINISTRATIVE COUNCIL

AUGUST LEROY STRAND, Ph.D.....	President
ERWIN BERTRAN LEMON, B.S.....	Dean of Administration
JAMES KENNETH MUNFORD, Ed.D.....	Secretary
<hr/>	
WILLIAM HUGH CARLSON, M.A.....	Librarian
RALPH COLBY, Ph.D.....	Dean of Lower Division
GEORGE EDWARD CROSSEN, Ph.D.....	Dean of Pharmacy
FRANCOIS ARCHIBALD GILFILLAN, Ph.D.....	Dean of Science
GEORGE WALTER GLEESON, Ch.E.....	Dean of Engineering and Industrial Arts
HENRY PAUL HANSEN, Ph.D.....	Dean of Graduate School
COLONEL LEROY GRAY HESTON.....	Professor of Air Science
ROY SERVAIS KEENE, B.S.....	Director of Intercollegiate Athletics
COLONEL ERNEST CLAIR KNAPP.....	Professor of Military Science
CLAIR VAN NORMAN LANGTON, Dr.P.H., Ed.D.....	Director of Physical Education
CLIFFORD ELGES MASER, Ph.D.....	Dean of Business and Technology
WALTER FRASER McCULLOCH, Ed.D.....	Dean of Forestry
CAPTAIN DANIEL BYRD MILLER, B.S.....	Professor of Naval Science
HELEN STERLING MOOR, M.A.....	Dean of Women
DALLAS W. NORTON, M.Ed.....	Personnel Coordinator
DANIEL THOMAS ORDEMAN, Ph.D.....	Registrar
DAN WILLIAMS POLING, M.S.....	Dean of Men
FREDERICK EARL PRICE, B.S.....	Dean and Director of Agriculture
GEORGE MORRIS ROBERTSON, M.S.....	Business Manager
MIRIAM GROSSER SCHOLL, Ed.D.....	Dean of Home Economics
FRANKLIN ROYALTON ZERAN, Ph.D.....	Dean of Education Director of Summer Session

## OTHER OFFICERS

RICHARD ALTON ADAMS.....	General Superintendent of Physical Plant
THOMAS FRANCIS ADAMS, B.S.....	Director of Dormitories
EDWARD CHRISTOPHER ALLWORTH, B.S., LL.D.....	Manager, Memorial Union
SAMUEL HALL BAILEY, M.S.....	Head, News Bureau
JOSEPH HOWARD BERRY, Ed.M.....	Assistant to the President
IRWIN CECIL HARRIS, M.S.J.....	Manager of Educational Activities
ROBERT PAUL KNOLL, B.S.....	Director of Alumni Relations
GEORGE YOULE MARTIN, B.S.....	Superintendent of College Press and Clerical Exchange
DANIEL CLYDE REYNOLDS, B.S., M.D.....	Director of Health Service
FRED MERLE SHIDELER, M.S.....	Director of Information

# Oregon State College Staff\*

AUGUST LEROY STRAND, Ph.D., President.

B.S. (1917), Montana State; M.S. (1925), Ph.D. (1928), Minnesota. At Oregon State (President and Professor) since 1942.

JOHN ADAIR, B.S., Research Assistant (Instructor) Fish and Game Management, Agricultural Experiment Station.

B.S. (1950), Oregon State. At Oregon State since 1953.

FRANK WILLIAM ADAMS, M.S. Research Assistant (Instructor) Agricultural Chemistry, Agricultural Experiment Station.

B.S. (1948), Montana State; M.S. (1950), Oregon State. At Oregon State since 1953.

RICHARD ALTON ADAMS, Director, Physical Plant (Associate Professor).  
At Oregon State since 1947.

THOMAS COOPER ADAMS, Ph.D., Assistant Professor of Forest Management; Assistant Forest Economist, Extension Service.

B.S. and A.B. (1940), California; M.A. (1951), Ph.D. (1952), Michigan. At Oregon State since 1955.

THOMAS FRANCIS ADAMS, B.S., Director of Dormitories (Associate Professor).  
B.S. (1936), Oregon State. At Oregon State since 1946.

LEONARD ALLEN ADOLF, Ph.D., Instructor in History.

B.A.Ed. (1943), Central Washington College; B.A. (1946), Ph.D. (1953), Washington. At Oregon State since 1955.

WALTER MILO ADRIEN, M.A., Professor of Physical Education.

B.S. (1924), Michigan State Normal; M.A. (1939), Michigan. At Oregon State since 1939.

RAYMOND JOHN AGAN, Ed.D., Assistant Professor of Agricultural Education.

B.S. (1940), M.S. (1950), Iowa State; Ed.D. (1955), Missouri. At Oregon State since 1954.

MARIAN CUSHING AIKIN, M.Sc., Assistant Professor of Family Life.

B.Sc. (1939), Nebraska; M.Sc. (1943), Iowa State. At Oregon State since 1954.

LAWRENCE ARTHUR ALBAN, Ph.D., Assistant Professor of Soils; Assistant Soil Scientist, Agricultural Experiment Station.

B.S. (1943), M.S. (1948), Washington State; Ph.D. (1950), Oregon State. At Oregon State since 1952.

ARTHUR LEMUEL ALBERT, M.S., E.E., Professor of Communication Engineering.  
B.S. (1923), M.S. (1926), E.E. (1939), Oregon State. At Oregon State since 1923.

GERALD CORWIN ALEXANDER, B.S., Assistant Professor of Electrical Engineering.

B.S. (1951), Oregon State. At Oregon State since 1955.

ROBERT M ALEXANDER, M.A., Assistant Director (Associate Professor), Agricultural Experiment Station.

B.S. (1942), Oregon State; M.A. (1949), Harvard. At Oregon State since 1946.

HARRY THAIN ALLAN, J.D., Instructor in Business Administration.

B.A. (1953), Washington and Jefferson College; B.S. (1953), Massachusetts Institute of Technology; J.D. (1956), Chicago. At Oregon State since 1956.

ETHEL E ALLEN, B.S., Assistant Editor of Publications (Retired).

B.S. (1916), Oregon State. At Oregon State 1917-48.

\*Oregon State College officers of administration, instruction, research, and extension— at Corvallis, in the counties, and at branch experiment stations; U.S. Department of Agriculture and Oregon Forest Products Laboratory scientists on the campus; staff members of the Oregon State System of Higher Education at Corvallis. Includes only those with rank of instructor or above.

- LEONARD JOHN ALLEN, M.S., State 4-H Club Leader (Retired).  
B.S. (1914), M.S. (1915), Oregon State. At Oregon State since 1915; State 4-H Club Leader 1946-52.
- IRA SHIMMIN ALLISON, Ph.D., Professor of Geology; Chairman of Department.  
A.B. (1917), Hanover College; Ph.D. (1924), Minnesota. At Oregon State since 1928.
- DELMAR ISAAC ALLMAN, Dr.P.H., Professor of Physical Education.  
B.S. (1928), Michigan State Normal College; M.S. (1931), Dr.P.H. (1936), Michigan. At Oregon State since 1937.
- EDWARD CHRISTOPHER ALLWORTH, B.S., LL.D., Manager and Secretary (Professor), Memorial Union.  
B.S. (1916), LL.D. (1929), Oregon State. At Oregon State since 1925.
- MARGARET MARIE ALLYN, B.A., Columbia County Extension Agent, Home Economics (Assistant Professor).  
B.A. (1926), Iowa. At Oregon State since 1954.
- WILBERT LOWELL ANDERSEN, B.S., Curry County Extension Agent (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State 1950-51 and since 1956.
- ARTHUR W ANDERSON, Ph.D., Assistant Professor of Bacteriology; Assistant Bacteriologist, Agricultural Experiment Station.  
B.S. (1942), North Dakota State; M.S. (1947), Wisconsin; Ph.D. (1952), Oregon State. At Oregon State since 1953.
- CARL LEONARD ANDERSON, Dr.P.H., Professor; Chairman of Hygiene and Environmental Sanitation.  
B.S. (1928), M.S. (1932), Dr.P.H. (1934), Michigan. At Oregon State since 1949.
- DONALD EUGENE ANDERSON, B.S., Extension Dairy Specialist (Associate Professor).  
B.S. (1939), Iowa State. At Oregon State since 1944.
- NELSON CHRISTIAN ANDERSON, B.S., Morrow County Extension Agent (Professor).  
B.S. (1942), North Dakota State. At Oregon State since 1946.
- WILLIAM BALLANTYNE ANDERSON, Ph.D., Professor Emeritus of Physics.  
B.S. (1901), M.S. (1903), Ph.D. (1906), Wisconsin. At Oregon State since 1914.
- WOOD POWELL ANDERSON, M.S., Research Assistant (Instructor), Malheur Experimental Area.  
B.S. (1950), M.S. (1956), Maryland. At Oregon State since 1956.
- ALLEN FRANCIS ANGLEMIER, Ph.D., Research Assistant (Instructor) in Food Technology, Agricultural Experiment Station.  
B.S. (1953), Fresno State; M.S. (1955), Oregon State. At Oregon State since 1956.
- PETER ANTON, M.A., Instructor in Philosophy.  
A.B. (1952), M.A. (1954), Indiana. At Oregon State since 1956.
- SPENCER BUTLER APPLE, JR., Ph.D., Professor of Horticulture, Head of Department; Horticulturist in charge, Agricultural Experiment Station.  
B.S. (1933), M.S. (1936), Texas A and M; Ph.D. (1953), Washington State. At Oregon State since 1950.
- JOAN DENNIS ARMSTRONG, B.S., Research Assistant (Instructor), Science Research Institute.  
B.S. (1956), Oregon State. At Oregon State since 1956.
- BRADFORD HENRY ARNOLD, Ph.D., Associate Professor of Mathematics.  
B.S. (1938), M.S. (1940), Washington; Ph.D. (1942), Princeton. At Oregon State since 1947.

- GEORGE HENRY ARSCOTT, Ph.D., Assistant Professor of Poultry Husbandry; Assistant Poultry Husbandman, Agricultural Experiment Station.  
B.S. (1949), Oregon State; M.S. (1950), Ph.D. (1953), Maryland. At Oregon State since 1953.
- FLOYD REX ATCHISON, Staff Sergeant, Instructor in Air Science.  
At Oregon State since 1956.
- GEORGE H ATHERTON, B.S., In charge Milling and Engineering (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1950), Oregon State. At Oregon State since 1950.
- WINFRED MCKENZIE ATWOOD, Ph.D., Professor Emeritus of Botany.  
A.B. (1907), A.M. (1910), Cornell College; M.S. (1911), Ph.D. (1913), Chicago. At Oregon State since 1913.
- WILLIAM SAMUEL AVERILL, B.S., Multnomah County Extension Agent (Professor).  
B.S. (1917), Oregon State. At Oregon State since 1930.
- HARRY GRANT AVERY, B.S., Animal Husbandman (Professor), Eastern Oregon Branch Experiment Station.  
B.S. (1930), Oregon State. At Oregon State since 1921.
- WILLIAM EDWARD BABCOCK, D.V.M., M.S., Associate Veterinarian (Associate Professor), Agricultural Experiment Station.  
B.S. (1944), D.V.M. (1945), Washington State; M.S. (1951), Oregon State. At Oregon State since 1949.
- JAMES RONALD BAGGETT, Ph.D., Research Assistant (Instructor) in Horticulture, Agricultural Experiment Station.  
B.S. (1952), Idaho; Ph.D. (1956), Oregon State. At Oregon State since 1956.
- LEEDS CRIM BAILEY, B.S., Malheur County Extension Agent (Assistant Professor).  
B.S. (1941), Oregon State. At Oregon State since 1941.
- SAMUEL HALL BAILEY, M.S., Head of News Bureau; Associate Professor of Journalism.  
B.S. (1942), Utah State; M.S. (1947), Wisconsin. At Oregon State since 1947.
- GEORGE WILLIAM BAIN, B.S., Malheur County Extension Agent (Assistant Professor).  
B.S. (1943), Oregon State. At Oregon State 1946-52 and since 1953.
- FLORENCE S BAKKUM, M.A., Instructor in Mathematics.  
B.A. (1916), Grinnell; M.A. (1923), Cornell. At Oregon State 1942-51, and since 1954.
- GLENN ALMER BAKKUM, Ph.D., Professor of Sociology.  
B.S. (1920), Iowa State; M.A. (1925), Columbia; Ph.D. (1928), Cornell. At Oregon State since 1935.
- FRANK LLEWELLYN BALLARD, B.S., Associate Director, Federal Cooperative Extension Service (Professor).  
B.S. (1916), Oregon State. At Oregon State since 1917.
- SHIRLEY MARGARET BARBER, M.Ed., Assistant Professor of Business Education and Secretarial Science.  
B.S. (1950), Oregon; M.Ed. (1951), Oregon State. At Oregon State since 1956.
- CLARICE MIRIAM BARKER, B.S. in L.S., Assistant Order Librarian (Assistant Professor), Library.  
A.B. (1935), Indiana; B.S. in L.S. (1937), Columbia. At Oregon State since 1953. Resigned December 1, 1956.
- CHARLES ADAMS BARNES, Ph.D., Assistant Professor of Psychology.  
B.A. (1941), California (Los Angeles); Ph.D. (1950), Southern California. At Oregon State since 1955.



- GEORGE HECTOR BARNES, Ph.D., Associate Director, Forest Experiment Station; Professor of Forest Management.  
B.S. (1924), Washington; M.S. (1929), California; Ph.D. (1946), Duke. At Oregon State since 1943.
- MIRIAM YODER BARNES, B.A., Assistant Catalog Librarian (Assistant Professor), Library.  
Certificate of Librarianship (1936), California; B.A. (1937), Oregon. At Oregon State since 1948.
- HOWARD GLEN BARNETT, M.S., Professor of Electrical Engineering, Chairman of Department.  
B.S. (1931), M.S. (1934), Oregon State. At Oregon State since 1954.
- LLOYD CARL BARON, B.S., Washington County Extension Agent (Assistant Professor).  
B.S. (1940), Oregon State. At Oregon State since 1957.
- ROBERT BENJAMIN DENIS BARON, Ph.D., Associate Professor of Education; Head Counselor, School of Education.  
B.A. (1940), B.Educ. (1942), M.Educ. (1945), Alberta; Ph.D. (1948), Southern California. At Oregon State since 1954.
- JAMES GARNET BARRATT, JR., B.S., Athletic Business Manager, Intercollegiate Athletics (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State since 1950.
- EDWIN H BARTCHER, Master Sergeant, Instructor in Military Science and Tactics.  
At Oregon State since 1956.
- MANES BARTON, B.S., Assistant Water Forecaster (Instructor), Irrigation Water Forecasting, Agricultural Experiment Station (Portland).  
B.S. (1950), Oregon State. At Oregon State since 1951.
- RAY M BASSETT, M.A., Instructor in Visual Instruction, General Extension Division, State System of Higher Education.  
B.S. (1929), North Dakota State; M.A. (1939), Minnesota. At Oregon State since 1956.
- EDWARD BENJAMIN BEATY, M.A., Professor Emeritus of Mathematics.  
B.S. (1903), Oregon State; M.A. (1916), California. At Oregon State since 1908.
- JAMES RALPH BECK, B.S., Assistant Director, Federal Cooperative Extension Service (Professor).  
B.S. (1920), Oregon State. At Oregon State since 1922.
- MANNING HENRY BECKER, M.S., Extension Farm Management Specialist; Assistant Professor of Agricultural Economics.  
B.S. (1947), M.S. (1948), Oregon State. At Oregon State since 1948.
- ROBERT WARREN BECKLEY, B.M.E., Superintendent of Heating Plant; Assistant Professor of Mechanical Engineering.  
B.M.E. (1948), Minnesota. At Oregon State since 1954.
- FRANK M BEER, M.S., Associate Professor of General Science.  
B.S. (1929), Oregon; M.S. (1939), Washington. At Oregon State since 1947.
- CHARLES E BEHLKE, M.S., Associate Professor of Civil Engineering.  
B.S. (1948), M.S. (1950), Washington State. At Oregon State since 1956.
- RICHARD OLIVER BELKENGREN, Ph.D., Associate Professor of Botany; Associate Botanist, Agricultural Experiment Station.  
B.S. (1939), Ph.D. (1941), Minnesota. At Oregon State since 1949.
- ELMA MARSHALL BEMIS, M.A., B.S. in L.S., Binding Librarian (Instructor), Library.  
A.B. (1915), B.S. (1917), M.A. (1918), Phillips; M.A. (1942), Colorado State College of Education; B.S. in L.S. (1944), Denver. At Oregon State since 1944.

- NOEL LINDSAY BENNION, M.S., Extension Poultry Specialist (Professor).  
B.S. (1928), Utah State; M.S. (1932), Kansas State. At Oregon State since 1937.
- BURTON ERDMAN BERGER, M.S., Extension Information Specialist (Assistant Professor).  
B.S. (1949) (1954), Oregon State; M.R.E. (1952), Iliff School of Theology; M.S. (1955), Wisconsin. At Oregon State since 1956.
- PAUL CARSON BERGER, M.S., Instructor in Animal Husbandry.  
B.S. (1950), M.S. (1951), Oregon State. At Oregon State since 1955.
- ROBERT WILLIAM BERGSTROM, Ed.D., Professor; Chairman of Professional Physical Education.  
B.S. (1937), Oregon State; M.A. (1942), Ed.D. (1947), Columbia. At Oregon State 1941-42, 1946-47, and since 1950.
- NORBORNE BERKELEY, M.A., Assistant Professor of History.  
A.B. (1924), Oregon; M.A. (1931), Harvard. At Oregon State since 1946.
- PAUL EMILE BERNIER, Ph.D., Professor of Poultry Husbandry; Poultry Husbandman, Agricultural Experiment Station.  
B.S.A. (1932), Université Laval; Ph.D. (1947), California. At Oregon State since 1947.
- DONALD WILSON BERRY, B.S., Jackson County Extension Agent (Instructor).  
B.S. (1947), Oregon State. At Oregon State since 1954.
- JOSEPH HOWARD BERRY, Ed.M., Assistant to the President; Executive Secretary Oregon State College Foundation (Professor).  
B.S. (1929), Ed.M. (1954), Oregon State. At Oregon State since 1951.
- RALPH STEPHEN BESSE, M.S., Professor Emeritus of Agriculture.  
B.S.A. (1913), M.S. (1915), Missouri. At Oregon State since 1922. Associate Director of Agricultural Experiment Station, 1949-53.
- GARNET DOUGLAS BEST, B.S., Wallowa County Extension Agent (Associate Professor).  
B.S. (1925), Oregon State. At Oregon State since 1931.
- AMOS WILBUR BIERLY, B.S., Jefferson County Extension Agent (Assistant Professor).  
B.S. (1941), Oregon State. At Oregon State since 1941.
- HERMAN ELDON BIEMAN, B.S., Assistant Umatilla County Extension Agent (Assistant Professor).  
B.S. (1948), Oregon State. At Oregon State since 1952.
- ARTHUR VINCENT BIGGS, LL.B., Assistant Professor of Business Administration.  
B.A. (1950), Superior State; LL.B. (1952), Wisconsin. At Oregon State since 1953.
- JULIUS F BINDER, B.S., Jefferson County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1948), Kansas State. At Oregon State since 1952.
- JACK GATELY BINK, Master Sergeant, Instructor in Military Science and Tactics.  
At Oregon State since 1954.
- ROBERT HILL BIRDSALL, M.A., Agricultural Information Specialist (Assistant Professor).  
B.A. (1949), Idaho State; M.A. (1952), Stanford. At Oregon State since 1952.
- DONALD STEPHEN BLACK, B.S., Research Assistant (Instructor), Klamath Experimental Area.  
B.S. (1950), Oregon State. At Oregon State since 1950.
- HAROLD MAYFIELD BLACK, B.S., Clackamas County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1947), Oregon State. At Oregon State since 1949.

- EVA BLACKWELL, B.S., Assistant Registrar (Assistant Professor).  
B.S. (1924), Oregon State. At Oregon State since 1924.
- †GRANT E BLANCH, Ph.D., Professor of Agricultural Economics; Agricultural Economist, Agricultural Experiment Station.  
B.S. (1940), Utah State; M.S. (1941), Illinois; Ph.D. (1944), Cornell. At Oregon State since 1945.
- LAWRENCE THOMAS BLANEY, Ph.D., Assistant Professor of Horticulture; Assistant Horticulturist, Agricultural Experiment Station.  
B.S. (1941), M.S. (1948), Pennsylvania State; Ph.D. (1955), California (Los Angeles). At Oregon State since 1948.
- ELIZABETH ROZLYN BLODGETT, M.A., Instructor in Physical Education.  
A.B. (1949), Chico State College; M.A. (1956), San Francisco State. At Oregon State since 1956.
- ALBERT HAROLD BOCKIAN, Ph.D., Research Assistant (Instructor) in Food Technology, Agricultural Experiment Station.  
B.S. (1941), City College of New York; M.S. (1949), California (Los Angeles); Ph.D. (1954), California. At Oregon State since 1955.
- RALPH BOGART, Ph.D., Professor of Animal Husbandry; Animal Husbandman, Agricultural Experiment Station.  
B.S. (1934), Missouri; M.S. (1936), Kansas State; Ph.D. (1940), Cornell. At Oregon State since 1947.
- †DUIS DONALD BOLINGER, Ph.D., Associate Professor of Physics.  
B.S. (1930), Missouri; M.S. (1938), Oregon State; Ph.D. (1951), Stanford. At Oregon State since 1948.
- WALTER BENO BOLLEN, Ph.D., Professor of Bacteriology; Bacteriologist, Agricultural Experiment Station.  
B.S. (1921), M.S. (1922), Oregon State; Ph.D. (1924), Iowa State. At Oregon State since 1929.
- JONOTHAN BOLLES, B.S., Assistant Professor of Mechanical Engineering.  
B.S. (1951), Houston. At Oregon State since 1957.
- CARL ELDON BOND, M.S., Associate Professor of Fish and Game Management; Associate Biologist, Agricultural Experiment Station.  
B.S. (1947), M.S. (1948), Oregon State. At Oregon State since 1949.
- TURNER HANKS BOND, B.S., Malheur County Extension Agent, Potato Project (Assistant Professor).  
B.S. (1938), Oregon State. At Oregon State since 1943.
- JESSE FRANKLIN BONE, D.V.M., M.S., Assistant Professor of Veterinary Medicine; Assistant Veterinarian, Agricultural Experiment Station.  
B.A. (1937), B.S. (1949), D.V.M. (1950), Washington State; M.S. (1953), Oregon State. At Oregon State since 1950.
- EARL EDWARD BONHAM, B.S., Wasco County Extension Agent, 4-H Club (Instructor).  
B.S. (1950), Oregon State. At Oregon State since 1955.
- LEROY WAYNE BONNICKSEN, M.S., Assistant Professor of Agricultural Engineering; Assistant Agricultural Engineer, Agricultural Experiment Station.  
B.S. (1950), M.S. (1951), Iowa State. At Oregon State since 1951.
- DEAN EMERSON BOOSTER, M.S., Instructor, Research Assistant in Agricultural Engineering.  
B.S. (1954), M.S. (1956), Oregon State. At Oregon State since 1956.
- RUSSELL MAYNARD BOSHELL, B.S., Research Assistant (Instructor) Agricultural Economics, Agricultural Experiment Station.  
B.S. (1955), Oregon State. At Oregon State since 1955.

† On detached duty, Kasetsart University, Thailand; see page 85.

- DAVID ARTHUR BOSTWICK, M.A., Instructor in Geology.  
B.A. (1942), Montana; M.A. (1951), Wisconsin. At Oregon State since 1953.
- RICHARD WILLIAM BOUBEL, M.S., Instructor in Mechanical Engineering.  
B.S. (1953), M.S. (1954), Oregon State. At Oregon State since 1954.
- ARTHUR GEORGE BRISTOW BOUQUET, M.S., Professor Emeritus of Horticulture.  
B.S. (1906), Oregon State; M.S. (1930), Cornell. At Oregon State since 1909.
- EDOUARD JOANY BOURBOUSSON, Docteur de l'Université de Lyon (Lettres),  
Professor of French.  
Licence és Lettres (1915), Licence en Droit (1916) Licence és Sciences (1916), Lyon;  
Docteur en Droit (1919), Paris; Docteur de l'Université de Lyon (Lettres) (1950). At  
Oregon State since 1943.
- CHARLES HENRY BOWEN, M.A., Associate Professor of Economics.  
B.A. (1930), Washington; M.A. (1935), California. At Oregon State since 1947.
- WALDO BOWERS, B.S., Major, Associate Professor of Air Science.  
B.S. (1955), American International College. At Oregon State since 1956.
- HAROLD ALFRED BOYD, JR., Ph.D., Assistant Professor of Geology.  
A.B. (1947), M.A. (1949), Ph.D. (1956), California. At Oregon State since 1950.
- DAMARIS KATHLEEN BRADISH, B.S., Lincoln County Extension Agent, Home  
Economics (Instructor).  
B.S. (1953), Oregon State. At Oregon State since 1955.
- ROBERT FRANKE BRADLEY, B.S., Douglas County Extension Agent, Forestry  
(Assistant Professor).  
B.S. (1939), New Hampshire. At Oregon State since 1956.
- BEVERLY JEAN BRADSHAW, B.S., Morrow County Extension Agent, Home Eco-  
nomics (Instructor).  
B.S. (1950), Southern Oregon; B.S. (1955), Oregon State. At Oregon State since 1954.
- JAMES JOSEPH BRADY, Ph.D., Professor of Physics.  
B.A. (1927), Reed; M.A. (1928), Indiana; Ph.D. (1931), California. At Oregon State  
since 1937.
- BERTON EDWARD BRALY, M.D., Assistant Physician Student Health Service  
(Associate Professor).  
B.S. (1946), Northwestern State (Oklahoma); M.D. (1951), Oklahoma. At Oregon  
State since 1955.
- NORMAN ROBERT BRANDENBURG, M.S., Agricultural Engineer (Assistant Pro-  
fessor), U. S. Department of Agriculture.  
B.S. (1944), Colorado; M.S. (1951), Oregon State. At Oregon State since 1950.
- VERA HASKELL BRANDON, Ph.D., Professor Emeritus of Home Economics.  
B.S. (1911), B.S. (1927), M.S. (1929), Oregon State; Ph.D. (1936), Iowa. At Oregon  
State since 1928. Acting Dean of the School of Home Economics 1950-54; Associate Dean  
1954-55.
- PHILIP MARTIN BRANDT, A.M., Professor of Dairying, Head of Department;  
Dairy Husbandman in Charge, Agricultural Experiment Station.  
B.S. (1910), A.M. (1913), Missouri. At Oregon State since 1917.
- WILLIAM H BRANDT, Ph.D., Instructor in Botany.  
B.A. (1950), Montana; M.Sc. (1951), Ph.D. (1954), Ohio State. At Oregon State since  
1956.
- FRIEDRICH E BRAUNS, Ph.D., Professor of Chemistry; Professor (Chemistry),  
Science Research Institute.  
Ph.D. (1915), University of Berlin. At Oregon State since 1956.
- EVELYN JEAN BRAY, B.Sc., Instructor in Chemistry.  
B.Sc. (1952), Alberta. At Oregon State since 1956.
- KENNETH WILSON BRAZELL, Technical Sergeant, Instructor in Air Science.  
At Oregon State since 1954.

- VICTOR N BREDEHOEFT, B.S., Assistant Professor of Electrical Engineering.  
B.S. (1948), Oregon State. At Oregon State fall term 1956-57.
- WILBUR PAUL BREESE, M.S., Research Assistant (Instructor) Fish and Game Management, Agricultural Experiment Station.  
B.S. (1951), M.S. (1953), Oregon State. At Oregon State since 1953.
- LE ROY BREITHAAPT, B.S., Extension Agricultural Economist Emeritus.  
B.S. (1910), Oregon State. At Oregon State 1911-18, and since 1920.
- BURNS W BREWER, Ph.D., Associate Professor of Mathematics.  
A.B. (1935), A.M. (1936), Ph.D. (1938), Missouri. At Oregon State since 1947.
- AINSLIE ALICE BRICKER, M.A., Assistant Professor of Radio Education, KOAC. General Extension Division.  
B.F.A. (1948), Carnegie Institute of Technology; M.A. (1953), American University. At Oregon State since 1956.
- GERALD WALTER BROG, B.S., Coos County Extension Agent, 4-H Club (Instructor).  
B.S. (1954), Oregon State. At Oregon State since 1956.
- FLORENCE RYDER BROMLEY, B.S., Tillamook County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1922), Oregon State. At Oregon State since 1955.
- VICTOR JACK BROOKES, Ph.D., Research Associate (Instructor) in Entomology and Chemistry, Science Research Institute.  
B.A. (1950), Michigan; M.S. (1951), Ph.D. (1956), Illinois. At Oregon State since 1956.
- STANLEY NELSON BROOKS, M.S., Research Agronomist (Assistant Professor), U.S. Department of Agriculture.  
B.S. (1948), Colorado A and M; M.S. (1949), Kansas State. At Oregon State since 1955.
- DOROTHY DALLAS BROWN, A.B., Instructor in English.  
A.B. (1949), Indiana. At Oregon State fall term, 1956.
- DOROTHY FURTICK BROWN, B.S., Benton County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1949), Colorado. At Oregon State since 1955.
- EARL EUGENE BROWN, B.S., Umatilla County Extension Agent (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State 1949-52 and since 1956.
- GORDON G BROWN, B.S., Associate Professor Emeritus of Horticulture, Hood River Branch Experiment Station.  
A.B. (1910), Pacific University; B.S. (1912), Oregon State. At Oregon State since 1916.
- JOHN GALE BROWN, B.S., Instructor in Architecture.  
B.S. (1955), Illinois. At Oregon State since 1955.
- ROBERT D BROWN, Ph.D., Assistant Professor of English.  
A.B. (1949), M.A. (1950), Ph.D. (1952), Indiana. At Oregon State since 1952.
- ROBERT WALLACE BROWN, M.S., Acting Instructor in Mathematics.  
B.S. (1950), Pacific; M.S. (1952), Oregon State. At Oregon State since 1956.
- WILLIAM GALEN BROWN, Ph.D., Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agricultural Experiment Station.  
B.S. (1950), Kansas State; M.S. (1953), Ph.D. (1955), Iowa State. At Oregon State since 1955.
- JESSE FRANKLIN BRUMBAUGH, A.M., Professor Emeritus of Psychology.  
A.B. (1894), DePauw; LL.B. (1911), South Dakota; A.M. (1902), Chicago. At Oregon State since 1915.
- JOSEPH CHESTER BRYE, M.M., Associate Professor of Music.  
B.M. (1940), M.M. (1941), Northwestern. At Oregon State since 1947.

- EDWARD CHARLES BUBL, Ph.D., Associate Agricultural Chemist (Associate Professor), Agricultural Experiment Station.  
B.S. (1942), Illinois; M.S. (1945), Wisconsin; Ph.D. (1948), Oregon State. At Oregon State since 1948.
- DAVID ALVIN BUCY, B.S., Instructor in General Engineering.  
B.S. (1955), Oregon State. At Oregon State since 1955.
- IVAN BUDDENHAGEN, M.S., Research Assistant (Instructor), Botany and Plant Pathology, Agricultural Experiment Station.  
B.S. (1953), M.S. (1954), Oregon State. At Oregon State since 1956.
- DELOS EVERETT BULLIS, M.S., Chemist (Professor) Agricultural Experiment Station.  
B.S. (1917), M.S. (1929), Oregon State. At Oregon State since 1917.
- FREDERICK JOSEPH BURGESS, M.S., Instructor in Civil Engineering; Associate Sanitary Engineer, State Board of Health.  
B.S. (1950), Oregon State; M.S. (1955), Harvard. At Oregon State since 1953.
- WILBUR WILLIS BURKHART, JR., B.S., Washington County Extension Agent (Assistant Professor).  
B.S. (1947), Oregon State. At Oregon State since 1947.
- CHARLES HENRY BURROWS, JR., B.S. Research Assistant (Instructor), Oregon Forest Products Laboratory.  
B.S. (1954), Oregon State. At Oregon State since 1956.
- WAYNE VINCENT BURT, Ph.D., Associate Professor of Oceanography.  
B.S. (1939), Pacific College; M.S. (1948), Ph.D. (1952), Scripps Institution of Oceanography. At Oregon State since 1954.
- EVERETT C BURTS, B.S., Research Assistant (Instructor), Mid-Columbia Branch Experiment Station (U. S. Department of Agriculture).  
B.S. (1954), Washington State. At Oregon State since 1955.
- IRENE BUTTS, B.A., Instructor in English.  
B.A. (1946), Oregon State. At Oregon State since 1947.
- JOSEPH SHIREY BUTTS, Ph.D., Professor of Biochemistry; Head of Department of Agricultural Chemistry, Agricultural Experiment Station.  
B.S. (1926), Florida; M.S. (1928), Fordham; Ph.D. (1933), Southern California. At Oregon State since 1939.
- ROBERT F CAIN, Ph.D., Associate Professor of Food Technology; Associate Food Technologist, Agricultural Experiment Station.  
B.S. (1938), Texas Technological College; M.S. (1941), Texas A and M; Ph.D. (1952), Oregon State. At Oregon State since 1952.
- WILLIAM ELMER CALDWELL, Ph.D., Professor of Chemistry.  
B.S. (1926), Florida; M.S. (1928), Fordham; Ph.D. (1933), Southern California. At Oregon State since 1939. On sabbatical leave 1956-57.
- WHEELER CALHOUN, JR., M.S., Assistant Agronomist (Assistant Professor), Agricultural Experiment Station; in charge of Farm Service Department.  
B.S. (1946), M.S. (1953), Oregon State. At Oregon State since 1948.
- LYLE DAVID CALVIN, Ph.D., Statistician (Associate Professor), Agricultural Experiment Station.  
B.S. (1948), Chicago; Ph.D. (1953), North Carolina State. At Oregon State since 1953.
- H RONALD CAMERON, Ph.D., Assistant Plant Pathologist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1951), California; Ph.D. (1955), Wisconsin. At Oregon State since 1955.
- JOHN CARL CAMPBELL, M.S., Assistant Professor of General Engineering.  
B.S. (1947), Kansas State; M.S. (1949), Oregon State. At Oregon State since 1948.
- PEGGY ANN CAMPBELL, B.A., Instructor in Physical Education for Women.  
B.A. (1953), Bethany College (West Virginia). At Oregon State since 1957.

- RONALD KENNETH CAMPBELL, Ph.D., Professor of Business Administration.  
A.B. (1925), Illinois; M.B.A. (1928), Harvard; Ph.D. (1940), Stanford. At Oregon State since 1945.
- GERALD ORESTES CANNON, Ed.D., Assistant Professor of Trade and Industrial Education.  
B.S. (1931), Denver; Ed.D. (1953), Washington State. At Oregon State since 1954.
- DOROTHY HUGH CANTRELL, M.Ed., Assistant Professor of Education.  
B.A. (1946), M.Ed. (1947), Texas. At Oregon State since 1956.
- TILMAN MEADE CANTRELL, M.A., Assistant Professor of Sociology.  
B.A. (1947), M.A. (1948), Texas. At Oregon State 1952-53 and since 1956.
- JOSEPH CAPIZZI, M.S., Assistant Extension Entomology Specialist (Instructor).  
B.S. (1949), State Teachers College (Indiana, Pennsylvania); M.S. (1954), Oregon State. At Oregon State since 1955.
- HERBERT DEYO CARLIN, M.S., Assistant Professor of History.  
B.S. (1940), M.S. (1947), Oregon. At Oregon State since 1951.
- WILLIAM HUGH CARLSON, M.A. in L.S., Librarian (Professor), Library.  
A.B. (1924), Nebraska; Certificate (1926), New York State Library School; M.A. in L.S. (1937), California. At Oregon State since 1954.
- JOHN PHILLIP CARNEY, M.A., Instructor in Political Science.  
A.B. (1951), Wittenberg; M.A. (1954), Southern California. At Oregon State since 1956.
- PAUL CARPENTER, B.S., Professor Emeritus of Agricultural Economics.  
B.S. (1932), Minnesota. At Oregon State 1920-27, and since 1934.
- DAVID LAVERE CARTER, M.S., Soil Scientist (Instructor), U. S. Department of Agriculture.  
B.S. (1955), M.S. (1956), Utah State. At Oregon State since 1956.
- MYRTLE MAE CARTER, M.S., Extension Home Furnishings Specialist (Associate Professor).  
B.S. (1941), M.S. (1942), Oregon State. At Oregon State since 1942.
- RUTH HARRIETT CARTER, Ed.M., Instructor in English.  
B.S. (1932), Ed.M. (1934), Boston. At Oregon State since 1955.
- EMERY NEAL CASTLE, Ph.D., Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agricultural Experiment Station.  
B.S. (1948), M.S. (1950), Kansas State; Ph.D. (1952), Iowa State. At Oregon State since 1954.
- RUFUS HENRY CATE, JR., M.Ed., Lincoln County Extension Agent (Assistant Professor).  
B.S. (1944), Oregon State; M.Ed. (1954), Colorado A and M. At Oregon State since 1945.
- HUGH GRIMES CATON, B.S., Clackamas County Extension Agent (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State since 1954.
- IDA A CECIL, B.S., Research Assistant (Instructor) in Home Economics, Agricultural Experiment Station.  
B.S. (1943), Georgia State for Women. At Oregon State since 1956.
- SAMUEL REBER CECIL, M.S.A., Research Assistant (Instructor) in Food Technology, Agricultural Experiment Station.  
B.S. (1937), Michigan College; M.S.A. (1954), Georgia. At Oregon State since 1956.
- WILLARD JOSEPH CHAMBERLIN, Ph.D., Professor Emeritus of Entomology.  
B.S. (1915), M.S. (1921), Oregon State; Ph.D. (1930), Stanford. At Oregon State since 1915.

- GLADYS DAWSON CHAMBERS, M.A., Instructor in Radio Education, KOAC. General Extension Division.  
B.A. (1917), M.A. (1920), Indiana. At Oregon State since 1951.
- HELEN CHANDLER, B.S., Douglas County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1952), George Washington. At Oregon State since 1952.
- HELEN GENEVA CHARLEY, M.S., Associate Professor of Foods and Nutrition.  
A.B. (1930), DePauw; M.S. (1941), Chicago. At Oregon State since 1944.
- VERNON HENDRUM CHELDELIN, Ph.D., Professor of Chemistry; Director Science Research Institute.  
B.A. (1937), Reed; M.S. (1939), Oregon State; Ph.D. (1941), Texas. At Oregon State since 1942.
- HORACE BELLATTI CHENEY, Ph.D., Professor of Soils, Head of Department; Soil Scientist in Charge, Agricultural Experiment Station.  
B.S. (1935), Iowa State; Ph.D. (1942), Ohio State. At Oregon State since 1952.
- DAVID OWEN CHILCOTE, B.S., Research Assistant (Instructor) in Farm Crops.  
B.S. (1953), Oregon State. At Oregon State since 1953.
- WILLIAM WESLEY CHILCOTE, Ph.D., Associate Professor of Botany; Associate Botanist, Agricultural Experiment Station.  
B.S. (1943), Ph.D. (1950), Iowa State. At Oregon State since 1950.
- HERBERT ELLSWORTH CHILDS, Ph.D., Professor of English.  
A.B. (1926), Oberlin College; Ph.D. (1932), Washington. At Oregon State since 1935.
- LEROY CHILDS, A.B., Professor Emeritus of Entomology, Mid-Columbia Branch Experiment Station.  
A.B. (1913), Stanford. At Oregon State since 1914.
- TE MAY TSOU CHING, Ph.D., Assistant Professor of Farm Crops; Assistant Agronomist, Agricultural Experiment Station.  
B.S. (1944), Central University, China; M.S. (1950), Ph.D. (1954), Michigan State. At Oregon State since 1956.
- BERT EINAR CHRISTENSEN, Ph.D., Professor of Chemistry; Chairman of Department.  
B.S. (1927), Washington State; Ph.D. (1931), Washington. At Oregon State since 1931.
- HARVEY DeVON CHRISTENSEN, M.S., Assistant Professor of Mechanical Engineering.  
B.S. (M.E.) (1943), Washington; M.S. (M.E.) (1950), Oregon State. At Oregon State since 1947.
- SEYMOUR KENT CHRISTENSEN, Ph.D., Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agricultural Experiment Station.  
B.S. (1948), Utah State; M.S. (1950), Ph.D. (1953), Cornell. At Oregon State since 1955.
- LOIS LEOTA CHRISTIAN, B.S., Crook County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1937), Oregon State. At Oregon State since 1951.
- CLARENCE LEWIS CHURCH, M.A., Assistant Professor of Physics.  
A.B. (1927), Willamette; M.A. (1936), Southern California. At Oregon State 1943-44, and since 1945.
- DAVID CALVIN CHURCH, Ph.D., Instructor, Research Assistant, Animal Husbandry.  
B.S. (1950), Kansas State; M.S. (1952), Idaho; Ph.D. (1956), Oklahoma A and M. At Oregon State since 1956.
- VANCE CURTIS CLAPP, Ed.D., Assistant Professor of Business Administration.  
B.A. (1948), M.A. (1950), Ed.D. (1953), Denver. At Oregon State since 1955.



- AVA MILAM CLARK, M.A., Professor Emeritus of Home Economics.  
Ph.B. (1910), M.A. (1911), Chicago. At Oregon State since 1911. Dean of the School of Home Economics 1917-50.
- CHARLES LESTER CLARK, Ph.D., Professor of Mathematics.  
B.A. (1939), M.A. (1940), Stanford; Ph.D. (1944), Virginia. At Oregon State since 1944.
- DAVID L CLARK, M.S., Acting Instructor in Mathematics.  
B.A. (1953), Eastern Washington College of Education; M.S. (1955), Oregon State. At Oregon State fall term 1956-57.
- HARRY EDWIN CLARK, M.S., Josephine County Extension Agent (Assistant Professor).  
B.S. (1939), M.S. (1942), Oregon State. At Oregon State since 1951.
- ROBERT RALPH CLARK, M.S., Extension Horticulture Specialist (Associate Professor).  
B.S. (1925), M.S. (1941), Oregon State. At Oregon State since 1945.
- VERNON ALBERT CLARKSON, M.S., Instructor in Horticulture; Research Assistant (Horticulture), Agricultural Experiment Station.  
B.S. (1949), Washington State; M.S. (1952), Oregon State. At Oregon State since 1951.
- STANLEY ARNOLD CLAYES, Ph.D., Assistant Professor of English.  
A.B. (1946), Ursinus College; M.A. (1950), Ph.D. (1951), Pennsylvania. At Oregon State since 1950.
- LAURA MAE CLEAVELAND, M.S., Assistant Professor of Institution Management; Manager Memorial Union Dining Service.  
B.S. (1930), Iowa State; M.S. (1942), Oregon State. At Oregon State since 1946.
- SCOTT PHILIP CLEVINGER, B.S., Lincoln County Extension Agent (Assistant Professor).  
B.S. (1939), Oregon State. At Oregon State since 1945.
- JOHN MYERS CLIFFORD, Acting Extension Administrative Assistant (Retired).  
At Oregon State 1918-20 and 1933-49.
- FRANCES ANN CLINTON, M.S., State Leader, Home Economics Extension (Professor).  
B.S. (1925), Puget Sound; M.S. (1930), Oregon State. At Oregon State since 1930.
- RILEY JENKINS CLINTON, Ed.D., Professor of Education.  
A.B. (1922), B.S. (in Ed.) (1922), M.A. (1925), Missouri; Ed.D. (1933) Stanford. At Oregon State since 1928.
- HAROLD COCKERLINE, B.S., Professor of Electrical Engineering.  
B.S. (in E.E.) (1912), Oregon. At Oregon State since 1921.
- RALPH COLBY, Ph.D., Dean of Lower Division; Professor of English.  
B.A. (1916), M.A. (1917), Minnesota; Ph.D. (1928), Illinois. At Oregon State since 1928.
- RALPH ORVAL COLEMAN, M.A., Professor; Chairman of Service Programs for Men; Head Coach of Baseball.  
B.S. (1918), Oregon State; M.A. (1929), Columbia. At Oregon State since 1919.
- OLIVER CECIL COMPTON, Ph.D., Associate Professor of Horticulture; Associate Horticulturist, Agricultural Experiment Station.  
B.S. (1931), M.S. (1932), California; Ph.D. (1947), Cornell. At Oregon State since 1948.
- MELVIN J. CONKLIN, B.S., Assistant Agricultural Economist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1922), Montana State. At Oregon State 1926-39 and since 1950.
- CLIVE WINTON COOK, B.S., Clackamas County Extension Agent (Assistant Professor).  
B.S. (1933), Oregon State. At Oregon State since 1944.

- LAWRENCE DAVID COOLIDGE, Ph.D., Associate Professor of Business Administration; Chairman of Department.  
A.B. (1936), M.A. (1938), Ph.D. (1950), Columbia. At Oregon State since 1948.
- WILBUR TARLTON COONEY, M.S., Associate Dean, School of Agriculture (Professor); Campus Coordinator, Kasetsart University Contract.  
B.S. (1937), M.S. (1942), Oregon State. At Oregon State since 1937.
- CLEE SCOTT COOPER, M.S., Agronomist (Assistant Professor), Squaw Butte-Harney Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1948), M.S. (1950), Montana State. At Oregon State since 1951.
- MARTIN PORTMAN COOPEY, B.S., Professor of Civil Engineering.  
B.S. (1936), Oregon State. At Oregon State since 1941.
- WALTER J COPPOCK, Ph.D., Instructor in Psychology.  
B.A. (1952), Ph.D. (1956), California. At Oregon State since 1956.
- MARY C CORCORAN, B.S., Instructor in Nursing Education.  
R.N. (1936), B.S. (1952), Oregon. At Oregon State since 1956.
- STANLEY EUGENE CORDER, B.S., Mechanical Engineer (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1950), Oregon State. At Oregon State since 1951.
- CLIFFORD BERNARD CORDY, M.S., Jackson County Extension Agent (Associate Professor).  
B.S. (1930), Oregon State; M.S. (1934), Michigan State. At Oregon State since 1935.
- ELGIN MAC CORNETT, B.S., Special County Extension Agent (Associate Professor).  
B.S. (1939), Oregon State. At Oregon State since 1942.
- EVERETT STEWART CORTRIGHT, M.A., Associate Professor of Speech.  
B.A. (1927), Iowa State Teachers; M.A. (1941), Michigan. At Oregon State since 1944.
- JOE IRVIN COTTLE, M.A., Captain, Associate Professor of Air Science.  
B.A. (1950), Washburn University; M.A. (1952), Colorado State College of Education. At Oregon State since 1955.
- JOHN RITCHIE COWAN, Ph.D., Professor of Farm Crops; Agronomist, Agricultural Experiment Station.  
B.S.A. (1939), Toronto; M.S. (1942), Ph.D. (1952), Minnesota. At Oregon State since 1948.
- HELEN JULIA COWGILL, M.A., Assistant State 4-H Club Leader Emeritus (Associate Professor).  
B.S. (1913), B.S. (1916), Oregon State; M.A. (1931), Washington. At Oregon State since 1914.
- GEORGE BRYAN COX, M.S., Professor of Industrial Engineering and Industrial Arts; Professor of Industrial Education; Head of Department.  
B.S. (1919), Missouri; M.S. (1940), Oregon State. At Oregon State since 1927.
- JOSEPH ALFRED COX, M.S., Associate Professor of Physical Education.  
B.A. (1926), Colorado College; M.S. (1938), Oregon State. At Oregon State since 1946.
- BOB WALLACE COYLE, Extension Agricultural Economist (Associate Professor).  
At Oregon State since 1946.
- IRENE LOUISE CRAFT, M.S., Serials Librarian (Associate Professor), Library.  
B.S. (1930), Fort Hays State; M.A. (1931), Nebraska; B.S. in L.S. (1941), M.S. in L.S. (1943), Illinois. At Oregon State since 1944.
- WILLARD MAXON CRAIG, M.B.A., LL.B., Associate Professor of Business Administration.  
B.S. (1926), Oregon State; M.B.A. (1931), LL.B. (1936), Washington. At Oregon State since 1938.

- GRAYDON TALMADGE CREWS, M.S., Science Student Personnel Adviser (Instructor).  
B.S. (1938), Washington; M.S. (1950), Oregon State. At Oregon State since 1948.
- MARY ANN CROCKER, B.S., Jefferson County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1952), Oregon State. At Oregon State since 1956. On leave December 8, 1956 to March 31, 1957.
- JACK GEORGE CROENI, B.S., Instructor in General Engineering.  
B.S. (1950), Oregon State. At Oregon State since 1956.
- WILLIAM RAMSDEN CROOKS, Ph.D., Associate Professor of Psychology; Chairman of Department.  
A.B. (1937), California; M.A. (1939), Connecticut; Ph.D. (1952), Minnesota. At Oregon State since 1947.
- MYRON GEORGE CROUSEY, Ph.D., Associate Professor of Agricultural Engineering; Associate Agricultural Engineer, Agricultural Experiment Station.  
B.S. (1933), California; M.S. (1941), North Dakota State; Ph.D. (1956), Michigan State. At Oregon State since 1946.
- GEORGE EDWARD CROSSEN, Ph.D., Dean of Pharmacy; Professor of Pharmacy; Director of the Drugs Laboratory of the Oregon Board of Pharmacy.  
B.S. (1933), M.S. (1937), Ph.D. (1940), Minnesota. At Oregon State since 1945.
- HAMBLIN HOWES CROWELL, Ph.D., Associate Entomologist (Associate Professor), Agricultural Experiment Station.  
B.S. (1935), M.S. (1937), Oregon State; Ph.D. (1940), Ohio State. At Oregon State since 1946.
- ANDREW JACKSON CULVER, JR., M.S., Associate Plant Pathologist (Associate Professor), U.S. Department of Agriculture.  
B.A. (1943), Delaware; M.S. (1948), Vermont. At Oregon State since 1950.
- RAYMOND ALAN CURRIER, M.S., Research Associate (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1950), Massachusetts; M.S. (1952), New York State College of Forestry. At Oregon State since 1952.
- IMOGENE CUSAC, B.A. in L.S., Union Cataloger (Instructor), Library.  
B.A. (1930), Baylor; B.A. in L.S. (1931), Oklahoma; B.A. (1937), Highlands. At Oregon State since 1949.
- HOWARD EUGENE CUSHMAN, B.S., Extension Soil Conservation Specialist (Associate Professor).  
B.S. (1942), Oregon State. At Oregon State since 1952.
- DANIEL KEITH DAGLE, B.S., Lieutenant (JG), USN, Assistant Professor of Naval Science.  
B.S. (1953), State Teachers College (Kutztown, Pennsylvania). At Oregon State since 1956.
- CHARLES HENRY DAILEY, JR., M.A., Assistant Professor of Physical Education.  
B.S. (1943), North Central College (Illinois); M.A. (1947), Michigan. At Oregon State since 1947.
- VERNON JOHN DAMM, M.A., Instructor in Psychology.  
B.A. (1952), Houghton College; M.A. (1954), Bowling Green. At Oregon State since 1956.
- BLISS F DANA, M.S., Plant Pathologist (Professor), U. S. Department of Agriculture (Retired).  
B.S. (1916), M.S. (1917), Washington State. At Oregon State since 1931.
- ROBERT HORNIMAN DANN, M.A., Professor Emeritus of Sociology.  
B.A. (1917), George Fox; M.A. (1918), Haverford College. At Oregon State since 1927.
- MABEL DARELIUS, R.N., Nurse, Student Health Service (Retired).  
R.N. (1912), Eugene Hospital School of Nursing. At Oregon State 1921-47.

- SUNIL KUMAR DATTA, Ph.D., Research Associate (Instructor) in Chemistry. B.Sc. (1943), Presidency College, Calcutta; M.Sc. (1949), University College of Science, Calcutta; Ph.D. (1956), Indian Association for the Cultivation of Science, Calcutta. At Oregon State since 1956.
- ROBERT WESLEY DAVENPORT, Ph.D., Assistant Professor of Economics. B.A. (1943), Washington; M.A. (1944), Fletcher School of Law and Diplomacy; Ph.D. (1953), Columbia. At Oregon State since 1956.
- ALEXANDER NORMAN DAVIDSON, M.B.A., C.P.A., Assistant Professor of Business Administration. B.S. (1947), Columbia; C.P.A. (1953), Texas; M.B.A. (1948), New York; LL.B. (1955), Denver. At Oregon State since 1956.
- THOMAS PARNELL DAVIDSON, B.S., Research Assistant (Instructor), Umatilla Branch Experiment Station, Milton-Freewater Experimental Area. B.S. (1949), Oregon State. At Oregon State since 1950.
- WILLIAM ALBERT DAVIES, M.F., Professor of Forest Engineering; Head of Department. B.S.F. (1938), M.F. (1946), Washington. At Oregon State since 1946.
- DONALD EVAN DAVIS, Ed.D., Assistant Professor of Music. A.B. (1946), California; Mus.M. (1948), Northwestern; Ed.D. (1954), Oregon. At Oregon State since 1955.
- GEORGE BALFOUR DAVIS, M.S., Associate Agricultural Economist (Associate Professor), Agricultural Experiment Station. B.S. (1939), M.S. (1942), Oregon State. At Oregon State since 1941.
- KENNETH GENE DAVIS, M.S., Research Assistant (Instructor) in Fish and Game Management. B.S. (1952), M.S. (1954), Oregon State. At Oregon State since 1954.
- MELISSA MARTIN DAWES, A.M., Professor of Modern Languages. A.B. (1912), Oregon; B.S. (1915), Oregon State; A.M. (1920), Columbia. At Oregon State since 1915.
- JAMES KAYE DAWSON, M.Engrg., Instructor in Mechanical Engineering. B.S. (1940), Oklahoma A and M; M.Engrg. (1951), Oklahoma. At Oregon State since 1955.
- MURRAY DRAYTON DAWSON, Ph.D., Assistant Professor of Soils; Assistant Soil Scientist, Agricultural Experiment Station. M.Agr.Sc. (1949), University of New Zealand; M.S. (1952), Ph.D. (1954), Cornell. At Oregon State since 1954.
- JOHN COURTNEY DECIUS, Ph.D., Professor of Chemistry. A.B. (1941), Stanford; M.A. (1943), Ph.D. (1947), Harvard. At Oregon State since 1949.
- FRED WILLIAM DECKER, Ph.D., Assistant Professor of Physics. B.S. (1940), Oregon State; M.S. (1943), New York; Ph.D. (1952), Oregon State. At Oregon State since 1946.
- IRA WASHINGTON DEEP, Ph.D., Instructor in Botany. B.A. (1950), Miami (Ohio); M.S. (1952), Tennessee; Ph.D. (1956), Oregon State. At Oregon State since 1953.
- JEAN MARIE DEFENBACH, M.S., Instructor in Mathematics. B.S. (1953), Eastern Washington; M.S. (1956), Oregon State. At Oregon State since 1955.
- MAX WALKER DE LAUBENFELS, Ph.D., Professor of Zoology. A.B. (1916), Oberlin; A.M. (1926), Ph.D. (1929), Stanford. At Oregon State since 1950.
- RICHARD ROY DEMPSTER, Ph.D., Professor of Physics. A.B. (1930), M.A. (1931), Ph.D. (1942), California. At Oregon State since 1944.
- GEORGE WILLIAM DEWEY, B.S., Extension Specialist in Certification (Assistant Professor). B.S. (1911), Michigan State. At Oregon State since 1944.

- ELVIS ARNIE DICKASON, M.S., Assistant Entomologist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1947), M.S. (1949), Oregon State. At Oregon State since 1949.
- ERNEST MILTON DICKINSON, D.V.M., M.S., Professor of Veterinary Medicine; Head of Department; Veterinarian in Charge, Agricultural Experiment Station.  
D.V.M. (1927), Ohio State; M.S. (1935), Oregon State. At Oregon State 1927-36 and since 1938.
- FRANK HERMAN JOSEPH DICKMANN, B.S., Research Assistant (Instructor) Agricultural Economics, Agricultural Experiment Station.  
B.S. (1951), Oregon State. At Oregon State since 1952.
- MARIE DIEDESCH, M.S., Associate Professor of Clothing, Textiles, and Related Arts.  
B.A. (1933), Washington State; M.S. (1941), Oregon State. At Oregon State since 1945. On sabbatical leave, spring term 1956-57.
- JAMES HADLEY DIETZ, Ph.D., Assistant Professor of Food Technology; Assistant Food Technologist, Agricultural Experiment Station.  
B.S. (1949), Oregon State; M.S. (1951), Ph.D. (1953), Massachusetts. At Oregon State since 1957.
- SHERL MELVIN DIETZ, Ph.D., Professor of Botany and Plant Pathology; Chairman of Department; Plant Pathologist in Charge, Agricultural Experiment Station.  
B.S. (1917), M.S. (1918), Ph.D. (1924), Iowa State. At Oregon State since 1947.
- JOHN RICHARD DILWORTH, Ph.D., Professor of Forest Management; Head of Department.  
B.S. (1937), M.S. (1938), Iowa State; Ph.D. (1956), Washington. At Oregon State since 1946.
- ROLAND EUGENE DIMICK, M.S., Professor of Fish and Game Management; Head of Department; Wildlife Conservationist in Charge, Agricultural Experiment Station.  
B.S. (1926), M.S. (1931), Oregon State. At Oregon State since 1929.
- JAMES VICTOR DIXON, M.S., Associate Professor of Physical Education.  
B.S. (1931), M.S. (1939), Oregon State. At Oregon State since 1927.
- NORMAN DALE DOBIE, Ph.D., Assistant Plant Pathologist, Agricultural Experiment Station; Extension Certification Specialist (Assistant Professor).  
B.S. (1947), South Dakota State; Ph.D. (1954), Oregon State. At Oregon State since 1949.
- BOB DOLAN, B.S., Instructor in Geography.  
B.S. (1955), Southern Oregon College. At Oregon State since 1956.
- THURSTON ERMON DOLER, M.S., Assistant Professor of Speech.  
B.A. (1948), Furman; M.S. (1949), Purdue. At Oregon State since 1949.
- ERNST JOHN DORNFELD, Ph.D., Professor of Zoology; Chairman of Department.  
B.S. (1933), Marquette; M.A. (1935), Ph.D. (1937), Wisconsin. At Oregon State since 1938.
- PETER DOUDOROFF, Ph.D., Supervisory Fishery Research Biologist (Professor), U. S. Public Health Service.  
A.B. (1935), Stanford; Ph.D. (1941), California. At Oregon State since 1953.
- RIZPAH ANNA DOUGLASS, M.A., Josephine County Extension Agent, Home Economics (Associate Professor).  
B.S. (1923), Nebraska; M.A. (1938), Columbia. At Oregon State since 1949.
- STEVE RICHARD DOWELL, B.S., Hood River County Extension Agent, 4-H Club (Instructor).  
B.S. (1955), Oklahoma A and M. At Oregon State since 1956.

- DONALD THOMAS DOWNS, Ph.D., Assistant Professor of Economics.  
A.B. (1948), M.A. (1949), Nebraska; Ph.D. (1954), Iowa. At Oregon State since 1956.
- WILLIAM HENRY DREESEN, Ph.D., Professor Emeritus of Economics.  
A.B. (1907), Greenville College; M.A. (1916), Ph.D. (1918), Illinois. At Oregon State since 1918.
- ROYCE CARLETON DREYER, B.S., Lieutenant, Assistant Professor of Naval Science.  
B.S. (1949), U. S. Naval Academy. At Oregon State since 1955.
- KARL FRANCIS DRLICA, M.S., Assistant Professor of Physical Education; Coach of Rowing.  
B.S. (1940), M.S. (1952), Oregon State. At Oregon State since 1950.
- ULYSSES GRANT DUBACH, Ph.D., Dean of Men Emeritus.  
A.B. (1908), Indiana; M.A. (1909), Harvard; Ph.D. (1913), Wisconsin. At Oregon State since 1913.
- MARVIN CLARENCE DUBBÉ, Ed.D., Instructor in English.  
B.S. (1929), M.A. (1932), Columbia; Ed.D. (1956), Oregon State. At Oregon State since 1952.
- MAY DUBOIS, Ph.D., Professor of Home Economics Education; Head of Department.  
B.S. (1931), M.S. (1939), Colorado A and M; Ph.D. (1951), Ohio State. At Oregon State since 1939.
- NORMA JEAN DUDLEY, B.S., Hood River County Extension Agent, Home Economics (Instructor).  
B.S. (1947), Iowa State. At Oregon State since 1956.
- †EDISON ELLSWORTH EASTON, M.B.A., C.P.A., Assistant Professor of Business Administration.  
B.S. (1947), Southern California; C.P.A. (1948), M.B.A. (1951), California. At Oregon State since 1951.
- ARNOLD CHRISTIAN EBERT, B.S., Agricultural Information Chairman (Associate Professor).  
B.S. (1936), Oregon State. At Oregon State since 1936.
- CLARA WILLIAMS EDABURN, M.A., Associate Professor of Clothing, Textiles, and Related Arts; Associate Home Economist (Clothing), Agricultural Experiment Station.  
B.S. (1925), Iowa State; M.A. (1939), Columbia. At Oregon State since 1939.
- EUGENE SINCLAIR EDGINGTON, Ph.D., Assistant Professor of Psychology.  
B.S. (1950), M.S. (1951), Kansas State; Ph.D. (1955), Michigan State. At Oregon State since 1957.
- LOUIS LAIRD EDWARDS, M.E., Instructor in Business Administration.  
B.S. (1935), M.E. (1949), Montana State. At Oregon State since 1955. Winter term only, 1956-57.
- MARGARET ANN EDWARDS, B.S., Research Assistant (Instructor) Home Economics, Agricultural Experiment Station.  
B.S. (1937), Washington State. At Oregon State since 1951.
- ARTHUR SKOGMAN EINARSEN, B.S., Biologist (Professor), U. S. Fish and Wildlife Service.  
B.S. (1923), Washington. At Oregon State since 1935.
- SIGMUND EISNER, Ph.D., Instructor in English.  
B.A. (1947), M.A. (1949), California; Ph.D. (1955), Columbia. At Oregon State since 1954.
- FLOYD ELROY ELLERTSON, B.A., Research Assistant (Instructor), Mid-Columbia Branch Experiment Station.  
B.A. (1942), Oregon State. At Oregon State since 1951.

† On detached duty, Kasetsart University, Thailand; see page 85.

- PAUL REUBEN ELLIKER, Ph.D., Professor of Bacteriology; Chairman of Department; Bacteriologist in Charge, Agricultural Experiment Station.  
B.S. (1934), M.S. (1935), Ph.D. (1937), Wisconsin. At Oregon State since 1947.
- RUSSELL EUGENE ELLIS, B.Arch.E., R.A., Assistant Professor of Architecture.  
B.S. (1949), B.Arch.E. (1952), Washington State. At Oregon State since 1949. On leave 1956-57.
- JOSEPH WALDO ELLISON, Ph.D., Professor of History; Head of Department.  
A.B. (1917), M.A. (1919), Ph.D. (1923), California. At Oregon State since 1924.
- RUTH ANN EMERSON, M.S., Instructor in Family Life.  
B.S. (1951), M.S. (1953), Cornell. At Oregon State since 1953.
- MARY FLORENCE ENGESSER, B.A., Instructor in English.  
B.A. (1943), Western Maryland. At Oregon State 1946-47 and since 1957.
- WILLIAM FREDERIC ENGESSER, M.S., Professor of Industrial Engineering.  
B.S. (1941), M.S. (1950), Northwestern. At Oregon State since 1941.
- DAVID CHARLES ENGLAND, Ph.D., Assistant Animal Husbandman (Assistant Professor), Agricultural Experiment Station.  
B.S. (1949), Washington State; M.S. (1950), Ph.D. (1952), Minnesota. At Oregon State since 1955.
- JOHN FRANKLIN ENGLE, M.S., Assistant Professor of Electrical Engineering.  
B.S. (1947), M.S. (1951), Oregon State. At Oregon State since 1947.
- LEIF DEDRICK ESPENAS, M.S., Chief of Physical Research and Development, (Professor), Oregon Forest Products Laboratory.  
B.S. (1938), Syracuse; M.S. (1940), California. At Oregon State since 1947.
- DANIEL DONALD EVANS, Ph.D., Associate Professor of Soils; Associate Soil Scientist, Agricultural Experiment Station.  
B.S. (1947), Ohio State; M.S. (1950), Ph.D. (1952), Iowa State. At Oregon State since 1953.
- ROBERT WILSON EVERY, B.S., Extension Entomology Specialist (Associate Professor).  
B.S. (1939), Idaho. At Oregon State since 1946.
- HAROLD PLYMPTON EWALT, B.S., Extension Dairy Specialist (Professor).  
B.S. (1932), Oregon State. At Oregon State since 1932.
- DWIGHT WESLEY FAIRBANKS, M.S., Extension Visual Instruction Specialist (Associate Professor).  
B.S. (1943), Colorado A and M; M.S. (1956), Michigan State. At Oregon State since 1956.
- SHENG CHUNG FANG, Ph.D., Assistant Agricultural Chemist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1937), Fukien Christian University; M.S. (1944), Ph.D. (1948), Oregon State. At Oregon State since 1948.
- WILLIAM KING FARRELL, B.S., Grant County Extension Agent (Associate Professor).  
B.S. (1942), Oregon State. At Oregon State since 1942.
- CAROLINE GERTRUDE FAUST, B.S., Josephine County Extension Agent, Home Economics (Instructor).  
B.S. (1954), Oregon State. At Oregon State since 1954.
- GRANT STEPHEN FEIKERT, M.S., E.E., Associate Professor of Electrical Engineering; Chief Engineer of KOAC.  
B.S. (1930), M.S. (1932), E.E. (1937), Oregon State. At Oregon State since 1929.
- CLIFFORD FRANK FELTS, Master Sergeant, Instructor in Military Science and Tactics, Sergeant Major.  
At Oregon State since 1955.

- DOROTHY HARSTAD FENNER, M.S., Instructor in Foods and Nutrition.  
B.S. (1939), M.S. (1942), Oregon State. At Oregon State 1940-41, 1948, and since 1955.
- WILLIAM KREITER FERRELL, Ph.D., Assistant Professor of Forest Management.  
B.S.F. (1941), Michigan; M.F. (1946), Ph.D. (1949), Duke. At Oregon State since 1956.
- PETER NELSON FERREN, Master Sergeant, Instructor in Military Science and Tactics.  
At Oregon State since 1953.
- BARBARA RUTH FESSLER, B.S., Marion County Extension Agent, Home Economics (Instructor).  
B.S. (1953), Oregon State. At Oregon State since 1955.
- MARIAN FIELD, B.A., Associate Professor Emeritus of Art.  
B.A. (1930), Oregon. At Oregon State since 1942.
- MARGARET LOUISE FINCKE, Ph.D., Professor of Foods and Nutrition; Head of Department.  
A.B. (1921), Mount Holyoke; A.M. (1932), Ph.D. (1935), Columbia. At Oregon State since 1935.
- HAROLD ETHAN FINNELL, M.S., Extension Certification Specialist (Associate Professor).  
B.S. (1934), M.S. (1936), Oregon State. At Oregon State since 1936.
- CHARLES MEREL FISCHER, M.S., Extension Poultry Marketing Specialist (Assistant Professor).  
B.S. (1943), South Dakota State; M.S. (1947), Iowa State. At Oregon State since 1947.
- ERMINA JANE FISHER, M.S., Marion County Extension Agent, Home Economics (Associate Professor).  
B.S. (1938), Kansas State; M.S. (1951), Cornell. At Oregon State since 1952.
- ELIZABETH O'BRIEN FLOOD, M.S., Instructor in Mathematics.  
B.S. (1940), M.S. (1947), Oregon State. At Oregon State since 1954.
- GERHARD RAGNVALD FLOOD, M.S., Assistant Professor of Physical Education.  
B.S. (1929), M.S. (1941), Oregon State. At Oregon State 1940-41, and since 1943.
- WILSON HOOVER FOOTE, Ph.D., Associate Professor of Farm Crops; Associate Agronomist, Agricultural Experiment Station.  
B.S. (1942), Utah State; M.S. (1946), Ph.D. (1948), Minnesota. At Oregon State since 1948.
- ROBERT BYRON FORBES, B.B.A., Lieutenant Colonel, Associate Professor of Air Science.  
B.B.A. (1950), Baylor. At Oregon State since 1955.
- ROBERT ESTES FORE, Ph.D., Professor of Farm Crops; Agronomist, Agricultural Experiment Station.  
B.S. (1929), Iowa State; M.S. (1931), Ph.D. (1935), Illinois. At Oregon State since 1936.
- WALTER CYRIL FOREMAN, Ph.D., Associate Professor of English.  
B.A. (1933), Union College (Nebraska); M.A. (1937), Nebraska; Ph.D. (1948), California. At Oregon State since 1948.
- HERMAN CARL FORSLUND, M.S., Associate Professor of Pharmaceutical Chemistry.  
B.S. (1938), M.S. (1940), Washington State. At Oregon State since 1945.
- LEE RUSSELL FOSTER, B.S., Hood River County Extension Agent (Associate Professor).  
B.S. (1933), Washington State. At Oregon State since 1947.
- ROY A FOSTER, H.S.D., Associate Professor of Hygiene and Health Education.  
B.A. (1937), Concordia College; M.S. (1950), H.S.D. (1953), Indiana. At Oregon State since 1955.



- TED E FOULKE, M.D.**, Assistant Physician, Student Health Service (Associate Professor).  
B.S. (1944), Case Institute of Technology; M.D. (1951), Western Reserve. At Oregon State since 1955.
- WILLIAM YOUNG FOWLER III, B.S.A.**, Extension Livestock Marketing Specialist (Instructor).  
B.S.A. (1949), Kansas State. At Oregon State since 1955.
- CARROLL WARREN FOX, Ph.D.**, Assistant Professor of Animal Husbandry; Assistant Animal Husbandman, Agricultural Experiment Station.  
B.S. (1943), Colorado A and M; Ph.D. (1954), California. At Oregon State since 1956.
- DOROTHY BOURKE FOX, B.A.**, Associate Professor of Art.  
B.A. (1925), California School of Arts and Crafts. At Oregon State since 1928.
- FRED WAYNE FOX, M.A.**, Assistant Professor of Science Education.  
B.S.Ed. (1942), Miami University (Ohio); M.A. (1949), Ohio State. At Oregon State since 1957.
- NED WELLINGTON FRANDEEN, B.S.**, Multnomah County Extension Agent (Assistant Professor).  
B.S. (1952), Oregon State. At Oregon State since 1952.
- RONALD GERALD FRASHOUR, B.S.**, In charge of Manufactured Products Section (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1951), Oregon State. At Oregon State since 1951.
- LLOYD McDONALD FRAZIER, B.S.**, Assistant Professor of Industrial Engineering and Industrial Arts.  
B.S. (1949), Oregon State. At Oregon State since 1947.
- WILLIAM ALLEN FRAZIER, Ph.D.**, Professor of Horticulture; Horticulturist (Vegetable Crops), Agricultural Experiment Station.  
B.S. (1930), Texas A and M; M.S. (1931), Ph.D. (1933), Maryland. At Oregon State since 1949.
- GEORGE NORMAN FREDEEN, B.S.**, Instructor in Landscape Architecture.  
B.S. (1950), Oregon State. At Oregon State since 1956.
- VIRGIL HAVEN FREED, M.S.**, Associate Professor of Farm Crops; Associate Chemist, Agricultural Experiment Station.  
B.S. (1943), M.S. (1948), Oregon State. At Oregon State since 1943.
- HARRY FREUND, Ph.D.**, Associate Professor of Chemistry.  
B.S. (1940), College of City of New York; M.S. (1941), Ph.D. (1945), Michigan. At Oregon State since 1947.
- CHARLES BOSTWICK FRIDAY, Ph.D.**, Associate Professor of Economics.  
B.A. (1943), M.A. (1947), Ph.D. (1950), Colorado. At Oregon State since 1950.
- DEAN WILFORD FRISCHKNECHT, M.S.**, Extension Animal Husbandry Specialist (Assistant Professor).  
B.S. (1942), M.S. (1943), Utah State. At Oregon State since 1956.
- ALMA CATHERINE FRITCHOFF, M.A.**, Professor Emeritus of Clothing and Textiles.  
B.A. (1917), Nebraska; M.A. (1925), Columbia. At Oregon State 1918-22, and since 1925.
- JOHN KITCHENER FRIZZELL, M.S.**, Wasco County Extension Agent (Assistant Professor).  
B.S.A. (1942), Saskatchewan; M.S. (1955), Wisconsin. At Oregon State since 1955.
- WILFRID TUTTLE FROST, A.B.**, Hydraulic Engineer (Associate Professor), Irrigation Water Forecasting, U. S. Department of Agriculture (Portland).  
A.B. (1933), California. At Oregon State since 1942.
- ROBERT FRANK FUQUAY, Ph.D.**, Assistant Professor of Political Science.  
B.A. (1949), M.A. (1950), Ph.D. (1953), Florida. At Oregon State since 1953.

- WILLIAM FURTICK, M.S., Instructor in Farm Crops; Research Assistant, Agricultural Experiment Station.  
B.S. (1949), Kansas State; M.S. (1952), Oregon State. At Oregon State since 1949.
- JOHN CLIFTON GARMAN, Ph.M., Associate Professor of Physics.  
B.S. (1922), Oregon State; Ph.M. (1933), Wisconsin. At Oregon State since 1923.
- RALPH GARREN, JR., M.S., Assistant Horticulturist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1950), M.S. (1954), Oregon State. At Oregon State since 1950.
- CHESTER ARTHUR GARRISON, M.A., Instructor in English.  
B.A. (1940), Dartmouth; M.A. (1946), Columbia. At Oregon State since 1954.
- EVRA ALTA GARRISON, M.A., Assistant Professor of Foods and Nutrition.  
B.S. (1923), Nebraska; M.A. (1930), California. At Oregon State since 1930.
- LOUISE GARRISON, M.A., Acting Instructor in English.  
B.Ed. (1943), Illinois State Normal University; M.A. (1946), Columbia. At Oregon State fall term 1956.
- ELEANOR JANE GATES, B.S., Douglas County Extension Agent, 4-H Club (Instructor).  
B.S. (1950), Vermont. At Oregon State since 1953.
- DOROTHY GATTON, M.A., Professor of Clothing, Textiles, and Related Arts.  
B.A. (1925), M.A. (1933), Washington. At Oregon State since 1940.
- ANTHONY FRANCIS GAUDY, JR., M.S., Resident Engineer, National Council for Stream Improvement (Assistant Professor), Engineering Experiment Station.  
B.S. (1951), Massachusetts; M.S. (1955), Massachusetts Institute of Technology. At Oregon State since 1956.
- CHARLES GERALD GAVIN, B.S., Union County Extension Agent (Assistant Professor).  
B.S. (1949), Wyoming. At Oregon State since 1955.
- ALTA ISABELLE GAYNOR, Ed.D., Assistant Professor of Physical Education for Women.  
B.S. (1943), M.A. (1947), Wyoming; Ed.D. (1955), Oregon State. At Oregon State since 1954.
- LOUIS GUSTAVE GENTNER, Ph.D., Entomologist (Professor), Southern Oregon Branch Experiment Station.  
B.S. (1915), Oregon State; M.S. (1918), Wisconsin; Ph.D. (1953), Oregon State. At Oregon State since 1930.
- DONALD WAYNE GEORGE, M.S., Research Agronomist (Assistant Professor), Pendleton Branch Experiment Station, U.S. Department of Agriculture.  
B.S. (1948), M.S. (1949), Kansas State. At Oregon State since 1954.
- CLEVELAND JOSEPH GERARD, Ph.D., Assistant Soil Scientist (Assistant Professor), Pendleton Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1948), Southwestern Louisiana; M.S. (1950), Kansas State; Ph.D. (1955), Texas A and M. At Oregon State since 1954.
- EVAN KEITH GIBSON, Ph.D., Associate Professor of English.  
A.B. (1933), Seattle Pacific; M.A. (1935), Ph.D. (1947), Washington. At Oregon State since 1947.
- EARL C GILBERT, Ph.D., Professor of Physical Chemistry.  
B.S. (1916), M.S. (1917), Hiram College; Ph.D. (1922), Chicago. At Oregon State since 1917.
- FRANCOIS ARCHIBALD GILFILLAN, Ph.D., Dean of the School of Science; Professor of General Science; Executive Committee, Oregon Institute of Marine Biology.  
B.S. (1918), Ph.G. (1918), Ph.C. (1920), Oregon State; Ph.D. (1921), Yale. At Oregon State 1918, 1922-25, and since 1927.

- GORDON WAVERLY GILKEY, M.F.A., Professor of Art; Head of Department.  
B.S. (1933), Albany College; M.F.A. (1936), Oregon. At Oregon State since 1947.
- HELEN MARGARET GILKEY, Ph.D., Professor Emeritus of Botany.  
B.S. (1907), M.S. (1911), Oregon State; Ph.D. (1915), California. At Oregon State 1908-11 and since 1918. Curator of Herbarium 1918-51.
- AMORY TINGLE GILL, B.S., Head Coach of Basketball (Professor).  
B.S. (1925), Oregon State. At Oregon State since 1926.
- PERCY MARGARET GILL, M.S., Associate Professor of Physical Education for Women.  
B.A. (1931), California; M.S. (1948), Oregon State. At Oregon State since 1945.
- WINNIFRED KEIL GILLEN, M.S., State Extension Agent, 4-H Club (Professor).  
B.S. (1930), M.S. (1938), Iowa State. At Oregon State since 1938.
- WILLIAM JAMES GILMORE, B.C.E., B.S., Professor Emeritus of Agricultural Engineering.  
B.C.E. (1909), B.S. (in A.E.) (1911), Iowa State. At Oregon State since 1915.
- CAMPBELL M GILMOUR, Ph.D., Associate Professor of Bacteriology.  
B.S. (1941), M.S. (1945), British Columbia; Ph.D. (1949), Wisconsin. At Oregon State since 1951.
- WILLIAM RAY GLASS, B.Arch., Instructor in Architecture.  
B.Arch. (1956), Oregon. At Oregon State since 1956.
- GEORGE WALTER GLEESON, Ch.E., Dean, School of Engineering and Industrial Arts; Director Engineering Experiment Station; Professor of Chemical Engineering.  
B.S. (1928), M.S. (1934), Ch.E. (1936), Oregon State. At Oregon State since 1928.
- DOUGLAS WILLIAM GLENNIE, Ph.D., Acting Head, Division of Chemical Research and Development (Associate Professor), Oregon Forest Products Laboratory.  
B.A. (1949), M.A. (1951), University of British Columbia; Ph.D. (1955), Washington. At Oregon State since 1956.
- RUSSELL HOLCOMB GODARD, M.A., Assistant Professor of Mathematics.  
B.S. (1938), Oregon State; M.A. (1939), Iowa. At Oregon State since 1950.
- EARL GODDARD, D.B.A., Assistant Professor of Business Administration.  
B.S. (1943), Southern Illinois; M.B.A. (1945), Northwestern; D.B.A. (1956), Washington. At Oregon State since 1946.
- JAMES DAVID GODDARD, M.Ed., Assistant Professor of Physical Education; Assistant Intramural Director.  
B.S. (1952), Lewis and Clark; M.Ed. (1956), Oregon. At Oregon State since 1956.
- HARRY EARL GOHEEN, Ph.D., Associate Professor of Mathematics.  
B.A. (1936), M.A. (1938), Ph.D. (1940), Stanford. At Oregon State since 1955.
- DELMER MORRISON GOODE, M.A., Professor of Higher Education; Curriculum Consultant; Editor of Publications.  
B.A. (1916), Minnesota; M.A. (1938), Oregon State. At Oregon State since 1919.
- KENNETH LLEWELLYN GORDON, Ph.D., Professor of Zoology.  
A.B. (1923), Colorado College; M.A. (1925), Missouri; Ph.D. (1936), Cornell. At Oregon State since 1927.
- ROBERT LEE GOULDING, Ph.D., Assistant Entomologist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1946), Florida; M.S. (1948), Ph.D. (1955), Ohio State. At Oregon State since 1955.
- SAMUEL HERMAN GRAF, M.E., M.S., Professor Emeritus of Mechanical Engineering.  
B.S. (1907), E.E. (1908), B.S. (1908), M.E. (1909), M.S. (1909), Oregon State. At Oregon State since 1908.

- ROBERT DOUGLAS GRAHAM, M.S., In Charge of Wood Preservation (Associate Professor), Oregon Forest Products Laboratory.  
B.S. (1941), Pennsylvania State; M.S. (1947), Oregon State. At Oregon State since 1947.
- PHYLLIS EMOGENE GRANT, M.S., Assistant Professor of Clothing, Textiles, and Related Arts.  
B.S. (1939), Minnesota; M.S. (1950), Oregon State. At Oregon State since 1949.
- JOHN BERNARD GRANTHAM, M.S., Managing Director (Professor), Oregon Forest Products Laboratory.  
B.S.F. (1934), Washington; M.S. (1935), Syracuse. At Oregon State since 1945.
- EDWARD MILTON GRASSELL, M.A., Assistant Professor of Visual Instruction, General Extension Division, State System of Higher Education.  
A.B. (1944), San Jose State; M.A. (1951), College of Pacific. At Oregon State since 1953.
- IRIS GRAY, M.M., Associate Professor of Music.  
B.M. (1933), Cincinnati Conservatory of Music; M.M. (1944), Idaho. At Oregon State 1933-42, and since 1944.
- JAMES LATIMER GRAY, B.S., Assistant Professor of General Engineering.  
B.S. (1948), Oregon State. At Oregon State since 1949.
- MARY ANNE GREENLUND, B.S., Coos County Extension Agent, Home Economics (Instructor).  
B.S. (1955), Oregon State. At Oregon State since 1956.
- ELLA NINA GREENSLADE, B.S., Washington County Extension Agent, Home Economics (Instructor).  
B.S. (1950), Oregon State. At Oregon State since 1955.
- CHARLES THORNTON GREGG, M.S., Research Assistant (Instructor), Agricultural Chemistry, Agricultural Experiment Station.  
B.S. (1952), M.S. (1956), Oregon State. At Oregon State since 1955.
- WILLIAM JENKINS GRIFFITH, B.A. in L.S., Engineering Librarian (Assistant Professor), Library.  
B.A. (1949), B.A. in L.S. (1952), Washington. At Oregon State since 1956.
- SAMUEL ERNEST GRIFFITHS, B.S., Captain, Assistant Professor of Military Science and Tactics.  
B.S. (1950), Norwich University. At Oregon State since 1956.
- JOHN KEITH GRIMES, B.S., Polk County Extension Agent (Assistant Professor).  
B.S. (1940), Oregon State. At Oregon State 1942-44, and since 1953.
- ROLAND HERBERT GRODER, B.S., Extension Fruit and Vegetable Marketing Specialist (Assistant Professor).  
B.S. (1950), Maine. At Oregon State since 1950.
- JAMES WILLARD GROSHONG, A.B., Assistant Professor of English.  
A.B. (1947), Stanford. At Oregon State 1946 and since 1950.
- ALVIN EUGENE GROSS, M.S., Superintendent (Associate Professor), Klamath Experimental Area.  
B.S. (1932), M.S. (1935), Oregon State. At Oregon State since 1935.
- LOUIE HENRY GROSS, B.S., Yamhill County Extension Agent (Associate Professor).  
B.S. (1939), Oregon State. At Oregon State since 1943.
- PAUL JAMES GUNN, M.F.A., Assistant Professor of Art.  
B.S. (1947), Pennsylvania State Teachers (Edinboro); M.F.A. (1948), California College of Arts and Crafts. At Oregon State since 1948.

- JOHN REGINALD GURTON, B.S., Lane County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1939), Minnesota. At Oregon State since 1948.
- JOSEPH ROY HAAG, Ph.D., Professor of Animal Husbandry; Chemist (Animal Nutrition), Agricultural Experiment Station.  
B.S. (1918), M.S. (1923), Pennsylvania State; Ph.D. (1926), Minnesota. At Oregon State since 1927.
- OSCAR NATHANIEL HAGG, B.S., Extension Dairy Marketing Specialist (Associate Professor).  
B.S. (1926), Oregon State. At Oregon State since 1950.
- BRUCE JACKSON HAHN, Ed.D., Assistant Professor of Education; Assistant Professor of Industrial Education.  
B.S. (1930), M.S. (1941), Oregon State; Ed.D. (1955), Colorado State College of Education. At Oregon State since 1939.
- MARVIN REYNOLDS HAITH, B.S., Associate Professor of General Engineering.  
B.S. (1928), Nebraska. At Oregon State 1943-44 and since 1946.
- LUCIA HALEY, A.B., B.L.S., Assistant Librarian Emeritus (Associate Professor).  
A.B. (1911), Washington; Graduate (1912), B.L.S. (1942), Pratt Institute. At Oregon State since 1921.
- JACK VERNON HALL, Ed.D., Assistant Professor of Elementary Education.  
B.A. (1944), Central Washington; M.A. (1947), Ed.D. (1951), Colorado State College of Education. At Oregon State since 1954.
- MIRIAM LOUISE HALL, B.S., Extension Information Specialist (Instructor).  
B.S. (1955), South Dakota State. At Oregon State since 1955.
- PAIGE LEROY HALL, B.S., Lane County Extension Agent (Assistant Professor).  
B.S. (1930), Nebraska. At Oregon State since 1954.
- WILLIAM ELLIOTT HALL, M.S., Superintendent (Assistant Professor), Sherman Branch Experiment Station.  
B.S. (1943), M.S. (1953), Oregon State. At Oregon State since 1947.
- JACK WESLEY HANSELL, JR., Ag.M., Special Extension Agent (Assistant Professor).  
B.S. (1943), Ag.M. (1955), Oregon State. At Oregon State since 1946. On leave.
- ELMER HANSEN, Ph.D., Professor of Horticulture; Horticulturist (Pomology), Agricultural Experiment Station.  
B.S. (1934), M.S. (1935), Oregon State; Ph.D. (1946), Chicago. At Oregon State since 1935.
- HARRY LEE HANSEN, B.S., Lake County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1942), Nevada. At Oregon State since 1950.
- HENRY PAUL HANSEN, Ph.D., Dean of Graduate School; Professor (Chairman) of General Science.  
Ph.B. (1930), Ph.M. (1931), Wisconsin; Ph.D. (1937), Washington. At Oregon State since 1939.
- NIELS JOHN HANSEN, B.S., Polk County Extension Agent (Associate Professor).  
B.S. (1941), Oregon State. At Oregon State since 1943.
- GERTRUDE VILATE HANSON, B.S., Umatilla County Extension Agent, Home Economics (Instructor).  
B.S. (1955), Utah. At Oregon State since 1955.
- INA HANSON, B.A., Sherman County Extension Agent, Home Economics (Assistant Professor).  
B.A. (1931), South Dakota. At Oregon State since 1953.

- JOHN ROBERT HARDISON, Ph.D.**, Plant Pathologist (Associate Professor), U. S. Department of Agriculture.  
B.S. (1939), Washington State; M.S. (1940), Ph.D. (1942), Michigan. At Oregon State since 1944.
- JESSE E HARMOND, B.S.**, Senior Agricultural Engineer (Professor), U. S. Department of Agriculture.  
B.S. (1932), Mississippi State. At Oregon State since 1945.
- JAMES ARTHUR HARPER, M.S.**, Associate Professor of Poultry Husbandry; Associate Poultry Husbandman, Agricultural Experiment Station.  
B.S. (1940), Oregon State; M.S. (1942), Penn State. At Oregon State since 1942.
- CHARLES NEWTON HARRIS, M.A.**, Assistant Professor of Speech.  
B.S. (1940), Idaho; M.A. (1945), Colorado State College of Education. At Oregon State since 1946.
- IRWIN CECIL HARRIS, M.S.J.**, Manager of Educational Activities (Assistant Professor).  
B.S. (1941), Oregon State; M.S.J. (1943), Northwestern. At Oregon State 1942-44, and since 1945.
- VIRGINIA FLORENCE HARRISON, M.A.**, Associate Professor of Physical Education for Women.  
B.S. (1940), Wisconsin; M.A. (1944), Columbia. At Oregon State since 1948. On sabbatical leave 1956-57.
- MARIE IMOGENE HART, B.S.**, Instructor in Family Life.  
B.S. (1948), Tennessee. At Oregon State since 1956.
- HENRY HARTMAN, M.S.**, Professor of Horticulture; Horticulturist, Agricultural Experiment Station.  
B.S. (1917), Washington State; M.S. (1922), Iowa State. At Oregon State 1919-31, and since 1932.
- EDWARD WINSLOW HARVEY, Ph.D.**, Associate Food Technologist (Associate Professor), Agricultural Experiment Station; in charge Seafoods Laboratory, Astoria.  
B.S. (1934), M.S. (1937), Ph.D. (1940), Massachusetts. At Oregon State since 1938.
- FRANCES MADELEINE HARVEY, B.S.**, Umatilla County Extension Agent, Home Economics (Associate Professor).  
B.S. (1943), Idaho. At Oregon State since 1946. On sabbatical leave 1956-57.
- MOYLE E HARWARD, Ph.D.**, Assistant Professor of Soils; Assistant Soil Scientist, Agricultural Experiment Station.  
B.S. (1948), Brigham Young; M.S. (1950), Massachusetts; Ph.D. (1952), North Carolina State. At Oregon State since 1955.
- FRANK FLINN HASBROUCK, Ph.D.**, Instructor in Entomology; Curator, Science Technical Advisory Service.  
A.B. (1942), Ph.D. (1953), Illinois. At Oregon State since 1953.
- MARJORIE ANN HATTAN, B.S.**, Jackson County Extension Agent, Home Economics (Instructor).  
B.S. (1954), Idaho. At Oregon State since 1956.
- ERNEST MILLARD HAUSER, B.S.**, Malheur County Extension Agent, 4-H Club (Associate Professor).  
B.S. (1928), Oregon State. At Oregon State since 1930.
- BETTY EILEEN HAWTHORNE, Ph.D.**, Associate Professor of Foods and Nutrition; Associate Nutritionist, Agricultural Experiment Station.  
B.S. (1941), M.S. (1944), Washington; Ph.D. (1954), Michigan State. At Oregon State since 1946.
- MILTON RUFORD HAYNES, B.S.**, Assistant Professor of Electrical Engineering.  
B.S. (1955), Oregon State. At Oregon State winter term 1956-57.

- CHARLES OSWALD HEATH, JR., M.S., Associate Professor of Engineering Materials.  
B.S. (in M.E.) (1936), California Institute of Technology; M.S. (1944), Rutgers. At Oregon State since 1946. On leave 1956-58.
- KENNETH WAYNE HEDBERG, Ph.D., Assistant Professor of Chemistry.  
B.S. (1943), Oregon State; Ph.D. (1948), California Institute of Technology. At Oregon State since 1955.
- DONALD WARD HEDRICK, Ph.D., Associate Professor of Range Management; Associate in Range Management, Agricultural Experiment Station.  
B.S. (1939), Washington State; M.S. (1949), California; Ph.D. (1951), Texas A and M. At Oregon State since 1951.
- OLIVER HARRY HEINTZELMAN, Ph.D., Associate Professor of Geography; Associate Professor of Natural Resources.  
B.A. (1940), Central Washington; M.A. (1948), Ph.D. (1952), Washington. At Oregon State since 1949.
- CHARLES ALBERT HENDERSON, B.S., Klamath County Extension Agent (Professor).  
B.S. (1916), Oregon State. At Oregon State since 1922.
- ROBERT WESLEY HENDERSON, Ph.D., Assistant Director (Professor), Agricultural Experiment Station.  
B.S. (1938), Oregon State; Ph.D. (1950), Minnesota. At Oregon State 1938-41 and since 1946.
- DONALD RAYMOND HENRY, M.A., Instructor in Speech.  
B.A. (1947), Iowa State Teachers; M.A. (1953), Washington. At Oregon State since 1955.
- ELZIE VANCE HERBERT, Order Librarian Emeritus (Assistant Professor).  
At Oregon State since 1920.
- HENRY HERDT, Master Sergeant, Instructor in Air Science.  
At Oregon State since 1948.
- FREYA HERMANN, B.S., Research Assistant (Instructor) in Home Economics, Agricultural Experiment Station.  
B.S. (1949), Ludwig Maximilian University, Munich. At Oregon State since 1956.
- WILLIAM EDGAR HERON, JR., B.S., Major, Associate Professor of Military Science and Tactics.  
B.S. (1937), Georgia Institute of Technology. At Oregon State since 1955.
- BERTHA EMMA HERSE, B.S., B.L.S., Reference Librarian (Associate Professor), Library.  
B.S. (1910), B.S. (1928), Oregon State; B.L.S. (1924), New York State Library School. At Oregon State 1910-12, 1916-22, and since 1924.
- JOHN CLARENCE HESKETH, B.S., Baker County Extension Agent (Assistant Professor).  
B.S. (1951), Oregon State. At Oregon State since 1951.
- LEROY GRAY HESTON, Colonel, Professor of Air Science.  
At Oregon State since 1954.
- RAY STORLA HEWITT, Ph.D., Assistant Professor of English.  
A.B. (1941), M.A. (1947), Oregon; Ph.D. (1951), California. At Oregon State since 1953.
- RICHARD MORGAN HIGHSMITH, JR., Ph.D., Professor of Natural Resources; Professor of Geography.  
B.A. (1941), Central Washington; M.A. (1946), Ph.D. (1950), Washington. At Oregon State since 1947.
- IDA CATHERINE HILBERS, M.A. in L.S., Assistant Catalog Librarian (Assistant Professor), Library.  
B.A. (1922), Arizona; Certificate of Librarianship (1928), M.A. in L.S. (1931), California. At Oregon State since 1940.

- EMERY VERNON HILDEBRANDT, M.A., Assistant Professor of Speech.  
B.S. (1950), Oregon State; M.A. (1956), Pennsylvania State. At Oregon State since 1953.
- RAYMOND B HILE, B.S., Extension Agricultural Statistician (Professor).  
B.S. (1932), Nebraska. At Oregon State since 1956.
- CLARA CHAPMAN HILL, M.S., Instructor in Botany.  
B.S. (1938), M.S. (1940), Oregon State. At Oregon State since 1955.
- DONALD DAVID HILL, Ph.D., Professor of Farm Crops, Head of Department; Agronomist in Charge, Agricultural Experiment Station.  
B.S. (1925), Oregon State; M.S. (1927), Kansas State; Ph.D. (1936), Cornell. At Oregon State since 1927.
- HOWARD HERBERT HILLEMANN, Ph.D., Professor of Zoology.  
B.S. (1933), Marquette; M.A. (1939), Ph.D. (1942), Wisconsin. At Oregon State since 1946.
- JOHN HILZMAN, M.S., Acting Instructor in Mathematics.  
B.S. (1953), Rhode Island; M.S. (1955), Oregon State. At Oregon State since 1955.
- ROBERT CARLETON HINZ, B.A., Senior Instructor in Radio Education, KOAC. General Extension Division.  
B.A. (1950), Oregon. At Oregon State since 1950.
- PHILIP WEN-JEN HO, M.A., M.L., Assistant Catalog Librarian (Instructor), Library.  
B.A. (1939), M.A. (1941), Yenching University (China); M.L. (1953), Washington. At Oregon State since 1953.
- JEAN GRAHAM HOBART, B.S., Instructor in Home Administration.  
B.S. (1954), Oregon College of Education; B.S. (1954), Oregon State. At Oregon State since 1955.
- FREDERICK DALE HOECKER, B.S., Clatsop County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1946), Oregon State. At Oregon State since 1946. On leave.
- †GODFREY RICHARD HOERNER, M.S., Extension Hop Specialist (Professor); Agent (Plant Pathologist), U. S. Department of Agriculture.  
B.S. (1916), Oregon State; M.S. (1918), Minnesota. At Oregon State 1918-21 and since 1931.
- ELBERT NEIL HOFFMAN, B.S., Superintendent (Assistant Professor), Malheur Experimental Area.  
B.S. (1939), Oregon State. At Oregon State since 1942.
- LILLIAN MARIE HOFFMAN, B.S., Klamath County Extension Agent, 4-H Club (Instructor).  
B.S. (1951), Oregon State. At Oregon State since 1956.
- ARLAND DUANE HOFSTRAND, M.S., Research Assistant (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1950), M.S. (1952), Idaho. At Oregon State since 1952.
- HOPE LORRAINE HOLBROOK, B.S., Klamath County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1953), Oregon State. At Oregon State since 1953.
- GLENN WILLIS HOLCOMB, M.S., Chairman of Civil Engineering; Professor of Structural Engineering.  
B.S. (1919), Michigan; M.S. (1931), Oregon State. At Oregon State since 1920.
- HELEN LUCILE HOLGATE, B.S., Clerical Exchange Manager (Retired).  
B.S. (1895), Oregon State. At Oregon State 1900-47.

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† On detached duty, Kasetsart University, Thailand; see page 85.



- HAROLD FULLER HOLLANDS, Ph.D., Professor of Agricultural Economics; Agricultural Economist, Agricultural Experiment Station.  
B.S. (1923), Ph.D. (1939), Minnesota. At Oregon State since 1948.
- JOHN GORDON HOOD, B.S., State Extension Agent (Professor).  
B.S. (1935), Oregon State. At Oregon State since 1945.
- SALLY ANN HORNECKER, B.S., Clackamas County Extension Agent, Home Economics (Instructor).  
B.S. (1956), Oregon State. At Oregon State since 1956.
- CHESTER ELLSWORTH HORNER, Ph.D., Assistant Plant Pathologist (Assistant Professor), Agricultural Experiment Station; Extension Specialist in Plant Pathology.  
B.A. (1950), Walla Walla; Ph.D. (1954), Oregon State. At Oregon State since 1951.
- THEODORE R HORNING, M.S., Agricultural Engineer (Associate Professor), Pendleton Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1931), M.S. (1933), Idaho. At Oregon State since 1949.
- ELVERA CHARLOTTE HORRELL, Extension Agricultural Economist, Statistics (Assistant Professor).  
At Oregon State since 1942.
- INGOMAR M HOSTETTER, Ph.D., Professor of Mathematics.  
B.S. (1918), Ph.D. (1935), Washington. At Oregon State since 1941.
- HOWARD ROGERS HOUSTON, M.A., Instructor in English.  
B.A. (1939), Cornell; M.A. (1950), Pennsylvania State. At Oregon State since 1956.
- CLARENCE WARREN HOWLAND, Ph.D., Associate Professor of Philosophy, Associate Professor of Religion; Chairman of Departments.  
B.A. (1940), Lawrence College; B.D. (1943), Ph.D. (1950), Yale. At Oregon State since 1949.
- HERBERT BADOLLET HOWELL, B.S., Superintendent (Professor) John Jacob Astor Branch Experiment Station.  
B.S. (1916), Oregon State. At Oregon State since 1921.
- JAMES RUSSELL HUBER, M.S., Union County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1946), M.S. (1947), Utah State. At Oregon State since 1947.
- MILON GEORGE HUBER, B.S., Extension Agricultural Engineering Specialist (Associate Professor).  
B.S. Agric. (1929), B.S. (1932), Wisconsin. At Oregon State since 1945.
- ROBERT EMERSON HUCK, M.F.A., Assistant Professor of Art.  
B.A. (1950), Colorado College; M.F.A. (1952), Colorado. At Oregon State since 1955.
- ROBERT E HUFF, M.A., Instructor in English.  
B.A. (1949), M.A. (1952), Wayne. At Oregon State since 1955.
- ARTHUR DOUGLAS HUGHES, M.S., Professor of Mechanical Engineering.  
B.S. (1932), M.S. (1932), M.E. (1953), Washington State. At Oregon State since 1938.
- MARY BOWMAN HULL, Curator Emeritus, Horner Museum of the Oregon Country.  
At Oregon State since 1910.
- JOHN IRELAND HUNDERUP, M.B.A., C.P.A., Administrative Assistant, Comptroller's Office, Oregon State System of Higher Education (Assistant Professor).  
B.A. (1944), Linfield; M.B.A. (1946), Northwestern; C.P.A. (1946), Illinois; (1947), Oregon. At Oregon State since 1946.

- DONALD R HUNT, A.M.L.S., Assistant Reference Librarian (Assistant Professor), Library.  
B.A. (1950), M.A. (1951), Colorado; A.M.L.S. (1954), Michigan. At Oregon State since 1955.
- ALBERT SINCLAIR HUNTER, Ph.D., Soil Scientist (Professor), Agricultural Experiment Station, U. S. Department of Agriculture.  
B.S. (1938), Utah State; M.S. (1940), Washington State; Ph.D. (1943), Rutgers. At Oregon State since 1949.
- MILDRED BOWERS HUNTER, Ph.D., Assistant Professor of Foods and Nutrition.  
B.S. (1938), Utah State; M.S. (1939), Columbia; Ph.D. (1949), Cornell. At Oregon State 1950-52 and since 1955.
- FLORENCE LOUISE HUPPRICH, Ed.D., Assistant Professor of Physical Education for Women.  
B.S. (1923), M.A. (1926), Wisconsin; Ed.D. (1949), Oregon. At Oregon State since 1937.
- WESLEY CHARLES HURLEY, Lieutenant Colonel, Assistant Professor of Military Science and Tactics.  
At Oregon State since 1956.
- BURTON SEYMOUR HUTTON, B.S., State 4-H Club Leader (Professor).  
B.S. (1927), Oregon State. At Oregon State 1935-43, and since 1948.
- DONALD NELSON HYDER, M.S., Range Conservationist (Assistant Professor), Squaw Butte-Harney Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1947), Idaho; M.S. (1949), Utah State. At Oregon State since 1949.
- IDA INGALLS, M.A., Associate Professor of Clothing, Textiles, and Related Arts; Associate Home Economist, Agricultural Experiment Station.  
B.A. (1921), Iowa; M.A. (1924), Columbia. At Oregon State since 1952.
- JOHN JERRY INSKEEP, M.S., Clackamas County Extension Agent (Professor).  
B.S.A. (1921), Purdue; M.S. (1943), Oregon State. At Oregon State since 1926.
- IDA ELIZABETH IRGENS-MÖLLER, B.S., Research Assistant (Instructor) Home Economics, Agricultural Experiment Station.  
B.S. (1949), Royal Veterinary and Agricultural College, Copenhagen, Denmark. At Oregon State since 1954.
- JANE CATHERINE IRVING, B.S., Salem City Extension Agent, 4-H Club (Instructor).  
B.S. (1927), Oregon State. At Oregon State since 1955.
- JANET IRVING, B.S., Yamhill County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State since 1950.
- LORA FRANCES IVES, B.A., Assistant Serials Librarian (Assistant Professor), Library.  
B.A. (1941), California (Los Angeles); Certificate of Librarianship (1942), California. At Oregon State since 1944.
- EDWIN RUSSELL JACKMAN, B.S., Extension Range Crops Management Specialist (Professor).  
B.S. (1920), Oregon State. At Oregon State since 1920.
- MARIE HULL JACKSON, B.A., B.S. in L.S., Catalog Librarian (Associate Professor), Library.  
B.A. (1925), Oregon; B.S. in L.S. (1926), Washington. At Oregon State 1926-35, and since 1944.
- STONEWALL ANDREW JACKSON, B.S., Benton County Extension Agent (Associate Professor).  
B.S. (1937), Oregon State. At Oregon State since 1939.

- THOMAS LLOYD JACKSON, Ph.D., Associate Soil Scientist (Associate Professor), Agricultural Experiment Station; Extension Soil Conservation Specialist.  
B.S. (1943), M.S. (1948), Ph.D. (1952). Washington State. At Oregon State since 1952.
- ALEX J JAENICKE, B.S., Special Lecturer, Forest Management.  
B.S. (1912), Pennsylvania State. At Oregon State fall and winter terms 1956-57.
- DEMETRIOS GEORGE JAMESON, M.F.A., Assistant Professor of Art.  
B.F.A. (1949), Washington University; M.F.A. (1950), Illinois. At Oregon State since 1950.
- KATE WEITZEL JAMESON, Ph.D., Dean of Women Emeritus.  
A.B. (1905), A.M. (1910), Ohio Wesleyan; A.M. (1914), Ph.D. (1916), Wisconsin. At Oregon State since 1923.
- WALTER JOHN JENDRZEJEWski, B.S., Klamath County Extension Agent (Associate Professor).  
B.S. (1938), Oregon State. At Oregon State since 1938.
- GEORGE HERRICK JENKINS, B.S., Coos County Extension Agent (Professor).  
B.S. (1926), Oregon State. At Oregon State since 1927.
- HAROLD DAVID JENKINS, Ph.D., Associate Professor of English.  
B.A. (1929), M.A. (1931), Kansas; Ph.D. (1943), Yale. At Oregon State since 1944.
- HAROLD JAMES JENSEN, Ph.D., Assistant Professor of Botany; Assistant Nematologist, Agricultural Experiment Station.  
B.S. (1947), Ph.D. (1950), California. At Oregon State since 1950.
- JOHN GRANVILLE JENSEN, Ph.D., Professor of Natural Resources; Chairman of Department; Professor of Geography.  
A.B. (1939), Western Washington; M.A. (1942), Ph.D. (1946), Clark. At Oregon State since 1946.
- LELAND CHRISTIAN JENSEN, B.S., Assistant Professor of Electrical Engineering.  
B.S. (1954), Oregon State. At Oregon State since 1955.
- LOUISA AMES JENSEN, B.S., Associate Professor of Farm Crops; Associate Seed Technologist, Agricultural Experiment Station.  
B.S. (1933), Colorado A and M. At Oregon State since 1941.
- JAMES RALPH JEWELL, Ph.D., LL.D., Professor Emeritus of Education.  
A.B. (1903), Coe; M.A. (1904), Ph.D. (1906), Clark; LL.D. (1927), Arkansas. At Oregon State since 1927. Dean of School of Education 1927-47.
- BURCHARD MOUNT JOHNSON, Lieutenant Colonel, Associate Professor of Military Science and Tactics.  
At Oregon State since 1954.
- ELMER CARL JOHNSON, B.S., Extension Certification Specialist (Assistant Professor).  
B.S. (1947), Oregon State. At Oregon State since 1947. On leave July 1, 1956 through February 28, 1957.
- JAMES WENDELL JOHNSON, M.S., Senior Research Associate (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1949), Idaho; M.S. (1951), Oregon State. At Oregon State since 1950.
- JOE BONNER JOHNSON, M.S., Associate Professor of Animal Husbandry; Associate Animal Husbandman, Agricultural Experiment Station.  
B.S. (1939), M.S. (1947), Oregon State. At Oregon State since 1947.
- LEONE MILDRED JOHNSON, M.S., Program Consultant (Assistant Professor), Memorial Union.  
B.S. (1926), North Dakota State; M.S. (1948), Oregon State. At Oregon State since 1948.

- MALCOLM JULIUS JOHNSON, M.S., Superintendent (Assistant Professor), Central Oregon Experimental Area.  
B.S. (1941), M.S. (1954), Oregon State. At Oregon State since 1948.
- MARTIN FRED JOHNSON, Assistant Professor of Industrial Arts.  
At Oregon State since 1943.
- VICTOR WALDEMAR JOHNSON, B.S., Umatilla County Extension Agent (Professor).  
B.S. (1928), Oregon State. At Oregon State since 1928.
- WALLACE EARLE JOHNSON, B.S., News Bureau Assistant (Instructor).  
B.S. (1951), Oregon State. At Oregon State 1956.
- REBECCA KATHERINE JOHNSTON, B.S., Malheur County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1946), Bowling Green. At Oregon State since 1955.
- PATRICIA ACUZAR JOHNSTONE, B.A., Instructor (Registered Occupational Therapist) in Psychology.  
B.A. (1952), California (Berkeley). At Oregon State fall term 1956-57.
- BETTY SUE JOINER, M.S., Research (Instructor) in Home Economics, Agricultural Experiment Station.  
B.S. (1941), Oregon State; M.S. (1943), Cornell. At Oregon State since 1956.
- HILDA MEIUS JONES, M.A., Assistant Professor of Secretarial Science.  
B.S.S. (1939), M.A. (1940), New York. At Oregon State since 1947.
- IDWAL RALPH JONES, Ph.D., Professor of Dairying; Dairy Husbandman, Agricultural Experiment Station.  
B.S. (1920), Pennsylvania State; M.S. (1921), Rutgers; Ph.D. (1925), Minnesota. At Oregon State since 1925.
- LEO EDWARD JONES, Ph.D., Assistant Professor of Botany; Assistant Botanist, Agricultural Experiment Station.  
A.B. (1940), Chico State; Ph.D. (1950), Oregon State. At Oregon State since 1950.
- SIDNEY CARROLL JONES, M.S., Associate Entomologist (Associate Professor), Agricultural Experiment Station.  
B.S. (1926), Oregon State; M.S. (1928), Iowa State. At Oregon State since 1930.
- SUDHA JOSHI, Ph.D., Research Assistant (Instructor), Science Research Institute.  
M.Sc. (1949), Indian Institute of Science (Bangalore); Ph.D. (1954), University Department of Chemical Technology (Bombay). At Oregon State since 1956.
- EARLE FRED JOSSY, B.S., Jackson County Extension Agent (Assistant Professor).  
B.S. (1938), Oregon State. At Oregon State since 1943.
- ETTA WESTENHOUSE JUDD, B.A., Assistant Reference Librarian (Assistant Professor), Library.  
B.A. (1932), Willamette; B.S. in L.S. (1935), Illinois. At Oregon State since 1955.
- ANAITA SHELKOVNIKOVA JURGENSON, A.B., Assistant Professor of English and Russian.  
A.B. (1915), French College, Alexandre Institute, Petrograd. At Oregon State since 1946.
- PHILIP BLAINE KALAR, SR., Mus.B., Assistant Professor of Radio Education, KOAC, General Extension Division.  
Mus.B. (1926), Columbia School of Music. At Oregon State since 1951.
- SARA ELIZABETH KANE, B.S., Grant County Extension Agent, Home Economics (Instructor).  
B.S. (1955), Oregon State. At Oregon State since 1955.

- ERVIN H KARDOS, B.S., Research Assistant (Instructor), Mid-Columbia Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1951), Utah State; M.A. (1953), Kansas. At Oregon State since 1956.
- MAX KATZ, Ph.D., Fisheries Research Biologist (Associate Professor), U. S. Public Health Service.  
B.S. (1939), M.S. (1942), Ph.D. (1949), Washington. At Oregon State since 1953.
- ROY SERVAIS KEENE, B.S., Director of Intercollegiate Athletics (Professor).  
B.S. (1921), Oregon State. At Oregon State since 1947.
- ROBERT FERNALD KENISTON, M.S., Associate Professor of Forest Management.  
B.A. (1929), Nebraska; B.S. (1937), M.S. (1941), California. At Oregon State since 1946.
- DAVID HONORE KENNEDY, B.S., Tillamook County Extension Agent, 4-H Club (Associate Professor).  
B.S. (1921), Oregon State. At Oregon State since 1922.
- CLYDE KERNEK, M.D., Assistant Physician (Associate Professor), Student Health Service.  
B.S. (1935), M.D. (1937), Oklahoma. At Oregon State since 1955.
- JESS R KIENHOLZ, Ph.D., Pathologist (Associate Professor), Mid-Columbia Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1928), M.S. (1929), Washington State; Ph.D. (1938), Oregon State. At Oregon State since 1931.
- JOHN GEORGE KILIAN, D.V.M., Assistant Veterinarian (Assistant Professor), Veterinary Medicine, Agricultural Experiment Station.  
D.V.M. (1950), Iowa State. At Oregon State since 1955.
- CAROLYN McCOMAS KIMME, B.A., Acting Instructor in Mathematics.  
B.A. (1953), Minnesota. At Oregon State fall term 1956-57.
- ERNEST GODFREY KIMME, Ph.D., Instructor in Mathematics.  
B.A. (1952), Pomona; M.A. (1954), Ph.D. (1955), Minnesota. At Oregon State since 1956.
- ARTHUR SOLOMON KING, M.S., Extension Conservation Specialist (Professor).  
B.S. (1928), M.S. (1930), Oregon State. At Oregon State since 1929.
- ROGER EDWARD KING, M.A., Instructor in English.  
A.B. (1950), M.A. (1954), Colorado State College of Education. At Oregon State since 1954.
- TSOO E KING, Ph.D., Associate Professor of Chemistry; Associate Professor (Biochemistry), Science Research Institute.  
B.S. (1935), National Central University, China; M.S. (1948), Ph.D. (1949), Oregon State. At Oregon State since 1949.
- DALE EARL KIRK, M.S., Associate Professor of Agricultural Engineering; Associate Agricultural Engineer, Agricultural Experiment Station.  
B.S. (1942), Oregon State; M.S. (1954), Michigan State. At Oregon State since 1942.
- LESTER ALLEN KIRKENDALL, Ph.D., Professor of Family Life.  
B.S. (1928), Kansas State; M.A. (1931), Ph.D. (1937), Columbia. At Oregon State since 1949.
- WILLIAM JOHN KIRKHAM, Ph.D., Associate Professor of Mathematics.  
A.B. (1927), A.M. (1928), Ph.D. (1935), Indiana. At Oregon State since 1929.
- ERNEST JOHN KIRSCH, M.S., Gilliam County Extension Agent (Associate Professor).  
B.S. (1940), Oregon State; M.S. (1942), Purdue. At Oregon State since 1946.
- RICHARD KNEALE KIRSCH, M.S., Instructor in Soils; Research Assistant, Agricultural Experiment Station.  
B.S. (1951), California State Polytechnic; M.S. (1954), Oregon State. At Oregon State since 1953.

- GLENN ARTHUR KLEIN, B.S., Jackson County Extension Agent, 4-H Club (Instructor).  
B.S. (1951), Oregon State. At Oregon State since 1952.
- LEONARD M KLEIN, B.S., Agricultural Engineer (Associate Professor), U. S. Department of Agriculture.  
B.S. (1938), Oregon State. At Oregon State since 1939.
- RUTH NICHOLS KLIPPSTEIN, M.S., Acting Lane County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1944), University of Cincinnati; M.S. (1946), Michigan State. At Oregon State since 1956.
- ERNEST CLAIR KNAPP, Colonel, Professor of Military Science and Tactics.  
At Oregon State since 1954.
- RALPH S KNEELAND, M.S., Instructor, Counseling and Testing Bureau.  
B.S. (1929), Northeast Missouri State Teachers; M.S. (1945), Montana. At Oregon State since 1956.
- PAUL XENOPHON KNOLL, M.S., Professor of Speech.  
B.S. (1923), M.S. (1930), Oregon State. At Oregon State since 1928. Deceased January 4, 1957.
- ROBERT PAUL KNOLL, B.S., Director of Alumni Relations (Assistant Professor).  
B.S. (1948), Oregon State. At Oregon State since 1948.
- ROBERT PETER KNOTT, M.S., Instructor in Pharmacy.  
B.S. (1951), Union University; M.S. (1953), Purdue. At Oregon State since 1955.
- ELLIS GILBERT KNOX, Ph.D., Assistant Professor of Soils; Assistant Soil Scientist, Agricultural Experiment Station.  
B.S. (1949), M.S. (1950), Illinois; Ph.D. (1954), Cornell. At Oregon State since 1954.
- JAMES GEORGE KNUDSEN, Ph.D., Associate Professor of Chemical Engineering.  
B.S. (1943), M.S. (1944), Alberta; Ph.D. (1949), Michigan. At Oregon State 1949-52, and since 1953.
- GEORGE SCHNEIDER KOCH, JR., Ph.D., Assistant Professor of Geology.  
S.B. (1948), Harvard College; M.A. (1949), Johns Hopkins; Ph.D. (1955), Harvard. At Oregon State since 1956.
- ORVILLE KOFOID, M.S., Associate Professor of Civil Engineering.  
B.S. (1932), Oregon State; M.S. (1940), Iowa. At Oregon State since 1947.
- BERTHA KOHLHAGEN, M.S., State Supervisor and Teacher Trainer in Home Economics Education.  
B.S. (1929), M.S. (1941), Oregon State. At Oregon State since 1935.
- †AGNES KOLSHORN, M.A., Extension Nutrition Specialist (Professor).  
B.S. (1913), Oklahoma State; B.S. (1918), Columbia; M.A. (1919), Denver. At Oregon State since 1929.
- ROBERT FRANK KOONTZ, M.S., Technician in Entomology (Instructor).  
B.S. (1946), M.S. (1950), Northwestern. At Oregon State since 1956.
- GERALD EARL KORZAN, Ph.D., Associate Professor of Agricultural Economics; Associate Agricultural Economist, Agricultural Experiment Station.  
B.S. (1940), South Dakota State; M.A. (1948), Ph.D. (1950), Minnesota. At Oregon State since 1949.
- WILLIAM ARTHUR KOSKI, Ed.D., Assistant Professor of Physical Education; Swimming Coach.  
B.S. (1949), Oregon State; M.S. (1950), Michigan; Ed.D. (1954), Oregon State. At Oregon State since 1950.

† On detached duty, Kasetsart University, Thailand; see page 85.

- WALTER CARL KRAFT, Ph.D., Associate Professor of Modern Languages; Chairman of Department.  
B.A. (1938), M.A. (1941), Oregon; Ph.D. (1950), California. At Oregon State since 1950.
- GERALD WILLIAM KRANTZ, Ph.D., Assistant Entomologist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1951), Pittsburgh; Ph.D. (1955), Cornell. At Oregon State since 1955.
- ALBERT WILLIAM KRATZKE, M.A., Instructor, Boeing Research Associate, in Mathematics.  
B.A. (1950), Oregon State; M.A. (1951), Connecticut. At Oregon State since 1955.
- HUGO MARTIN KRUEGER, Ph.D., Professor of Physiology; Animal Physiologist, Agricultural Experiment Station.  
A.B. (1924), M.A. (1926), Denver; Ph.D. (1930), Michigan. At Oregon State since 1948.
- MARGARET LOVAIRE KRUG, B.S., Marion County Extension Agent, 4-H Club (Instructor).  
B.S. (1952), Iowa State. At Oregon State since 1955.
- JAMES THEODORE KRYGIER, M.S., Assistant Professor of Forest Management.  
B.S. (1952), M.S. (1955), Utah State. At Oregon State since 1954.
- DENNIS LLOYD KRZYZANIAK, M.S., Instructor in Chemistry.  
B.S. (1947), M.S. (1951), North Dakota State. At Oregon State since 1956.
- LEE WALLACE KUHN, M.S., Associate Professor of Fish and Game Management; Associate Biologist, Agricultural Experiment Station.  
B.S. (1940), Iowa State; M.S. (1942), Oregon State. At Oregon State since 1946.
- EDITH CARTER KUNEY, A.M., Associate Professor Emeritus of Modern Languages.  
A.B. (1909), Willamette; A.M. (1925), Stanford. At Oregon State 1910-15, and since 1925.
- FREDERICK JUNIOR KURPJUWEIT, M.S., Research Assistant (Instructor) in Soils, Klamath Experimental Area.  
B.S. (1954), M.S. (1956), South Dakota State. At Oregon State since 1956.
- ERVIN FREDERICK KURTH, Ph.D., Professor of Chemistry; Professor (Chemistry), Science Research Institute.  
B.S. (1927), M.S. (1929), Ph.D. (1933), Wisconsin. At Oregon State since 1945.
- LAWRENCE LAHM, B.S., Lieutenant Colonel, Associate Professor of Military Science and Tactics.  
B.S. (1942), West Point. At Oregon State since 1956.
- ADELAIDE VALETA LAKE, M.A., Associate Professor of Journalism.  
B.A. (1920), Oregon; M.A. (1942), Oregon State. At Oregon State since 1939.
- JOHN H LANDERS, JR., M.S., Acting Chairman, Department of Animal Husbandry; Extension Animal Husbandry Specialist (Associate Professor).  
B.S. (1942), M.S. (1950), Missouri. At Oregon State since 1950.
- ANDREW S LANDFORCE, B.S., Extension Wildlife Management Specialist (Associate Professor).  
B.S. (1942), Oregon State. At Oregon State since 1946.
- WILLIAM MARTIN LANGAN, B.S., Agricultural Student Personnel Adviser (Associate Professor).  
B.S. (1945), Oregon State. At Oregon State since 1935.
- REUBEN DONALD LANGMO, B.S., Assistant Professor of Industrial Engineering.  
B.S. (1943), B.S. (1950), Oregon State. At Oregon State since 1948.

- CLAIR VAN NORMAN LANGTON, Dr.P.H., Ed.D.**, Director of the Division of Physical Education; Professor of Physical Education; Professor of Hygiene; Technical Counselor in Sanitary Engineering, Engineering Experiment Station.  
B.S. (1923), M.S. (1925), Dr.P.H. (1928), Michigan; Ed.D. (1938), Oregon. At Oregon State since 1928.
- ENOS ROLAND LANING, JR., M.Sc.**, Instructor in Horticulture; Research Assistant, Agricultural Experiment Station.  
B.Sc. (1950), M.Sc. (1951), Rutgers. At Oregon State since 1951.
- LOYD QUENDERBILT LARSE, D.Ed.**, Associate Professor of Business Education and Secretarial Science.  
B.S. (1928), Oklahoma A and M; Ed.M. (1935), Oklahoma; D.Ed. (1954), Oregon. At Oregon State since 1940.
- CARL AUGUST LARSON, Ph.D.**, Superintendent (Professor), Umatilla Branch Experiment Station, Milton-Freewater Experimental Area, U. S. Department of Agriculture.  
B.S. (1927), M.S. (1930), Ph.D. (1931), Washington State. At Oregon State since 1946.
- MILTON BYRD LARSON, M.S.**, Assistant Professor of Mechanical Engineering.  
B.S. (1950), Oregon State; M.Eng. (1951), Yale; M.S. (1955), Oregon State. At Oregon State since 1952.
- ROBERT THOMAS LARSON, Lieutenant Colonel**, Associate Professor of Military Science and Tactics.  
B.A. (1955), California (Los Angeles); M.S. (1956), Oregon State. At Oregon State since 1953.
- THEODORE ORVILLE LARSON, B.S.**, Marion County Extension Agent (Assistant Professor).  
B.S. (1940), South Dakota State. At Oregon State since 1956.
- JOHN DANIEL LATTIN, M.A.**, Instructor in Entomology; Research Assistant, Agricultural Experiment Station.  
B.S. (1950), Iowa State; M.A. (1951), Kansas. At Oregon State since 1955.
- DUNCAN KENNETH LAW, B.S.**, Research Assistant (Instructor) Food Technology, Agricultural Experiment Station; at Seafoods Laboratory, Astoria.  
B.S. (1944), Oregon State. At Oregon State since 1944.
- MARGARET LUCILLE LAWRENCE, B.A.**, Assistant Professor of English.  
B.A. (1933), Iowa. At Oregon State since 1945.
- WILBUR WRAY LAWRENCE, B.S.**, Extension Agricultural Economist (Associate Professor).  
B.S. (1926), Oregon State. At Oregon State since 1926.
- CHARLES MORLEY LEACH, Ph.D.**, Research Assistant (Instructor) Botany and Plant Pathology, Agricultural Experiment Station.  
B.S. (1949), B.Agr. (1950), Queens University (Belfast, Ireland); Ph.D. (1956), Oregon State. At Oregon State since 1950.
- GENE MAURICE LEAR, M.P.A.**, State Extension Agent (Professor).  
B.S. (1938), Oregon State; M.P.A. (1951), Harvard. At Oregon State since 1939.
- MARIE LEDBETTER, M.S.**, Assistant Professor of Clothing, Textiles, and Related Arts.  
B.A. (1934), Willamette; M.S. (1950), Oregon State. At Oregon State since 1946.
- SYLVIA LEE, B.S.**, Curry County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1927), Washington State. At Oregon State since 1952.
- WILLIAM ORVID LEE, M.S.**, Agronomist (Instructor), U. S. Department of Agriculture.  
B.S. (1950), M.S. (1954), Utah State. At Oregon State since 1956.



- ALBERT LEWIS LEELAND, Ed.D., Assistant Professor of Elementary Education.  
A.B. (1947), M.A. (1949), Colorado State College of Education; Ed.D. (1952), Columbia. At Oregon State since 1954.
- JEROME LLOYD LEMASTER, LL.B., M.A., Professor of Business Administration.  
LL.B. (1923), Illinois; Cert.d'A en Droit Civile (1924), Bordeaux; M.A. (1925), Colorado. At Oregon State since 1928.
- ERWIN BERTRAN LEMON, B.S., Dean of Administration (Professor).  
B.S. (1911), Oregon State. At Oregon State since 1911.
- THEODORE EDMUND LEONARD, M.S., Assistant Professor of Civil Engineering.  
B.S. (1950), Oregon State; M.S. (1956), California (Berkeley). At Oregon State 1953-55 and since 1956.
- RAY RAMSEY LESTER, Master Sergeant USMC, Instructor in Naval Science.  
At Oregon State since 1954.
- GLORIA A LEVINE, M.A., Instructor in English.  
B.A. (1945), Queens College; M.A. (1946), New Mexico. At Oregon State since 1956.
- SHEPARD LEVINE, M.A., Assistant Professor of Art.  
B.A. (1950), M.A. (1951), New Mexico. At Oregon State since 1954.
- MARY EUNICE LEWIS, Ph.D., Associate Professor Emeritus of Modern Languages.  
B.S. (1906), George Fox; A.B. (1907), Penn College (Iowa); M.A. (1918), California; Ph.D. (1939), Washington. At Oregon State since 1928.
- JEROME CHING REN LI, Ph.D., Professor of Statistics; Acting Chairman of Department; Professor of Mathematics.  
B.S. (1938), Nanking; Ph.D. (1943), Iowa State. At Oregon State since 1946.
- JOHN FRANK LIGON, JR., M.A., Assistant Professor of English.  
A.B. (1938), Vanderbilt; M.A. (1940), Peabody. At Oregon State since 1946.
- SAM T LIKENS, B.S., Agent (Chemist) (Assistant Professor), U. S. Department of Agriculture.  
B.S. (1950), Oregon State. At Oregon State since 1951.
- HARRY ARTHUR LINDGREN, B.S., Extension Animal Husbandry Specialist Emeritus.  
B.S. (1911), Oregon State. At Oregon State 1913-15, and since 1920.
- RICHARD FOREST LINK, Ph.D., Assistant Professor of Statistics; Assistant Professor of Mathematics.  
B.S. (1948), M.A. (1949), Oregon; M.A. (1951), Ph.D. (1953), Princeton. At Oregon State since 1955.
- EARL MILO LITWILLER, Ph.D., Professor of Food Technology; Food Technologist, Agricultural Experiment Station.  
B.S. (1924), M.S. (1926), Kansas State; Ph.D. (1944), Oregon State. At Oregon State since 1942.
- HAROLD MAURICE LIVINGSTON, M.A., Associate Professor of Speech.  
A.B. (1936), Illinois Wesleyan; M.A. (1941), Colorado. At Oregon State since 1946.
- ALBERT VICTOR LOGAN, Ph.D., Associate Professor of Chemistry.  
B.A. (1924), Willamette; M.S. (1928), Ph.D. (1938), Massachusetts Institute of Technology. At Oregon State since 1946.
- JAMES B LOMAX, B.A., Instructor in Geography.  
B.A. (1956), Eastern Washington College of Education. At Oregon State since 1956.
- DAVID ROBERT LONG, M.S., Assistant Professor of Agricultural Engineering; Assistant Agricultural Engineer, Agricultural Experiment Station.  
B.S. (1947), M.S. (1951), Oregon State. At Oregon State since 1947.
- DOROTHEA WOLF LONG, B.A., Assistant Circulation Librarian (Instructor), Library.  
B.A. (1949), B.L.S. (1950), Wisconsin. At Oregon State since 1955.

- JAY B LONG, M.S., Associate Professor of Fish and Game Management.  
B.S. (1939), M.S. (1948), Oregon State. At Oregon State since 1940.
- ARVID TURNER LONSETH, Ph.D., Professor of Mathematics.  
A.B. (1935), Stanford; Ph.D. (1939), California. At Oregon State since 1948.
- WALTER DAVID LOOMIS, Ph.D., Assistant Professor of Chemistry; Assistant Professor (Chemistry), Science Research Institute.  
B.S. (1948), Iowa State; Ph.D. (1953), California. At Oregon State since 1953.
- CLEVE EUGENE LOTHGREN, B.S., Assistant Professor of Mechanical Engineering.  
B.S. (1944), Colorado. At Oregon State since 1957.
- LEONARD CARL LOVE, B.S., Instructor in Industrial Engineering and Industrial Arts.  
B.S. (1955), Oregon State. At Oregon State since 1955.
- PLUMER P LOWE, Master Sergeant, Instructor in Military Science and Tactics.  
At Oregon State since 1956.
- KUO CHIN LU, Ph.D., Research Assistant (Instructor) Bacteriology, Agricultural Experiment Station.  
B.S. (1937), Nanking (China); Ph.D. (1953), Oregon State. At Oregon State since 1952.
- MARY PAT LUCY, B.S., Jackson County Extension Agent (Instructor).  
B.S. (1954), North Dakota State. At Oregon State since 1956.
- MARTIN JAMES LUDWIG, M.A., Assistant Professor of English.  
B.A. (1947), Northeastern (Massachusetts); M.A. (1949), Boston. At Oregon State since 1949.
- MARGARET CATHERINE LUMPKIN, M.S., Instructor in Education.  
B.S. (1944), Woman's College of University of North Carolina; M.S. (1945), Wellesley. At Oregon State since 1948.
- ALBERT ANDREW LUND, Master Sergeant, Instructor in Air Science.  
At Oregon State since 1953.
- WALTER THOMAS LUND, M.S., Instructor-Technician in Botany.  
B.S. (1930), M.S. (1932), Oregon State. At Oregon State since 1937.
- RALPH NICHOLAS LUNDE, B.S., Professor of Agricultural Engineering; Agricultural Engineer, Agricultural Experiment Station.  
B.S. (1926), Oregon State. At Oregon State since 1930.
- JAMES JOSEPH MCALISTER, B.S., Deschutes County Extension Agent (Assistant Professor).  
B.S. (1942), Oregon State. At Oregon State since 1954.
- LAURA MCALLESTER, B.S., Assistant Professor Emeritus of Physical Education for Women.  
Diploma (1906), Boston Normal School of Gymnastics; B.S. (1932), Oregon State. At Oregon State since 1926.
- JAMES ANDREW BELL MCARTHUR, Ph.D., Superintendent (Associate Professor), Eastern Oregon Branch Experiment Station.  
B.Sc. (1948), University of Alberta; M.Sc. (1950), Ph.D. (1951), Texas A and M.
- FRED JAY MCCALL, B.S., Master Sergeant, Instructor in Military Science and Tactics.  
B.E. (1936), Minnesota State Teachers (Bemidji). At Oregon State since 1953.
- RAYMOND GERALD McCARTY, M.S., Josephine County Extension Agent (Assistant Professor).  
B.S. (1936), Nebraska; M.S. (1938), Missouri. At Oregon State since 1953.
- JAMES ELIAS MCCAULEY, Ph.D., Research Associate (Instructor) in Zoology.  
B.S. (1946), M.S. (1949), Washington; Ph.D. (1954), Oregon State. At Oregon State since 1956.

- THOMAS JOHN McCLELLAN, M.Engr., Associate Professor of Civil Engineering.  
B.S. (1945), Oregon State; M.Engr. (1948), Yale. At Oregon State since 1945.
- WILLIAM ANDREW McCLENAGHAN, B.A., Assistant Professor of Political Science.  
B.A. (1948), Washington. At Oregon State since 1949. On sabbatical leave 1956-57.
- WILLIAM HARRY McCLUSKEY, B.S., Instructor in Poultry Husbandry; Research Assistant, Agricultural Experiment Station.  
B.S. (1948), Oklahoma A and M. At Oregon State since 1955.
- RUTH McCORKLE, M.A., Instructor in English.  
B.S. (1931), Oregon State; M.A. (1950), Washington. At Oregon State 1946-49 and since 1956.
- WALTER FRASER McCULLOCH, Ed.D., Dean, School of Forestry; Director of Forest Experiment Station; Professor of Forest Management.  
B.A. (1925), British Columbia; M.S. (1936), Syracuse (New York State College of Forestry); Ed.D. (1947), Oregon. At Oregon State since 1937.
- ROB STEWART McCUTCHEON, Ph.D., Associate Professor of Pharmacy.  
B.S. (1933), Idaho; M.S. (1946), Ph.D. (1948), Washington. At Oregon State since 1948.
- JACK THOMAS McDERMID, B.S., Superintendent (Assistant Professor), Red Soils Experimental Area.  
B.S. (1942), Oregon State. At Oregon State since 1945.
- CLARENCE RAY McDERMOTT, Sergeant First Class, Instructor in Military Science and Tactics.  
At Oregon State since 1956.
- HELEN MAY McDOWALL, M.S., Clackamas County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1934), Nebraska; M.S. (1952), Oregon State. At Oregon State since 1950.
- GERTRUDE ELIZABETH McELFRESH, A.M., Assistant Professor Emeritus of English.  
B.S. (1902), Oregon State; A.B. (1909), Cornell; A.M. (1924), Columbia. At Oregon State since 1909.
- ROBERT EARL McELROY, Technical Sergeant, Instructor in Air Science.  
At Oregon State since 1955.
- JAMES EDWARD McFARLAND, M.S., Acting Instructor in Mathematics.  
B.S. (1953), Denison; M.S. (1955), Oregon State. At Oregon State since 1956.
- JOHN WILLIAM MCGARITY, B.Sc.Agr., Research Assistant (Instructor), Bacteriology, Agricultural Experiment Station.  
B.Sc.Agr. (1950), University of Sydney (Australia). At Oregon State since 1956.
- WILLIAM FREDERICK McGRATH, M.A., Instructor in Speech.  
B.S. (1946), Minnesota; M.A. (1950), Washington. At Oregon State since 1954.
- WILLIAM S MCGUIRE, Ph.D., Assistant Professor of Farm Crops; Assistant Agronomist, Agricultural Experiment Station.  
B.S. (1947), Arkansas; M.S. (1951), University of New Zealand; Ph.D. (1952), Washington. At Oregon State since 1956.
- WILLIAM WARD MCKALIP, M.S., Assistant Professor of Physical Education.  
B.S. (1931), M.S. (1953), Oregon State. At Oregon State 1937-42, and since 1953.
- FREDERICK FRANCIS MCKENZIE, Ph.D., D.Agr., D.V.S., Professor of Animal Husbandry; Animal Husbandman, Agricultural Experiment Station.  
B.S.A. (1921), British Columbia; A.M. (1923), Ph.D. (1925), Missouri; D.Agr. (1941), Catholic University of Chile; D.V.S. (1945), University of Chile. At Oregon State since 1944. On leave 1956-58.
- MILFORD D MCKIMMY, Ph.D., Assistant Professor of Forest Products.  
B.S. (1949), Michigan State; M.S. (1951), Oregon State; Ph.D. (1955), New York State College of Forestry. At Oregon State since 1953.

- JACK LAMONT McLACHLAN, M.A., Research Assistant (Instructor), Botany and Plant Pathology, Agricultural Experiment Station.  
B.S. (1953), M.A. (1954), Oregon State. At Oregon State since 1955.
- EDWARD BLAKE McLEOD, JR., Ph.D., Assistant Professor of Mathematics.  
B.A. (1947), Occidental College; M.S. (1949), Ph.D. (1953), Stanford. At Oregon State since 1955.
- JAMES FRANCIS McNULTY, B.S., Lieutenant Commander, USNR, Assistant Professor of Naval Science.  
B.S. (1943), Niagara University. At Oregon State since 1956.
- ISABELLA FRANKLIN McQUESTEN, M.S., Associate Professor of Home Economics Education.  
B.S. (1932), Arizona; M.S. (1940), Oregon State. At Oregon State since 1948.
- FRANK PADEN McWHORTER, Ph.D., Plant Pathologist (Professor) Agricultural Experiment Station, U. S. Department of Agriculture.  
B.S. (1917), Vanderbilt; M.S. (1920), Chicago; Ph.D. (1928), Cornell. At Oregon State since 1930.
- JOHN HOWARD MACDONALD, B.A., Instructor in Radio Education, KOAC, General Extension Division.  
B.A. (1948), Oregon. At Oregon State since 1951.
- CLARON LEON MACE, B.S., Clackamas County Extension Agent (Assistant Professor).  
B.S. (1950), Kansas State. At Oregon State since 1955.
- HARRY JOHN MACK, Ph.D., Research Assistant (Instructor) in Horticulture, Agricultural Experiment Station.  
B.S. (1950), M.S. (1952), Texas A and M; Ph.D. (1955), Oregon State. At Oregon State since 1955.
- MABEL CLAIR MACK, M.S., Assistant Director, Federal Cooperative Extension Service (Professor).  
B.S. (1928), M.S. (1940), Oregon State. At Oregon State since 1928.
- ANDREA OVERMAN MACKIE, Ph.D., Professor of Foods and Nutrition; Home Economist, Agricultural Experiment Station.  
B.S., M.Sc. (1937), Nebraska; Ph.D. (1945), Iowa State. At Oregon State since 1938.
- JOHN RODERICK MACKIE, B.A., Commander, Associate Professor of Naval Science.  
B.A. (1938), California. At Oregon State since 1955.
- IAIN CHRISTIE MACSWAN, B.S.A., Extension Plant Pathology Specialist (Assistant Professor).  
B.S.A. (1942), British Columbia. At Oregon State since 1955.
- RUSSELL WEBBER MADDOX, JR., Ph.D., Associate Professor of Political Science.  
B.A. (1946), Marshall College; M.P.A. (1948), Wayne; Ph.D. (1953), Illinois. At Oregon State since 1950.
- BENJAMIN FULTON MAGILL, M.S., Research Assistant (Instructor) in Dairying.  
B.S. (1952), Washington State; M.S. (1954), Oregon State. At Oregon State since 1956.
- PHILIP COOPER MAGNUSON, Sc.D., E.E., Associate Professor of Electrical Engineering.  
B.S. (1937), Washington; M.S. (1938), California; Sc.D. (1941), Massachusetts Institute of Technology; E.E. (1947), Washington. At Oregon State since 1946.
- BERNARD MALAMUD, M.A., Assistant Professor of English.  
B.A. (1936), College of City of New York; M.A. (1942), Columbia. At Oregon State since 1949. On sabbatical leave 1956-57.

- JESSALEE AHRENS MALLALIEU, M.S., Extension Recreation Specialist (Associate Professor).  
B.S. (1933), Missouri; M.S. (1948), Wisconsin. At Oregon State since 1948. On leave 1956-57.
- HORACE MILTON MANNING, Ph.D., Assistant Professor of Psychology.  
B.A. (1947), M.Ed. (1949), Lewis and Clark; M.A. (1951), Oregon; Ph.D. (1954), Minnesota. At Oregon State since 1954.
- LESLIE JACK MARKS, B.S., Wheeler County Extension Agent (Associate Professor).  
B.S. (1946), Oregon State. At Oregon State since 1946.
- STEPHEN CHESTER MARKS, M.S., Extension Agricultural Economist (Assistant Professor).  
B.S. (1948), State College (River Falls, Wisconsin); M.S. (1955), Wisconsin. At Oregon State since 1956.
- CATTERINA MARIE PAULINE MARKSHEFFEL, B.Sc., Instructor in Secretarial Science.  
B.Sc. (in Educ.) (1941), Southern California. At Oregon State since 1956.
- NED DELAND MARKSHEFFEL, M.E., Assistant Professor of Education.  
B.S. (1933), Utah State; M.E. (1953), Temple. At Oregon State since 1955.
- ROBERT KENDALL MARSH, B.S., Clatsop County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1941), Massachusetts. At Oregon State since 1956.
- DONALD JOSEPH MARTEL, B.S., Professor of Landscape Architecture; Head of Department.  
B.S. (1942), Oregon. At Oregon State since 1947.
- BONNIE LUCILLE MARTIN, B.S., Instructor in Family Life and Home Administration.  
B.S. (1948), North Dakota State. At Oregon State since 1956.
- CHARLES HERBERT MARTIN, Ph.D., Associate Professor of Entomology.  
B.A., M.A. (1927), Kansas; Ph.D. (1939), Cornell. At Oregon State since 1946.
- GEORGE YOULLE MARTIN, B.S., Superintendent of College Press and Clerical Exchange (Associate Professor).  
B.S. (1935), South Dakota State. At Oregon State since 1936.
- WALLACE HOPE MARTIN, M.S., Professor Emeritus of Mechanical Engineering.  
M.E. (1910), Minnesota; M.S. (1930), Iowa State. At Oregon State since 1920.
- ELLIOT NELSON MARVELL, Ph.D., Assistant Professor of Chemistry.  
B.S. (1943), Brown; Ph.D. (1948), Illinois. At Oregon State since 1948. On sabbatical leave 1956-57.
- CLIFFORD ELGES MASER, Ph.D., Dean, School of Business and Technology; Professor of Business Administration.  
A.B. (1934), Swarthmore; D.K. (1935), Ph.D. (1936), Cologne. At Oregon State since 1942.
- ROBERT GEORGE MASON, M.S., Agricultural Experiment Station Editor (Assistant Professor).  
B.S. (1951), Oregon State; M.S. (1952), Wisconsin. At Oregon State since 1953.
- JOHN WILLIAM MASSIE, B.S., Linn County Extension Agent (Instructor).  
B.S.Agr. (1951), Ohio State. At Oregon State since 1956.
- DARRELL CLIFFORD MAXWELL, B.S., Jefferson County Extension Agent (Assistant Professor).  
B.S. (1952), Oregon State. At Oregon State since 1952.
- JOSEPH PARKE MEHLIG, Ph.D., Professor Emeritus of Chemistry; Chemist (Agricultural Chemistry), Agricultural Experiment Station.  
B.S. (1908), M.S. (1910), Ph.D. (1931), Purdue. At Oregon State since 1920.

- WALTER M MELLENTHIN, M.S., Superintendent (Assistant Professor), Mid-Columbia Branch Experiment Station.  
B.S. (1950), M.S. (1952), Oregon State. At Oregon State since 1950.
- CHARLOTTE MELLER, M.D., Assistant Physician, Student Health Service (Associate Professor).  
B.S. (1935), M.B. (1937), M.D. (1938), Minnesota. At Oregon State 1942-44, and since 1953.
- LOREN ROY MELTON, Chief Fire Control Technician USN, Instructor in Naval Science.  
At Oregon State since 1953.
- FRED MERRYFIELD, M.S., Professor of Sanitary Engineering.  
B.S. (1923), Oregon State; M.S. (1930), North Carolina. At Oregon State since 1927.
- THEODORE LAWRENCE MESANG, M.Ed., Associate Professor of Music.  
B.M. (1945), Wisconsin; M.Ed. (1949), Minnesota. At Oregon State since 1949.
- DOUGLAS ALLEN MESSENGER, JR., B.S., Columbia County Special Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State since 1952.
- ROBERT J METZGER, Ph.D., Geneticist (Assistant Professor), U. S. Department of Agriculture.  
B.S. (1948), M.S. (1949), Ph.D. (1953), Illinois. At Oregon State since 1954.
- EDWIN DAVID MEYER, M.S., Associate Professor of Industrial Arts and Industrial Education.  
B.S. (1927), Stout Institute; M.S. (1940), Oregon State. At Oregon State since 1925.
- WILMER ABELE MEYLE, B.S., Research Assistant (Instructor), Mid-Columbia Branch Experiment Station.  
B.S. (1931), Kansas State. At Oregon State since 1948.
- ROBERT RAY MICHAEL, M.S., Assistant Professor of Electrical Engineering.  
B.S. (1940), M.S. (1947), Oregon State. At Oregon State since 1947.
- OSCAR EDWIN MIKESSELL, B.S., Linn County Extension Agent (Professor).  
B.S. (1934), Oregon State. At Oregon State since 1934.
- JOHN A MILBRATH, Ph.D., Professor of Plant Pathology; Plant Pathologist, Agricultural Experiment Station.  
B.S. (1934), Washington State; Ph.D. (1938), Oregon State. At Oregon State since 1937.
- RICHARD EARL MILES, Technical Sergeant, Instructor in Air Science.  
At Oregon State since 1955.
- CLAY CARL MILLER, B.S., Multnomah County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1923), Oregon State. At Oregon State since 1929.
- CORA MAY MILLER, B.S., Umatilla County Extension Agent, 4-H Club (Instructor).  
B.S. (1954), Oregon State. At Oregon State since 1956.
- DANIEL BYRD MILLER, B.S., Captain USN, Professor of Naval Science.  
B.S. (1926), U. S. Naval Academy; M.Ed. (1956), Oregon State. At Oregon State since 1954.
- DONALD JAMES MILLER, M.F., Wood Technologist (Instructor), Oregon Forest Products Laboratory.  
B.S. (1951), Connecticut; M.F. (1954), Yale. At Oregon State since 1955.
- PAUL WILLIAM MILLER, Ph.D., Plant Pathologist (Professor), U.S. Department of Agriculture.  
B.S. (1923), M.S. (1924), Kentucky; Ph.D. (1929), Wisconsin. At Oregon State since 1930.

- LOUISE MARGUERITE MILLIGAN, A.B., B.L.S., Assistant Catalog Librarian (Assistant Professor), Library.  
A.B. (1930), Arizona; B.L.S. (1932), Southern California. At Oregon State since 1946.
- MARGARET MILLIKEN, M.S., Associate Professor of Physical Education for Women.  
B.S. (1942), M.S. (1947), Oregon State. At Oregon State since 1947.
- WILLIAM WILLIS MILLS, Ph.D., Assistant Professor of Psychology; Director of Counseling and Testing Center.  
A.B. (1939), St. Louis; Ph.D. (1954), Minnesota. At Oregon State since 1954.
- HORACE HANNA MILLSAP, Research Assistant (Instructor) Botany and Plant Pathology, Agricultural Experiment Station, U. S. Department of Agriculture.  
At Oregon State since 1945.
- WILLIAM EDMUND MILNE, Ph.D., D.Sc., Professor Emeritus of Mathematics.  
A.B. (1912), Whitman; A.M. (1913), Ph.D. (1915), Harvard; D.Sc. (1942), Whitman. At Oregon State since 1932.
- MARY BETH MINDEN, Ph.D., Extension Home Management Specialist (Associate Professor).  
B.S. (1940), Oregon State; M.A. (1947), Columbia; Ph.D. (1957), Purdue. At Oregon State since 1947.
- KENNETH CLAYTON MINNICK, M.Agr., Benton County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1939), M.Agr. (1954), Oregon State. At Oregon State since 1944.
- EDWARD REAMS MITCHELL, Ph.D., Assistant Professor of English.  
A.B. (1938), M.A. (1940), California; Ph.D. (1953), Stanford. At Oregon State since 1953.
- HAROLD WILLIAM MOE, M.S., Assistant Professor of Physical Education; Track Coach.  
B.S. (1935), M.S. (1952), Oregon State. At Oregon State 1935-42 and since 1949.
- BOBBY ANN MOHLER, B.S., Research Assistant (Instructor), Science Research Institute.  
B.S. (1951), Missouri. At Oregon State since 1956.
- JAMES DAWSON MOHLER, Ph.D., Assistant Professor of Zoology.  
A.B. (1949), A.M. (1950), Missouri; Ph.D. (1955), California. At Oregon State since 1955.
- PAUL OLANDER MOHN, M.S., Extension Agricultural Economist, Marketing (Instructor).  
B.S. (1951), Kansas State; M.S. (1952), Mississippi State. At Oregon State since 1955.
- KARL HERMAN MOLTSMANN, M.M., Assistant Professor of Music.  
B.A. (1937), Buena Vista College; M.M. (1946), Colorado. At Oregon State since 1956.
- CAL GRAHAM MONROE, M.S., State Extension Agent, 4-H Club (Associate Professor).  
B.S. (1939), Oregon State; M.S. (1952), Cornell. At Oregon State since 1942.
- HELEN STERLING MOOR, M.A., Dean of Women (Professor).  
A.B. (1925), Smith; M.A. (1935), Stanford. At Oregon State 1926-28, and since 1954.
- VIRGINIA MOORMAN, M.A., Lane County Extension Agent, Home Economics (Associate Professor).  
B.A. (1938), Eastern Washington College of Education; M.A. (1943), Columbia. At Oregon State since 1952. On leave through January 31, 1957.
- ETHEL POPE MORGAN, B.S., Instructor in Foods and Nutrition.  
B.S. (1923), Oregon State. At Oregon State since 1945.
- FRED BUCKNER MORGAN, M.S., Associate Professor Emeritus of Physics.  
B.Ped. (1910), Kirksville State Normal (Missouri); A.B., B.S. (1915), Missouri; M.S. (1930), Pittsburgh. At Oregon State 1920-32, and since 1934.

- RALPH L MORGAN, B.S., State Supervisor of Agricultural Education.  
B.S. (1920), Oregon State. At Oregon State since 1946.
- HENRIETTA MORRIS, Sc.D., Associate Professor of Hygiene.  
A.B. (1923), Goucher College; Sc.D. in Hygiene (1927), Johns Hopkins. At Oregon State since 1935.
- JAMES MADISON MORRIS, Ed.D., Professor of Radio Education; Head of Department; Program Manager, KOAC, General Extension Division.  
B.S. (1928), Ed.D. (1956), Oregon State. At Oregon State since 1929.
- MORTIMER HARRY MORRIS, M.Ed., Assistant Professor of Recreation.  
B.S. (1941), Ithaca College; M.Ed. (1949), St. Bonaventure, N. Y. At Oregon State since 1955.
- HUGH ENGLE MORRISON, M.S., Associate Entomologist (Associate Professor), Agricultural Experiment Station.  
B.S. (1927), Franklin and Marshall; M.S. (1936), Ohio State. At Oregon State since 1937.
- ROGER WILLIAM MORSE, B.S., Extension Dairy Specialist (Professor Emeritus of Dairying).  
B.S. (1916), Washington State. At Oregon State since 1923.
- RUTH ANNETTA MOSER, M.S., Assistant Professor of Clothing, Textiles, and Related Arts.  
B.S. (1931), North Dakota Agricultural College; M.S. (1950), Oregon State. At Oregon State since 1946.
- PAUL MOSHER, Sergeant First Class, Instructor in Military Science and Tactics.  
At Oregon State since 1955.
- WAYNE DELBERT MOSHER, B.S., Douglas County Extension Agent (Assistant Professor).  
B.S. (1948), Oregon State. At Oregon State since 1948.
- DON CARLOS MOTE, Ph.D., Professor Emeritus of Entomology.  
B.S. (1911), M.S. (1912), Ph.D. (1928), Ohio State. At Oregon State since 1923.
- HELEN MULHERN, M.S., Assistant Professor of Institution Management; Chairman of Department; Manager, Women's Food Service, Dormitories.  
B.S. (1925), M.S. (1931), Washington. At Oregon State since 1943.
- DWIGHT CURTIS MUMFORD, M.S., Professor of Agricultural Economics; Agricultural Economist, Agricultural Experiment Station.  
B.S. (1923), Illinois; M.S. (1925), Cornell. At Oregon State since 1938.
- JAMES KENNETH MUNFORD, Ed.D., Director of Publications; Professor of English; Secretary of Administrative Council.  
B.S. (1934), Oregon State; Ed.D. (1948), Stanford. At Oregon State 1939-46 and since 1948.
- OTTO HERBERT MUTH, D.V.M., M.S., Veterinarian (Professor), Agricultural Experiment Station.  
D.V.M. (1929), M.S. (1935), Michigan State. At Oregon State since 1929.
- WILFRED GERVAIS MYATT, M.A., Associate Professor of Geography.  
B.A. (1947), M.A. (1950), Washington. At Oregon State since 1947.
- HIGHLY JOE MYERS, B.S., Linn County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1949), Oregon State. At Oregon State since 1948.
- ELGAR MAURICE NELSON, B.S., B.A., Wasco County Extension Agent (Associate Professor).  
B.S., B.A. (1930), Minnesota. At Oregon State since 1946. On leave.
- GEORGE ALLEN NELSON, B.S., County Agent Emeritus, Columbia County (Professor).  
B.S. (1909), Oregon State. At Oregon State since 1922.



- HERBERT BENJAMIN NELSON, Ph.D.**, Professor of English; Head of Department.  
A.B. (1926), M.A. (1927), Colorado; Ph.D. (1944), Washington. At Oregon State since 1927.
- MILTON NELS NELSON, Ph.D.**, Professor of Economics; Head of Department.  
A.B. (1915), M.A. (1917), Ph.D. (1921), Illinois. At Oregon State since 1926.
- NONA JEAN NELSON, B.S.**, Instructor in Clothing, Textiles, and Related Arts.  
B.S. (1953), Oregon State. At Oregon State since 1956.
- ORAN MILTON NELSON, M.S.**, Professor Emeritus of Animal Husbandry.  
B.S. (1913), M.S. (1930), Wisconsin. At Oregon State since 1913.
- HARRY IRA NETTLETON, M.S.F.**, Associate Professor of Forest Management; Forest Manager.  
B.S. (1921), Oregon State; M.S.F. (1928), Idaho. At Oregon State 1936-42, and since 1947.
- JOHN FRED NEU, B.S.**, Special County Extension Agent (Assistant Professor).  
B.S. (1941), South Dakota State. At Oregon State since 1955.
- ROBERT WARREN NEWBURGH, Ph.D.**, Assistant Professor, Chemistry, U. S. Department of Agriculture, Science Research Institute.  
B.S. (1949), Iowa; M.S. (1951), Ph.D. (1953), Wisconsin. At Oregon State since 1953.
- HUGH ROSS NEWCOMB, M.S.**, Aquatic Biologist (Assistant Professor), Oregon State Game Commission.  
B.S. (1938), Maine; M.S. (1940), Oregon State. At Oregon State since 1950.
- BEN ALLEN NEWELL, B.S.**, Marion County Extension Agent (Associate Professor).  
B.S. (1941), Oregon State. At Oregon State since 1944.
- BYRON LOUIS NEWTON, Ed.D.**, Professor of Business Administration.  
B.S. (1935), Northwestern (Oklahoma); M.S. (1939), Ed.D. (1946), Oklahoma A and M. At Oregon State 1947-48, and since 1949.
- WILLIAM GERALD NIBLER, B.S.**, State Extension Agent (Professor).  
B.S. (1938), Oregon State. At Oregon State since 1940.
- DAVID BOWMAN NICODEMUS, Ph.D.**, Associate Professor of Physics.  
A.B. (1937), DePauw; Ph.D. (1946), Stanford. At Oregon State since 1950. On leave 1956-57.
- IRA R NISSEN, M.B.A.**, Assistant Professor of Business Administration.  
B.S. (1949), Minot State College; C.P.A. (1950), North Dakota; C.P.A. (1952), Minnesota; M.B.A. (1950), Denver. At Oregon State since 1956.
- CHARLES LESLIE NOE, Master Sergeant**, Instructor in Military Science and Tactics.  
At Oregon State since 1955.
- FAITH GRIGSBY NORRIS, Ph.D.**, Assistant Professor of English.  
B.A. (1939), British Columbia; M.A. (1941), Ph.D. (1947), California. At Oregon State since 1947.
- THOMAS HUGHES NORRIS, Ph.D.**, Associate Professor of Chemistry.  
A.B. (1938), Princeton; Ph.D. (1942), California. At Oregon State since 1947.
- MARTIN ELLIS NORTHCRAFT, B.S.**, Instructor in Civil Engineering.  
B.S. (1955), Oregon State. At Oregon State since 1955.
- DALLAS W NORTON, M.Ed.**, Personnel Coordinator; Assistant Registrar (Professor).  
B.S. (1936), M.Ed. (1941), Oregon. At Oregon State since 1947.
- DUNBAR SUTTON NORTON, Captain**, Assistant Professor of Military Science and Tactics.  
At Oregon State since 1955.

- RAYMOND EMANUEL NOVOTNY, B.S., Harney County Extension Agent (Associate Professor).  
B.S. (1946), Wyoming. At Oregon State since 1952.
- ROY BARNES NOYES, B.S., Instructor in Mechanical Engineering.  
B.S. (1950), Purdue. At Oregon State since 1956.
- JOHN ALAN O'CONNOR, M.S., Assistant Professor of Music.  
B.S. (1939), M.S. (1948), Idaho. At Oregon State since 1949.
- LOUIS MILTON OESTER, Ed.M., Curry County Extension Agent (Assistant Professor).  
B.S. (1949), Ed.M. (1952), Oregon State. At Oregon State since 1955.
- JAMES EDMUND OLDFIELD, Ph.D., Associate Professor of Animal Husbandry; Associate Animal Husbandman, Agricultural Experiment Station.  
B.S.A. (1941), M.S.A. (1949), British Columbia; Ph.D. (1951), Oregon State. At Oregon State since 1949.
- JOHN ELMER O'LEARY, M.F., Assistant Professor of Forest Engineering.  
B.S.F. (1942), Michigan; M.F. (1947), Oregon State. At Oregon State since 1949.
- ALFRED WEAVER OLIVER, M.S., Associate Professor of Animal Husbandry; Associate Animal Husbandman, Agricultural Experiment Station.  
B.S. (1918), Oregon State; M.S. (1928), Wisconsin. At Oregon State since 1919.
- BERTEL ORLANDO OLSON, B.S., Instructor in Civil Engineering.  
B.S. (1949), North Dakota State. At Oregon State since 1956.
- DONEL RUDOLPH OLSON, M.S., Instructor in General Engineering.  
B.S. (1955), M.S. (1956), Oregon State. At Oregon State since 1956.
- RAYMOND LLOYD OLSON, M.S., Instructor in Chemical Engineering.  
B.S. (1947), California Institute of Technology; B.S. (1948), M.S. (1950), Oregon State. At Oregon State since 1956.
- THOMAS ONSDORFF, M.S., Associate Professor of Food Technology.  
B.S. (1924), Oregon State; M.S. (1935), Massachusetts State. At Oregon State since 1924.
- PRESTON EUGENE ONSTAD, M.A., Instructor in English.  
B.A. (1942), M.A. (1947), College of Puget Sound. At Oregon State since 1956.
- DANIEL THOMAS ORDEMAN, Ph.D., Registrar (Professor).  
A.B. (1920), M.A. (1922), Washington and Lee; Ph.D. (1927), Maryland. At Oregon State since 1927.
- LOUISE JACKMAN ORNER, M.S., Assistant Professor of Secretarial Science.  
B.S. (1922), M.S. (1940), Oregon State. At Oregon State since 1936.
- JOHN LYNN OSBORN, Ph.D., Associate Professor Emeritus of Zoology.  
Ph.C. (1915), Michigan; A.B. (1922), Kansas; A.M. (1923), Nebraska; Ph.D. (1939), Washington. At Oregon State since 1923.
- KATHERINE HUGHES OSBORN, M.A., Science Librarian (Associate Professor), Library.  
B.S. (in L.S.) (1928), Washington; M.A. (1939), Oregon State. At Oregon State since 1929.
- PHILLIP WALLACE OSBORNE, M.S., Assistant Professor of Mechanical Engineering.  
B.M.E. (1948), George Washington; M.S.M.E. (1951), Washington. At Oregon State since 1954.
- GEORGE HOLLIS OTTAWAY, B.S., Marion County Extension Agent (Assistant Professor).  
B.S. (1941), Oregon State. At Oregon State 1941-42, 1946-50, and since 1950.
- JAMES LAFAYETTE OVERHOLSER, B.S., Technical Editor (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1950), Oregon State. At Oregon State since 1952.

- JEAN SATTERLEE OVERHOLSER, M.A., Instructor in Mathematics.  
B.A. (1936), California (Los Angeles); M.A. (1940), Redlands. At Oregon State since 1955.
- MERRILL MAHONRI OVESON, M.S., Superintendent (Professor), Pendleton Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1927), Brigham Young; M.S. (1930), Oregon State. At Oregon State since 1929.
- ALFRED OWCZARZAK, Ph.D., Research Associate (Instructor) in Zoology.  
B.S. (1944), Cornell; Ph.D. (1953), Wisconsin. At Oregon State since 1955.
- CHARLES ELMER OWENS, Ph.D., Professor Emeritus of Botany.  
A.B. (1910), A.M. (1911), Indiana; Ph.D. (1934), Wisconsin. At Oregon State since 1912.
- BETTE MARIE PAASCHE, B.S., Instructor in Foods and Nutrition.  
B.S. (1943), Illinois. At Oregon State since 1955.
- OLAF GUSTAV PAASCHE, M.S., Associate Professor of Mechanical Engineering.  
B.S. (1943), Illinois; M.S. (1955), Illinois Institute of Technology. At Oregon State since 1946.
- EARL LEROY PACKARD, Ph.D., Professor Emeritus of Geology.  
A.B. (1911), M.A. (1912), Washington; Ph.D. (1915), California. At Oregon State since 1932.
- GLEN ELLIS PAGE, M.S., Assistant Agricultural Engineer (Assistant Professor), Agricultural Experiment Station.  
B.S.A. (1940), Wisconsin; B.S. (M.E.) (1942), M.S. (M.E.) (1949), Purdue. At Oregon State since 1949.
- RICHARD EUGENE PAHRE, M.A., Assistant Dean of Men (Assistant Professor).  
B.S.C. (1950), M.A. (1954), Iowa. At Oregon State since 1956.
- JOHN HOWE PAINTER, M.S., Horticulturist (Professor), U. S. Department of Agriculture.  
B.S. (1922), Maryland; M.S. (1924), Oregon State. At Oregon State since 1948.
- JAMES ROLAND PARKER, M.S., Douglas County Extension Agent (Associate Professor).  
B.S. (1922), M.S. (1942), Oregon State. At Oregon State since 1926.
- JESSE ELMER PARKER, Ph.D., Professor of Poultry Husbandry, Head of Department; Poultry Husbandman in Charge, Agricultural Experiment Station.  
B.S. (1934), Tennessee; A.M. (1936), Ph.D. (1940), Missouri. At Oregon State since 1946.
- WILLIAM BEVERLY PARKER, B.S., Lane County Extension Agent (Associate Professor).  
B.S. (1946), Oregon State. At Oregon State since 1946.
- HAROLD NEVINS PARKINSON, B.S., Assistant Professor of General Engineering.  
B.S. (1918), Purdue. At Oregon State since 1947.
- FRANK LOVERN PARKS, Ph.D., Associate Professor of Sociology; Head Counselor of Lower Division.  
B.A., B.E. (1929), M.A. (1932), Colorado; Ph.D. (1949), Washington. At Oregon State since 1949.
- ROBERT D PARR, B.S., Research Assistant (Instructor) Agricultural Economics, Agricultural Experiment Station; Agricultural Statistician, U. S. Department of Agriculture.  
B.S. (1950), California. At Oregon State since 1955.
- THERAN DUANE PARSONS, Ph.D., Assistant Professor of Chemistry.  
B.S. (1949), Ph.D. (1953), Washington. At Oregon State since 1955.
- HENRY RICHARD PATTERSON, B.S., Professor Emeritus of Forest Engineering.  
B.S. (in C.E.) (1909), Oregon. At Oregon State since 1920.

- JOAN PATTERSON, M.F.A., Professor of Clothing, Textiles, and Related Arts.  
B.Arch. (1931), Oregon; M.F.A. (1950), Cranbrook Academy of Art. At Oregon State since 1936. On sabbatical leave fall term 1956-57.
- WILLIAM HOWARD PAUL, M.S., Professor of Automotive Engineering.  
B.S. (1924), M.S. (1935), Oregon State. At Oregon State since 1926.
- OSCAR INGVAL PAULSON, B.S., Associate Professor of Vocational Education.  
B.S. (1920), Oregon State. At Oregon State since 1941.
- BURTON FRANK PEASE, B.S., Instructor in Chemistry.  
B.S. (1950), Pacific University. At Oregon State since 1956.
- CHARLES S PEASE, Ph.D., Professor of Chemistry.  
B.S. (1918), Denison; Ph.D. (1928), Ohio State. At Oregon State since 1925.
- ARTHUR LEE PECK, B.S., B.A., Professor Emeritus of Landscape Architecture.  
B.S. (1904), Massachusetts; B.A. (1904), Boston. At Oregon State 1908-10 and since 1912.
- RAY ARTHUR PENDLETON, Ph.D., Agronomist, Soil Scientist (Professor), U. S. Department of Agriculture.  
B.S. (1928), Oregon State; M.S. (1928), Ph.L. (1930), Iowa State. At Oregon State since 1941. On leave 1955-57.
- EUGENE RAYMOND PERRIER, B.S., Research Assistant (Instructor) in Soils.  
B.S. (1955), Oregon State. At Oregon State since 1956.
- ANTHONY RICHARD PERRINO, B.A., Instructor in English.  
B.A. (1951), Wayne University; S.T.B. (1955), Boston. At Oregon State since 1956.
- SAMUEL CECIL PERRY, Technical Sergeant, Instructor in Air Science.  
At Oregon State since 1954.
- WILLIAM MCGUIRE PERRY, B.S., Yamhill County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1922), Oregon State. At Oregon State since 1945.
- ELNA CHRISTINE PETERSEN, M.S., Assistant Professor of Foods and Nutrition.  
B.A. (1939), Santa Barbara State; M.S. (1950), Cornell. At Oregon State since 1950. On military leave.
- RAY OLAF PETERSEN, B.S., Klamath County Extension Agent (Associate Professor).  
B.S. (1935), Idaho. At Oregon State since 1953.
- ROBERT VIRGIL PETERSEN, Ph.D., Assistant Professor of Pharmaceutical Chemistry.  
B.S. (1950), Utah; Ph.D. (1955), Minnesota. At Oregon State since 1955.
- ROGER GENE PETERSEN, Ph.D., Statistician (Assistant Professor), Agricultural Experiment Station.  
B.S. (1949), M.S. (1950), Iowa State; Ph.D. (1954), North Carolina State. At Oregon State since 1955.
- SIGURD HARLAN PETERSON, Ph.D., Professor Emeritus of English.  
A.B. (1910), Minnesota; Ph.D. (1931), Washington. At Oregon State since 1911.
- PAUL PETRI, Professor Emeritus of Music.  
At Oregon State since 1924.
- MARY MARGARET PETRUSICH, M.Ed., Assistant Professor of Education.  
B.Ed. (1946), M.Ed. (1951), Oregon. At Oregon State since 1956.
- FLORENCE ELOISE PETZEL, Ph.D., Professor of Clothing, Textiles, and Related Arts; Head of Department.  
Ph.B. (1931), A.M. (1934), Chicago; Ph.D. (1954), Minnesota. At Oregon State since 1954.
- JOHN ADAMS PFANNER, JR., Ph.D., Professor of Business Administration; Head Counselor, School of Business and Technology.  
A.B. (1927), Dartmouth; M.A. (1931), Ph.D. (1939), Chicago. At Oregon State since 1946.

- JACK RUSSELL PFEIFFER, M.F.**, In Charge of Wood Seasoning (Assistant Professor), Oregon Forest Products Laboratory.  
B.S. (1947), Colorado A and M; M.F. (1950), Duke. At Oregon State since 1950.
- MARK CLYDE PHILLIPS, B.M.E.**, Professor Emeritus of Mechanical Engineering.  
B.M.E. (1896), Oregon State. At Oregon State since 1897.
- HARRY KENYON PHINNEY, Ph.D.**, Associate Professor of Botany.  
B.A. (1941), Cincinnati; M.A. (1943), Albion; Ph.D. (1945), Northwestern. At Oregon State since 1947.
- K STEPHEN PILCHER, Ph.D.**, Professor of Bacteriology.  
B.S. (1933), Ph.D. (1939), Washington. At Oregon State since 1951.
- HANS HEINRICH PLAMBECK, Ph.D.**, Professor of Sociology; Chairman of Department.  
B.A. (1935), M.A. (1938), Oregon; Ph.D. (1941), Cornell. At Oregon State since 1946.
- C VINTON PLATH, Ph.D.**, Associate Professor of Agricultural Economics; Associate Agricultural Economist, Agricultural Experiment Station.  
B.S. (1937), North Dakota Agricultural College; M.S. (1939), Vermont; Ph.D. (1947), Cornell. At Oregon State since 1948.
- MARTHA AMANDA PLONK, M.S.**, Assistant Professor of Home Administration.  
B.S. (1940), Woman's College of University of North Carolina; M.S. (1949), Ohio State. At Oregon State since 1952.
- DAN WILLIAMS POLING, D.Ed.**, Dean of Men; Professor of Political Science.  
B.S. (1928), M.S. (1938), Oregon State; D.Ed. (1956), Oregon. At Oregon State since 1937.
- HELEN VIRGINIA POLING, B.S.**, Instructor in Physical Education for Women.  
B.S. (1956), Oregon State. At Oregon State since 1949.
- JAMES ALBERT POMERENING, M.S.**, Research Assistant (Instructor) in Soils.  
B.S. (1951), Wisconsin; M.S. (1956), Cornell. At Oregon State since 1956.
- ALBERT ROBERTS POOLE, Ph.D.**, Associate Professor of Mathematics.  
B.A. (1929), M.A. (1931), British Columbia; Ph.D. (1935), California Institute of Technology. At Oregon State since 1946.
- MILOSH POPOVICH, M.S.**, Assistant Dean, School of Engineering and Industrial Arts; in charge of Engineering Experiment Station; Professor of Mechanical Engineering.  
B.S. (1939), M.S. (1941), Oregon State. At Oregon State 1945, and since 1947.
- ERMINE LAWRENCE POTTER, M.S.**, Professor Emeritus of Agricultural Economics.  
B.S. (1906), Montana State; B.S.A. (1908), M.S. (1920), Iowa State. At Oregon State since 1908.
- MARGARET DORRANCE POTTER, M.S.**, Extension Clothing and Textiles Specialist (Associate Professor).  
B.S. (1931), M.S. (1936), Washington. At Oregon State since 1956.
- CHARLES EDGAR POULTON, Ph.D.**, Associate Professor of Range Management; Associate in Range Management, Agricultural Experiment Station.  
B.S. (1939), M.S. (1948), Idaho; Ph.D. (1955), Washington State. At Oregon State since 1949.
- LOUIS WILLIAM POWELL, M.F.**, Instructor in Forest Management.  
B.S. (1950), Oregon State; M.F. (1951), Duke. At Oregon State since 1956.
- WILBUR LOUIS POWERS, Ph.D.**, Professor Emeritus of Soils.  
B.S. (1908), M.S. (1909), New Mexico State; Ph.D. (1926), California. At Oregon State since 1909.
- IVAN PRATT, Ph.D.**, Professor of Zoology.  
B.A. (1932), Emporia; M.S. (1935), Kansas State; Ph.D. (1938), Wisconsin. At Oregon State since 1946.

- SARA WATT PRENTISS, M.A., Professor Emeritus of Child Development.  
B.S. (1917), Oregon State; M.A. (1929), California. At Oregon State since 1917.
- CATHERINE HALLENE PRICE, B.S., Extension Home Management Specialist (Assistant Professor).  
B.S. (1927), Kansas State Teachers College. At Oregon State since 1955.
- FREDERICK EARL PRICE, B.S., Dean, School of Agriculture (Professor); Director, Agricultural Experiment Station; Director, Federal Cooperative Extension.  
B.S. (1922), Oregon State. At Oregon State since 1922.
- AUSTIN WYATT PRITCHARD, Ph.D., Assistant Professor of Zoology.  
A.B. (1948), M.A. (1949), Stanford; Ph.D. (1953), Hawaii. At Oregon State since 1953.
- BLANCHE BAKER PROCTOR, B.A., Waldo Hall Residence Counselor (Instructor).  
B.A. (1918), Willamette. At Oregon State since 1954.
- JAMES THOMPSON PROTHRO, JR., B.A., Head Coach of Football (Professor).  
B.A. (1942), Duke. At Oregon State since 1955.
- MAUD CONWAY PURVINE, B.S., Deschutes County Extension Agent, Home Economics (Associate Professor).  
B.S. (1933), Oregon State. At Oregon State since 1934.
- HAZEL GUSTINE QUASDORF, B.A., B.S. in L.S., Assistant Science Librarian (Assistant Professor), Library.  
B.A. (1920), Cornell College; B.S. in L.S. (1928), Illinois. At Oregon State since 1944.
- HOWARD WILLIAM RAABE, M.S., Associate Professor of Physical Education; Director of Intramural Sports.  
B.S. (1935), M.S. (1939), Oregon State. At Oregon State since 1935.
- HENRY HARDY RAMPTON, M.S., Research Agronomist (Associate Professor), Agricultural Experiment Station, U. S. Department of Agriculture.  
B.S. (1928), Utah State; M.S. (1933), Oregon State. At Oregon State since 1936.
- WARREN ROBERT RANDALL, M.S., Assistant Professor of Forest Management.  
B.S. (1943), M.S. (1947), Idaho. At Oregon State since 1947.
- ROBERT HAROLD RANKIN, B.S., Assistant Professor of Electrical Engineering.  
B.S. (1950), Oregon State. At Oregon State fall and winter terms 1956-57.
- DONALD LOUIS RASMUSSEN, M.S., Marion County Extension Agent (Assistant Professor).  
B.S. (1937), Washington State; M.S. (1942), Oregon State. At Oregon State since 1946.
- CECIL OTIS RAWLINGS, M.S., Extension Horticulture Specialist (Associate Professor).  
B.S. (1925), Illinois; M.S. (1946), New Hampshire. At Oregon State since 1946.
- WILLIAM BRUCE RAYMER, Ph.D., Research Assistant (Instructor) in Botany.  
B.S.A. (1953), British Columbia; Ph.D. (1956), Oregon State. At Oregon State since 1956.
- KATHERINE HASKELL READ, M.S., Professor of Family Life; Head of Department of Family Life and Home Administration.  
A.B. (1925), Mills College; M.S. (1938), Purdue. At Oregon State since 1941.
- MILFORD NORMAN REED, B.S., Washington County Extension Agent (Assistant Professor).  
B.S. (1950), Minnesota. At Oregon State since 1954. Resigned December 31, 1956.
- RUTH LUCILLE REES, M.Ed., Assistant Professor of Education.  
B.S. (1950), M.Ed. (1955), Oregon. At Oregon State since 1955.
- †HAMIT DARWIN REESE, Ph.D., Assistant Professor of Chemistry.  
B.A. (1940), Brigham Young; Ph.D. (1947), Iowa State. At Oregon State since 1947.

† On detached duty, Kasetsart University, Thailand; see page 85.

- ROBERT RAY REICHART, D.Ed., Professor of Educational Psychology.  
B.S. (1917), M.S. (1937), Oregon State; D.Ed. (1941), Oregon. At Oregon State 1926-32, and since 1937.
- WILLIAM CURTIS REID, Ph.D., Professor of Visual Instruction; Head of Department; Extension Specialist in Visual Instruction.  
B.A. (1929), Willamette; M.S. (1932), New York; Ph.D. (1941), Oregon State. At Oregon State since 1937.
- ZELMA FAY REIGLE, B.S., Extension Consumer Marketing Specialist (Assistant Professor).  
B.S. (1949), Iowa State. At Oregon State since 1955.
- FRANK C REIMER, M.S., Superintendent Emeritus of Southern Oregon Experiment Station.  
B.S. (1903), Michigan State; M.S. (1905), Florida. At Oregon State since 1911.
- LEMAR FRED REMMERT, Ph.D., Associate Agricultural Chemist (Associate Professor), Agricultural Experiment Station.  
B.S. (1939), Iowa State; M.S. (1942), Oregon State; Ph.D. (1949), Wisconsin. At Oregon State since 1948.
- ROY ALFRED RENNER, B.S., Instructor in General Engineering.  
B.S. (1952), Oregon State. At Oregon State since 1954.
- DANIEL CLYDE REYNOLDS, B.S., M.D., Director of Student Health Service; Professor of Hygiene.  
B.S. (1916), M.D. (1918), Michigan. At Oregon State since 1929.
- NAN NABORS REYNOLDS, M.S., Instructor in Mathematics.  
B.A. (1938), Oklahoma College for Women; M.S. (1940), Oklahoma A and M. At Oregon State since 1955.
- ROBERT RAYMOND REYNOLDS, M.S., Acting Instructor in Mathematics.  
B.Ed. (1941), Chicago Teachers College; M.S. (1948), Oklahoma A and M. At Oregon State since 1956.
- HATTIE MAE RHONEMUS, B.S., Extension Agent-at-Large, 4-H Club (Assistant Professor).  
B.S. (1944), Miami (Ohio); B.S. (1950), George Washington. At Oregon State since 1950. On leave August 1, 1956, to June 15, 1957.
- IVAN F RICHARDS, M.A., Assistant Dean of Men (Assistant Professor).  
A.A. (1951), Boston; A.B. (1954), Antioch College; M.A. (1956), Washington State. At Oregon State since 1956.
- WAYNE ELLIOTT RICHARDS, B.A., Captain, Assistant Professor of Naval Science, Marine Corps Instructor.  
B.A. (1946), California. At Oregon State since 1955.
- GEORGE ARTHUR RICHARDSON, Ph.D., Professor of Dairying and Chemistry; Dairy Chemist, Agricultural Experiment Station.  
B.Sc. (1920), Toronto; M.S. (1925), Ph.D. (1927), Minnesota. At Oregon State since 1947.
- RICHARD LEVOYLE RICHARDSON, B.S., Associate Professor of General Engineering.  
B.S. (1940), Oregon State. At Oregon State since 1946.
- LOUIS EARL RICHTER, M.A., Assistant Professor of Modern Languages.  
B.A. (1940), Minnesota; M.A. (1947), Oregon. At Oregon State since 1953.
- JOHN PAUL RILEY, B.A.Sc., Instructor in Agricultural Engineering; Research Assistant, Agricultural Experiment Station.  
B.A.Sc. (1950), British Columbia; Irrigation Engineer (1953), Utah State. At Oregon State since 1955.
- NANCY WATLINGTON RILEY, B.S., Lane County Extension Agent, Home Economics (Instructor).  
B.S. (1951), Kentucky. At Oregon State since 1955.

- ANTHOL WAYNE RINEY, B.S., Marion County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1947), Oregon State. At Oregon State since 1947. On leave.
- PAUL OSBORN RITCHER, Ph.D., Professor of Entomology, Chairman of Department; Entomologist in Charge, Agricultural Experiment Station.  
A.B. (1931), A.M. (1932), Illinois; Ph.D. (1935), Wisconsin. At Oregon State since 1952.
- ELIZABETH PROPHET RITCHIE, A.B., B.L.S., Catalog Librarian Emeritus (Assistant Professor).  
A.B. (1900), Cotner College; B.L.S. (1909), Illinois. At Oregon State since 1920.
- ALFRED NATHAN ROBERTS, Ph.D., Associate Professor of Horticulture; Associate Horticulturist, Agricultural Experiment Station.  
B.S. (1939), M.S. (1941), Oregon State; Ph.D. (1953), Michigan State. At Oregon State since 1940.
- KIM ORVAL ROBERTS, B.S., Polk County Extension Agent (Assistant Professor).  
B.S. (1942), Montana State. At Oregon State since 1954.
- ROBERT MILES ROBERTS, B.A., Instructor in Radio Education, KOAC, General Extension Division.  
B.A. (1950), Oregon. At Oregon State since 1953.
- THOMAS EDWARD ROBERTS, M.M., Assistant Professor of Music.  
B.A. (1942), Iowa Wesleyan; M.M. (1948), Chicago Musical College. At Oregon State since 1948.
- WARREN WAYNE ROBERTS, B.S., Yamhill County Extension Agent (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State 1950-52, and since 1954.
- GEORGE MORRIS ROBERTSON, M.S., Business Manager (Associate Professor).  
B.S. (1941), Oregon State; M.S. (1942), New York. At Oregon State since 1946.
- WILLIAM BARR ROBERTSON, B.S., Athletic Trainer (Instructor), Intercollegiate Athletics.  
B.S. (1948), Oregon State. At Oregon State since 1946.
- DAN D ROBINSON, M.F., Professor of Forest Management.  
B.S.F. (1940), Oregon State; M.F. (1942), Syracuse. At Oregon State since 1944.
- MARY ROWLAND ROBINSON, M.A., Assistant Dean of Women (Instructor).  
A.B. (1949), Duke; M.A. (1957), Columbia. At Oregon State since 1956.
- REGINALD HEBER ROBINSON, M.S., Professor Emeritus of Agricultural Chemistry.  
A.B. (1909), Pacific; M.S. (1912), California. At Oregon State since 1911.
- ASA AUSTIN ROBLEY, B.S., Associate Professor of Industrial Arts.  
B.S. (1939), Oregon State. At Oregon State 1938-42, and since 1947. On sabbatical leave 1956-57.
- JEFFERSON BELTON RODGERS, A.E., Professor of Agricultural Engineering, Head of Department; Agricultural Engineer in Charge, Agricultural Experiment Station.  
B.S. (1929), M.S. (1935), A.E. (1939), Idaho. At Oregon State since 1946.
- HAROLD RICHARD ROE, B.Arch., Lieutenant (JG), Assistant Professor of Naval Science.  
B.Arch. (1953), Ohio State. At Oregon State since 1955.
- CHARLES RAYMOND ROHDE, Ph.D., Associate Agronomist (Associate Professor), Pendleton Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1947), Montana State; Ph.D. (1953), Minnesota. At Oregon State since 1952.



- KERMIT JULIUS ROHDE, Ph.D., Assistant Professor of Psychology.  
B.S. (1943), Iowa State; M.A. (1949), Nebraska; Ph.D. (1951), Northwestern. At Oregon State since 1956.
- ROBERT G ROSENSTIEL, Ph.D., Associate Entomologist (Associate Professor), Agricultural Experiment Station.  
B.S. (1937), M.S. (1939), Oregon State; Ph.D. (1950), California. At Oregon State since 1946.
- CHARLES ROBERT ROSS, M.S.F., Extension Specialist in Farm Forestry (Associate Professor).  
B.S.F. (1931), Georgia; M.S.F. (1932), Washington. At Oregon State since 1946.
- JACKSON ROSS, B.S., Extension Farm Crops Specialist (Assistant Professor).  
B.S. (1951), Oregon State. At Oregon State since 1951.
- LEWIS FRANKLIN ROTH, Ph.D., Associate Professor of Botany.  
B.A. (1936), Miami (Ohio); Ph.D. (1940), Wisconsin. At Oregon State since 1940.
- MARY ROUTH, M.A., Extension Clothing and Textile Specialist (Associate Professor).  
B.S. (1940), Texas State for Women; M.A. (1947), Columbia. At Oregon State since 1955.
- HAROLD ARMOND ROWLEY, B.S., Chief Accountant, Oregon State System of Higher Education (Assistant Professor).  
B.S. (1925), Oregon State. At Oregon State since 1938.
- DORRIS MARY ROY, B.S., Baker County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1934), Oregon State. At Oregon State since 1952.
- DOUGLAS KENNETH ROYAL, Chief Quartermaster (SS), USN, Instructor in Naval Science.  
At Oregon State since 1956.
- ARLENE NORMA RUDASH, M.L.S., Assistant Reference Librarian (Instructor), Library.  
A.B. (1955), California (Los Angeles); M.L.S. (1956), California (Berkeley). At Oregon State since 1956.
- ORIS CLARK RUDD, B.S., Lake County Extension Agent (Assistant Professor).  
B.S. (1951), Utah State. At Oregon State since 1955.
- JULIUS ALEXANDER RUDINSKY, Ph.D., Associate Professor of Entomology; Associate Forest Entomologist, Agricultural and Forest Experiment Stations.  
Diplom Engineer in Forestry (1944), Slovak University in Bratislava; Absolutorium in Economics (1949), Göttingen; Ph.D. (1953), Ohio State. At Oregon State since 1955.
- CARL JACK RUNYAN, B.S., Instructor in Industrial Engineering and Industrial Arts.  
B.S. (1956), Western Michigan College. At Oregon State since 1956.
- DAVID WILBERT RUSSELL, Gunner's Mate First Class, USN, Instructor in Naval Science.  
At Oregon State since 1956.
- ROBERT HARVEY RUTH, M.F., Research Forester (Assistant Professor), U. S. Forest Service.  
B.S. (1943), M.F. (1950), Oregon State. At Oregon State since 1954.
- PAUL MELTON RUTLAND, Instructor in Animal Husbandry (Horsemanship).  
At Oregon State since 1955.
- CHARLES VLADIS RUZEK, M.S., Professor Emeritus of Soils.  
B.S.A. (1909), M.S. (1929), Wisconsin. At Oregon State since 1914.

- AZALEA LINFIELD SAGER, M.A., State Leader Home Economics Extension (Retired), 1936-52.  
B.S. (1919), Montana State; M.A. (1921), Columbia. At Oregon State since 1932.
- RALPH WILLIAM SALISBURY, B.S., Extension Publications Specialist (Associate Professor).  
B.S. (1949), Kansas State. At Oregon State since 1949.
- CARL WALTER SALSER, Ed.M., Professor Emeritus of Education.  
B.A. (1911), Kansas State Teachers (Emporia); Ed.M. (1926), Harvard. At Oregon State since 1929. Assistant Dean of the School of Education, 1929-47.
- CLIFFORD ELROY SAMUELS, M.S., Assistant Professor of Food Technology; Assistant Food Technologist, Agricultural Experiment Station.  
B.S. (1941), California; M.S. (1954), Michigan State. At Oregon State since 1947.
- ROBERT MARTIN SAMUELS, B.S., In Charge Pulp and Paper (Associate Professor), Oregon Forest Products Laboratory.  
B.S., Ch.E. (1950), Washington. At Oregon State since 1955.
- GARY HERMAN SANDER, B.S., Extension Forest Products Marketing Specialist (Instructor).  
B.S. (1951), Missouri. At Oregon State since 1955.
- ERNEST NELSON SANDGREN, M.F.A., Assistant Professor of Art.  
B.A. (1943), M.F.A. (1948), Oregon. At Oregon State since 1948.
- HARRY RUDOLPH SANDQUIST, B.S., Malheur County Extension Agent (Professor).  
B.S. (1938), Oregon State. At Oregon State since 1945.
- LOIS ANN SATHER, B.S., Assistant Food Technologist (Assistant Professor), Agricultural Experiment Station.  
B.S. (1945), Oregon State. At Oregon State 1945-48, and since 1952.
- ROY BLY SAUNDERS, Ph.D., Associate Professor of Mathematics.  
A.B. (1933), Whitman; M.A. (1940), Ph.D. (1946), Minnesota. At Oregon State since 1946.
- WILLIAM ARTHUR SAWYER, B.S., Superintendent (Professor), Squaw Butte-Harney Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1931), Oregon State. At Oregon State since 1934.
- MURLE SCALES, M.S., State Extension Agent (Associate Professor).  
B.S. (1932), Trinity (Texas); M.S. (1947), Iowa State. At Oregon State since 1947.
- HENRY DELBERT SCHALOCK, Ph.D., Assistant Professor of Family Life.  
B.S. (1951), Whitworth; M.A. (1953), Ph.D. (1956), Nebraska. At Oregon State since 1956.
- LARRY SCHECTER, Ph.D., Assistant Professor of Physics.  
A.B. (1948), M.A. (1951), Ph.D. (1953), California. At Oregon State since 1955.
- JEAN WILLARD SCHEEL, M.A., Assistant Director, Federal Cooperative Extension Service (Professor).  
B.S. (1934), Kansas State; M.A. (1954), Chicago. At Oregon State since 1946.
- EMERSON WAYNE SCHLOTZHAUER, Captain, Associate Professor of Air Science.  
At Oregon State since 1956.
- JOHN HENRY SCHMID, B.S., Deschutes County Extension Agent, 4-H Club (Instructor).  
B.S. (1950), Oregon State. At Oregon State since 1953.
- JOHN OTTO SCHNAUTZ, V.M.D., M.S., Professor of Veterinary Medicine; Veterinarian, Agricultural Experiment Station.  
A.B. (1937), George Washington; V.M.D. (1941), Pennsylvania; M.S. (1945), Oregon State. At Oregon State since 1942. On leave January 1, 1957 to January 1, 1959.

- LEO FRANCIS SCHNEIDER, B.S., Game Biologist (Assistant Professor), Oregon State Game Commission.  
B.S. (1941), Oregon State. At Oregon State since 1948.
- GEORGE RUDOLPH SCHNEITER, M.S., Special County Extension Agent (Assistant Professor).  
B.S. (1932), M.S. (1933), Idaho. At Oregon State since 1955.
- WILLIAM ALFRED SCHOENFELD, M.B.A., Professor Emeritus of Agriculture.  
B.S. (1914), Wisconsin; M.B.A. (1922), Harvard. At Oregon State since 1931. Dean and Director of Agriculture, 1931-50.
- MIRIAM GROSSER SCHOLL, Ed.D., Dean, School of Home Economics; Professor of Home Economics.  
B.Sc. (1931), Washington; M.A. (1939), Ed.D. (1954), Columbia. At Oregon State since 1954.
- HARRY AUGUST SCHOTH, M.S., Research Agronomist (Professor), U. S. Department of Agriculture.  
B.S. (1914), M.S. (1917), Oregon State. At Oregon State since 1914.
- ELVER AUGUST SCHROEDER, Ph.D., Assistant Professor of English.  
A.B. (1934), Elmhurst College; M.A. (1937), Illinois; Ph.D. (1950), Michigan. At Oregon State since 1946.
- JANE FOSTER SCHROEDER, B.S., Wasco County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1949), Kansas State. At Oregon State since 1952.
- WALTER GREIFF SCHROEDER, B.S., Coos Bay County Extension Agent (Assistant Professor).  
B.S. (1949), Oregon State. At Oregon State since 1949. On sabbatical leave 1956-57.
- JOHN ROCKWELL SCHUBERT, Ph.D., Research Assistant (Instructor) Agricultural Chemistry, Agricultural Experiment Station.  
B.S. (1948), Pennsylvania State; M.S. (1951), Ph.D. (1956), Oregon State. At Oregon State since 1951.
- HAROLD LESTER SCHUDEL, Ph.D., Assistant Professor of Farm Crops; Assistant Agronomist, Agricultural Experiment Station.  
B.S. (1940), M.S. (1941), Nebraska; Ph.D. (1953), Oregon State. At Oregon State since 1946.
- JOSEPH SCHULEIN, B.S., Associate Professor of Chemical Engineering.  
B.S. (1940), Wisconsin. At Oregon State since 1942.
- HAROLD WILLIAM SCHULTZ, Ph.D., Professor of Food Technology, Head of Department; Food Technologist in Charge, Agricultural Experiment Station.  
B.A. (1933), Colorado College; M.S. (1935), Ph.D. (1937), Iowa. At Oregon State since 1953.
- LEO ANTON SCIUCHETTI, Ph.D., Associate Professor of Pharmacy.  
B.S. (1940), Idaho State; M.S. (1942), Washington State; Ph.D. (1957), Washington. At Oregon State since 1946.
- ALLEN BREWSTER SCOTT, Ph.D., Professor of Chemistry.  
B.S. (1937), Oregon State; Ph.D. (1941), Washington. At Oregon State since 1941.
- HERMAN AUSTIN SCULLEN, Ph.D., Professor Emeritus of Entomology.  
B.A. (1910), M.A. (1927), Oregon; Ph.D. (1934), Iowa State. At Oregon State since 1920.
- GRACE MARY SCULLY, Ed.D., Assistant Professor of Physical Education for Women.  
B.S. (1942), M.S. (1946), Oregon; Ed.D. (1956), Columbia. At Oregon State since 1945.
- STUART BRUCE SEATON, M.S., Associate Professor of Business Administration.  
B.S. (1933), Central State (Oklahoma); M.S. (1941), Oklahoma A and M. At Oregon State since 1950.

- BETTY JANE SEDGWICK, B.S., State Extension Agent (Associate Professor).  
B.S. (1940), South Dakota State. At Oregon State since 1955.
- EVA MARIE SEEN, Ed.D., Professor of Physical Education for Women; Head of Department.  
B.S. (1922), Knox College; M.A. (1926), Wisconsin; Ed.D. (1937), New York. At Oregon State since 1935.
- DELORIS SELL, Harney County Extension Agent, Home Economics (Instructor).  
At Oregon State since 1955.
- DALE SEVERTSON, A.B., Captain, Associate Professor of Air Science.  
A.B. (1949), Gettysburg. At Oregon State since 1954.
- MARY LYDIA SEYMOUR, M.A., Instructor in Physical Education.  
B.A. (1946), New York State (Albany); M.A. (1951), Syracuse. At Oregon State since 1955.
- EDFRED LOREN SHANNON, Ph.D., Portland City Extension Agent, 4-H Club (Associate Professor).  
B.S. (1922), M.S. (1932), Oklahoma A and M; Ph.D. (1941), Cornell. At Oregon State since 1945.
- FRANCIS HARDIN SHAW, M.A., Assistant Professor of History.  
B.A. (1948), Reed; M.A. (1951), California; M.A. (1952), Harvard. At Oregon State since 1955.
- JAMES NIVEN SHAW, B.S., D.V.M., Professor of Veterinary Medicine; Veterinarian, Agricultural Experiment Station.  
B.S. (1915), Oregon State; B.S., D.V.M. (1917), Washington State. At Oregon State 1919-21, and since 1926.
- MARVIN NOBEL SHEARER, B.S., Extension Irrigation Specialist (Associate Professor).  
B.S. (1948), Oregon State. At Oregon State since 1950.
- MILTON CONWELL SHEELY, B.S., Professor of Industrial Engineering and Industrial Arts.  
B.S. (1939), Oregon State. At Oregon State since 1939.
- HELEN LAW SHEPHERD, B.A., Sackett Hall Residence Counselor (Instructor).  
B.A. (1924), California. At Oregon State since 1954.
- DOROTHY MAIERHOFER SHERRILL, B.S., Extension Consumer Marketing Specialist (Assistant Professor).  
B.S. (1943), Texas. At Oregon State since 1954.
- FRED MERLE SHIDELER, M.S., Professor of Journalism, Head of Department; Director of Information.  
B.S. (1927), Kansas State; M.S. (1941), Oregon State. At Oregon State since 1929. On leave fall term, 1956-57.
- JEAN AGATHE SHIPMAN, B.S., Coos County Extension Agent, Home Economics (Instructor).  
B.S. (1956), Oregon State. At Oregon State since 1956.
- DELBERT WALLACE SHIRLEY, JR., B.S., Assistant Professor of Electrical Engineering.  
B.S. (1929), Oregon State. At Oregon State since 1947.
- ROY HOPKINS SHOEMAKER, Ph.D., Assistant Professor of Civil Engineering.  
A.B. (1947), Whitman College; M.S. (1951), Ph.D. (1956), Oregon State. At Oregon State 1949-50, 1951-53, and since 1954.
- STEPHENS TE-FEN SHOU, M.A., Head Circulation Librarian (Assistant Professor), Library.  
B.A. (1946), Yenching University (China); M.A. (1950), B.A. in Librarianship (1952), Washington. At Oregon State since 1952.

- THEODORE HENRY SIDOR, B.S.**, Union County Extension Agent (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State since 1952.
- ROY RAGNER SILEN, M.S.F.**, Forest Geneticist (Assistant Professor), U. S. Forest Service.  
B.S. (1943), Oregon State; M.S.F. (1948), Yale. At Oregon State since 1954.
- CLARA LOUISE SIMERVILLE, Ed.D.**, Adviser to Foreign Students (Assistant Professor).  
A.B. (1928), Willamette; M.A. (1930), Oregon; Ed.D. (1953), Oregon State. At Oregon State 1950-51 and since 1955.
- SAMUEL DOUGLAS SIMPSON, B.S.**, Assistant Professor of General Engineering.  
B.S. (1925), U.S. Naval Academy. At Oregon State since 1956.
- HERBERT REEVES SINNARD, M.S., R.A.**, Professor of Architecture and Agricultural Engineering; Head of Department of Architecture; Agricultural Engineer (Farm Structures), Agricultural Experiment Station.  
B.S. (1927), M.S. (1929), Iowa State. At Oregon State 1929-32, and since 1934.
- RUSSELL OTTO SINNHUBER, M.S.**, Associate Biochemist (Associate Professor), Agricultural Experiment Station; at Seafoods Laboratory, Astoria.  
B.S. (1939), Michigan State; M.S. (1941), Oregon State. At Oregon State since 1939.
- HARRIET ELEANOR SISSON, M.S.**, Assistant Professor of Pharmacy.  
B.S. (1937), M.S. (1939), Minnesota. At Oregon State since 1946.
- WILLIAM ALLEN SISTRUNK, M.S.**, Research Assistant (Instructor) in Food Technology, Agricultural Experiment Station.  
B.S. (1947), Southwestern Louisiana Institute; M.S. (1949), Oregon State. At Oregon State since 1956.
- DONALD PAUL SITES, M.S.**, Associate Professor of Music.  
B.A. (1939), Gustavus Adolphus; M.S. (Mus.Ed.) (1948), Idaho; M.A. (1954), Columbia. At Oregon State since 1947.
- GORDON RUSSELL SITTON, Ph.D.**, Assistant Professor of Agricultural Economics; Assistant Agricultural Economist, Agricultural Experiment Station.  
B.S. (1940), Oregon State; Ph.D. (1954), Stanford. At Oregon State since 1955.
- FRANCIS ASBURY SKINNER, B.S.**, Klamath County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1941), Oklahoma A and M. At Oregon State since 1946.
- RICHARD CHARLES SKOW, B.S.**, Captain, Associate Professor of Air Science.  
B.S. (1950), Southern Oregon. At Oregon State since 1955.
- WENDELL HARTMAN SLABAUGH, Ph.D.**, Associate Professor of Chemistry.  
B.A. (1936), North Central; M.S. (1938), North Dakota State; Ph.D. (1950), Washington State. At Oregon State since 1953.
- LOUIS SLEGEL, Ph.D.**, Professor of Mechanical Engineering; Chairman of Department.  
B.S. (1931), M.S. (1932), Ph.D. (1945), Purdue. At Oregon State since 1945.
- JOHN WILBER SLOSSER, B.S.**, Agricultural Engineer (Professor), Pendleton Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1926), Oklahoma A and M. At Oregon State since 1955.
- WILSON FOREST SLOVER, Master Sergeant**, Instructor in Military Science and Tactics.  
At Oregon State since 1953.
- BARNARD ELLIOT SMITH, M.S.**, Assistant Professor of Industrial Engineering.  
B.S. (1949), M.S. (1950), Minnesota. At Oregon State since 1954.
- CAIRNS KING SMITH, Ph.D.**, Professor of History.  
B.A. (1921), Saskatchewan; M.A. (1930), Minnesota; Ph.D. (1936), Chicago. At Oregon State since 1945.

- CHARLES WESLEY SMITH, B.S.**, Assistant Director, Federal Cooperative Extension Service (Professor).  
B.S. (1921), Washington State. At Oregon State since 1927.
- CLIFFORD LOVEJOY SMITH, M.S.**, State Extension Agent (Professor).  
B.S. (1929), Oregon State; M.S. (1930), Kansas State. At Oregon State 1931-34, and since 1941. On sabbatical leave 1956-57.
- DEAN HARLEY SMITH, D.V.M.**, Research Assistant (Instructor) Veterinary Medicine.  
B.S. (1944), D.V.M. (1949), Washington State. At Oregon State since 1956.
- EDWARD DOYLE SMITH, M.A.**, Assistant Professor of English.  
B.S.S. (1940), Oregon State; M.A. (1951), Oregon. At Oregon State 1946, and since 1947.
- FRANK HERSCHEL SMITH, Ph.D.**, Professor of Botany.  
B.S. (1929), Arkansas; M.S. (1930), Washington State; Ph.D. (1932), Wisconsin. At Oregon State since 1936.
- HOWARD GEORGE SMITH, B.S.**, Tillamook County Extension Agent (Associate Professor).  
B.S. (1935), Oregon State. At Oregon State since 1935.
- KATHRYN VENETA HASKIN SMITH, Ed.M.**, Director of Teacher Placement (Assistant Professor).  
B.S. (1949), Oregon; Ed.M. (1952), Oregon State. At Oregon State 1951-52, and since 1955.
- LAURA BELLE SMITH, M.A.**, Assistant Professor of Clothing, Textiles, and Related Arts.  
B.A. (1933), M.A. (1934), Ohio State. At Oregon State 1946-54, and since 1956.
- MAHLON ELWOOD SMITH, Ph.D.**, Professor Emeritus of English.  
A.B. (1906), Syracuse; M.A. (1909), Ph.D. (1912), Harvard. At Oregon State since 1919. Dean of Lower Division and Service Departments 1932-49.
- ROBERT LESTER SMITH, B.S.**, Clackamas County Extension Agent (Assistant Professor).  
B.S. (1949), Oklahoma A and M. At Oregon State since 1956.
- ROBERT WAYNE SMITH, Ph.D.**, Associate Professor of History.  
B.A. (1924), Kansas; M.A. (1932), Idaho; Ph.D. (1937), California. At Oregon State since 1943.
- WESLEY WARREN SMITH, M.E.**, Associate Professor of Mechanical Engineering.  
B.Sc. (1934), M.E. (1947), Montana State. At Oregon State 1947-48, and since 1956.
- WILLIAM C SMITH, B.S.**, Farm Program Director, KOAC (Assistant Professor).  
B.S. (1942), Nebraska. At Oregon State since 1951.
- FORREST A SNEVA, B.S.**, Range Conservationist (Instructor), Squaw Butte-Harney Branch Experiment Station, U. S. Department of Agriculture.  
B.S. (1952), Utah State. At Oregon State since 1952.
- JAMES DODD SNOODGRASS, M.W.T.**, Associate Chief, Physical Research and Development (Professor), Oregon Forest Products Laboratory.  
B.S. (W.T.) (1943), M.W.T. (1951), Michigan. At Oregon State since 1946.
- KEITH NEWMAN SODERLUND, B.S.**, Assistant Professor of Industrial Engineering and Industrial Arts.  
B.S. (1948), Oregon State. At Oregon State since 1955. On leave 1956-57.
- INGVALD BEN SOLBERG, B.L.A.**, Associate Professor of Landscape Architecture.  
B.L.A. (1924), Cornell. At Oregon State since 1947.
- RAYMOND WALTER SOMMERFELDT, M.S.**, Instructor in Physics.  
B.S. (1951), Oregon; M.S. (1954), Oregon State. At Oregon State since 1956.

- DAVID GELVIN SPENCER, Ph.D., Assistant Professor of English.  
A.B. (1948), M.A. (1949), Ph.D. (1952), California. At Oregon State since 1952.
- JEFFRY BURRESS SPENCER, A.B., Instructor in English.  
A.B. (1948), California (Berkeley). At Oregon State fall terms 1955-56 and 1956-57.
- JOHN FREMONT SPROWLS, B.S., Multnomah County Extension Agent (Assistant Professor).  
B.S. (1942), Oklahoma A and M. At Oregon State since 1952.
- ROGER GARRETT SPROWLS, LL.B., Instructor in Dairying; Research Assistant, Agricultural Experiment Station.  
B.A. (1938), LL.B. (1942), Pittsburgh; B.S. (1952), M.S. (1956), Oregon State. At Oregon State since 1952.
- MARILYN GRACE STAAEL, B.S., Polk County Extension Agent, Home Economics (Instructor).  
B.S. (1953), Oregon State. At Oregon State since 1956.
- ROBERT DELMER STALLEY, Ph.D., Assistant Professor of Mathematics.  
B.S. (1946), M.A. (1948), Oregon State; Ph.D. (1953), Oregon. At Oregon State since 1956.
- CECIL RICHARD STANTON, B.S., Agent (Instructor), U. S. Department of Agriculture.  
B.S. (1952), Oregon State. At Oregon State since 1956.
- GEORGE CLAYTON STAPLETON, B.S., Assistant Football Coach (Assistant Professor).  
B.S. (1948), Tennessee. At Oregon State since 1955.
- ROY WILFRED STEIN, M.S., Associate Professor of Dairying; Superintendent, Dairy Products Laboratory; Associate Dairy Technologist, Agricultural Experiment Station.  
B.S. (1937), M.S. (1942), Oregon State. At Oregon State since 1952.
- WILLIAM P STEPHEN, Ph.D., Assistant Professor of Entomology; Assistant Entomologist, Agricultural Experiment Station.  
B.S.A. (1948), Manitoba; Ph.D. (1952), Kansas. At Oregon State since 1953.
- LULA MARY STEPHENSON, Curator, Horner Museum of the Oregon Country (Instructor).  
At Oregon State since 1941.
- ROSCOE ELMO STEPHENSON, Ph.D., Professor Emeritus of Soils.  
B.S. (1915), Purdue; M.S. (1917), Illinois; Ph.D. (1920), Iowa State. At Oregon State since 1923.
- ROBERT HOWARD STERLING, B.S., Special County Extension Agent (Assistant Professor).  
B.S. (1935), Oregon State. At Oregon State 1940-42, and since 1956.
- ROBERT HUGH STEVELY, B.S., Columbia County Extension Agent, 4-H Club (Instructor).  
B.S. (1941), Cornell. At Oregon State since 1954.
- EDWARD ALMERON STEVENS, LL.B., Associate Professor Emeritus of Physical Education.  
LL.B. (1909), Cornell. At Oregon State since 1931.
- ALBERT NEWTON STEWARD, Ph.D., Associate Professor of Botany; Curator of Herbarium; Associate Botanist, Agricultural Experiment Station.  
B.S. (1921), Oregon State; A.M. (1927), Ph.D. (1930), Harvard. At Oregon State since 1951.
- ALVIN ERNEST STEWART, M.S., Captain, Assistant Professor of Military Science and Tactics.  
B.S. (1942), Mississippi State; M.S. (1948), Texas A and M. At Oregon State since 1956.

- H DANIEL STILLWELL, M.F., Research Assistant (Instructor), Oregon Forest Products Laboratory.  
B.S. (1952), M.F. (1954), Duke. At Oregon State since 1954.
- HENRY HERMAN STIPPLER, M.S., Senior Agricultural Economist (Professor), U. S. Department of Agriculture.  
Diplom Landwirt (1928), Agricultural College (Berlin); M.S. (1936), California. At Oregon State since 1954.
- JOY STOCKMAN, B.S., Research Assistant (Instructor), Home Economics, Agricultural Experiment Station.  
B.S. (1953), Southern Methodist. At Oregon State since 1955.
- LOUIS NELSON STONE, B.S., Associate Professor of Electrical Engineering.  
B.S. (1939), Oregon State. At Oregon State since 1947.
- SOLON ALLEN STONE, B.S., Assistant Professor of Electrical Engineering.  
B.S. (1952), Oregon State. At Oregon State since 1956.
- WILLIAM MATTHESON STONE, Ph.D., Associate Professor of Mathematics.  
B.A. (1938), Willamette; M.A. (1940), Oregon State; Ph.D. (1947), Iowa State. At Oregon State since 1947.
- DONALD JOHN STOOPS, B.A., Instructor in Industrial Engineering and Industrial Arts.  
B.A. (1943), Western Washington College of Education. At Oregon State since 1956.
- ROBERT MACLEOD STORM, Ph.D., Associate Professor of Zoology.  
B.E. (1939), Northern Illinois State Teachers; M.S. (1941), Ph.D. (1948), Oregon State. At Oregon State since 1948.
- CLARA A STORVICK, Ph.D., Professor of Foods and Nutrition; Nutritionist, Chairman of Home Economics Research, Agricultural Experiment Station.  
A.B. (1929), St. Olaf College; M.S. (1933), Iowa State; Ph.D. (1941), Cornell. At Oregon State since 1945.
- JOE VICTOR STOVER, B.S., Instructor in General Engineering.  
B.S. (1952), Oregon State. At Oregon State since 1953. On leave 1956-57.
- ANNE WRIGHT STRACHAN, B.S., Clatsop County Extension Agent, Home Economics (Instructor).  
B.S. (1953), Oregon State. At Oregon State since 1956.
- GERTRUDE STRICKLAND, B.S., Professor Emeritus of Clothing, Textiles, and Related Arts.  
B.S. (1935), Texas State College for Women. At Oregon State since 1920.
- LESTER BRADEN STRICKLER, D.B.A., Assistant Professor of Business Administration.  
B.A. (1948), M.A. (1949), Pennsylvania State; D.B.A. (1954), Indiana. At Oregon State since 1954.
- ROBERT ELWOOD STRIPPEL, B.D., Instructor in Religion, Executive Secretary YMCA-YWCA Round Table.  
A.B. (1949), Bowling Green; B.D. (1952), Yale. At Oregon State since 1954.
- DUANE HAMILTON STUBBS, B.A., First Lieutenant, Quartermaster Corps, Assistant Professor of Military Science and Tactics.  
B.A. (1951), California (Los Angeles). At Oregon State since 1956.
- CAROLYN H STUDER, B.S., Portland City Extension Agent, 4-H Club (Instructor).  
B.S. (1951), Idaho. At Oregon State 1953-54. and since 1955.
- BERTHA WHILLOCK STUTZ, M.S., Associate Professor Emeritus of Secretarial Science.  
B.Ped. (1910), Missouri State Teachers; B.S. (1918), M.S. (1927), Oregon State. At Oregon State since 1918.
- MELVIN LAVERNE SUTHERLAND, M.S., Instructor in Chemistry.  
B.S. (1952), M.S. (1953), Oregon State. At Oregon State since 1956.



- DEAN G SWAN, M.S., Research Assistant (Instructor), Pendleton Branch Experiment Station.  
B.S. (1952), M.S. (1954), Wyoming. At Oregon State since 1955.
- GRANT ALEXANDER SWAN, M.S., Associate Professor of Physical Education.  
B.S. (1922), Oregon State; M.S. (1951), Washington. At Oregon State since 1926.
- JOHN MAX SWARTHOUT, Ph.D., Professor of Political Science; Chairman of Department.  
A.B. (1934), M.A. (1937), Ph.D. (1942), Southern California. At Oregon State since 1946.
- MARY SWARTHOUT, M.A., Instructor in Speech.  
A.B. (1933), M.A. (1939), Southern California. At Oregon State since 1956.
- BETTY JUNE SWEDBERG, B.S., Washington County Extension Agent (Assistant Professor).  
B.S. (1950), Iowa State. At Oregon State since 1955.
- KNUD GEORGE SWENSON, Ph.D., Associate Entomologist (Associate Professor), Agricultural Experiment Station.  
B.S. (1948), South Dakota State; Ph.D. (1951), California. At Oregon State since 1954.
- KLINE RUTHVEN SWYGARD, Ph.D., Professor of Political Science.  
B.A. (1935), Ph.D. (1950), Washington. At Oregon State since 1947. On leave 1956-57.
- GERTRUDE TANK, D.D.S., Associate Professor of Nutrition Research.  
D.D.S. (1916), Temple. At Oregon State since 1953.
- ESTHER ADELIA TASKERUD, M.A., State Extension Agent (Professor).  
B.S. (1933), South Dakota State; M.A. (1947), Columbia. At Oregon State since 1947.
- WILLIAM HARRIS TAUBENECK, Ph.D., Assistant Professor of Geology.  
B.S. (1949), M.S. (1950), Oregon State; Ph.D. (1955), Columbia. At Oregon State since 1951.
- LISA WAITE TAUBMAN, M.Ed., Instructor in Psychology.  
B.A. (1948), Washington; M.Ed. (1952), Mills College. At Oregon State since 1956.
- NORTON OSCAR TAYLOR, B.S., Umatilla County Extension Agent (Assistant Professor).  
B.S. (1942), Oregon State. At Oregon State 1946-48, and since 1949.
- WAYNE PENDLETON TAYSOM, M.A., Assistant Professor of Art.  
B.F.A. (1948), Utah; M.A. (1950), Columbia. At Oregon State since 1953.
- RAY HOLT TEAL, M.S., Extension Seed and Grain Marketing Specialist (Associate Professor).  
B.S. (1935), M.S. (1937), Illinois. At Oregon State since 1950.
- DOROTHY CAROL TEEL, B.A., Union County Extension Agent, Home Economics (Assistant Professor).  
B.A. (1953), Washington State. At Oregon State since 1953.
- HENRY ARNOLD TEN PAS, Ed.D., Associate Professor of Agricultural Education; Head of Department.  
B.S. (1940), Wisconsin; M.S. (1949), Oregon State; Ed.D. (1954), Washington State. At Oregon State since 1948.
- LEON C TERRIERE, Ph.D., Associate Agricultural Chemist and Associate Insect Toxicologist (Associate Professor), Agricultural Experiment Station.  
B.S. (1943), Idaho; Ph.D. (1950), Oregon State. At Oregon State since 1950.
- JOHN RALPH THIENES, B.S., Coos County Extension Agent (Assistant Professor).  
B.S. (1949), Oregon State. At Oregon State since 1952.
- MARTIN BERNHARDT THINGVOLD, B.S., Benton County Extension Agent (Instructor).  
B.S. (1953), Oregon State. At Oregon State since 1954.

- CHARLES EDWIN THOMAS, M.M.E., Professor Emeritus of Mechanics and Materials.  
M.E. (1913), M.M.E. (1931), Cornell. At Oregon State since 1918.
- JOHN F THOMAS, M.Ed., Assistant Football Coach (Instructor).  
B.S. (1953), M.Ed. (1956), Oregon State. At Oregon State since 1956.
- MARION DAWS THOMAS, B.S., Extension Agricultural Economist (Professor).  
B.S. (1937), Oregon State. At Oregon State 1937-45 and since 1947.
- OREN DALE THOMAS, Ph.D., Assistant Professor of Physical Education; Varsity Wrestling Coach.  
B.A. (1947), Cornell College; M.P.E. (1948), Purdue; Ph.D. (1956), Iowa. At Oregon State since 1956.
- BENJAMIN GARRISON THOMPSON, Ph.D., Professor Emeritus of Entomology.  
B.S. (1918), M.S. (1924), Oregon State; Ph.D. (1939), Washington. At Oregon State since 1924.
- BETTY LYND THOMPSON, M.A., Associate Professor of Physical Education for Women.  
A.B. (1923), Illinois Wesleyan; M.A. (1926), Wisconsin. At Oregon State since 1927.
- JOHN GRAY THOMPSON, B.S., Umatilla County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1948), Oregon State. At Oregon State since 1948.
- THOMAS WILLIAM THOMPSON, B.S., Sherman County Extension Agent (Assistant Professor).  
B.S. (1949), Oregon State. At Oregon State since 1949.
- GEORGE EARL THORNBURGH, M.S., Assistant Professor of Mechanical Engineering.  
B.S. (1944), Nebraska; M.S. (1950), Iowa State. At Oregon State since 1952.
- WALTER JOHN TOLMSOFF, B.S., Research Assistant (Instructor), Botany and Plant Pathology, Agricultural Experiment Station.  
B.S. (1956), Oregon State. At Oregon State since 1956.
- PALMER STANLEY TORVEND, M.S., Washington County Extension Agent (Professor).  
B.S. (1938), Oregon State; M.S. (1953), Columbia. At Oregon State since 1939.
- GEORGE GALLOWAY TOWN, M.S., Acting Instructor in Mathematics.  
B.S. (1952), M.S. (1953), Wisconsin. At Oregon State since 1956.
- LOUIS NAPOLEON TRAVER, General Superintendent of Physical Plant (Retired).  
At Oregon State 1918-22 and 1940-49.
- BESSIE GWYNETH TRESSLER, B.S. in L.S., Order Librarian (Associate Professor), Library.  
A.B. (1926), Emporia; B.S. in L.S. (1930), Illinois. At Oregon State since 1946.
- GEORGE LOCKWOOD TRIGG, Ph.D., Assistant Professor of Physics.  
A.B. (1947), A.M. (1950), Ph.D. (1951), Washington University. At Oregon State since 1954.
- ELEANOR TRINDLE, M.A., State Extension Agent, Home Economics (Associate Professor).  
B.S. (1937), Oregon State; M.A. (1955), Columbia. At Oregon State since 1945. Deceased December 20, 1956.
- RICHARD HENRY TROJAN, M.A., Assistant Professor of Art.  
B.A. (1948), Fresno State; M.A. (1953), Columbia. At Oregon State since 1956.
- DANIEL PEH-NIEN TSAO, Ph.D., Assistant Professor of Pharmacognosy.  
B.A. (1927), Central China; Ph.C. (1931), M.S. (1932), Ph.D. (1951), Washington. At Oregon State since 1952.

- DUANE EMERY TUCKER, M.A.**, Assistant Professor of Radio Education, KOAC. General Extension Division.  
A.B. (1947), Kansas State Teachers (Emporia); M.A. (1949), Wisconsin. At Oregon State since 1951.
- GRACE KATHRYN TUCKER, B.S.**, Instructor in Mathematics.  
B.S. (1953), Washington. At Oregon State since 1955.
- WILLIAM BENJAMIN TUCKER**, Jackson County Extension Agent (Professor).  
At Oregon State since 1921.
- RICHARD MARVIN TWENGE, B.S.**, Assistant Football Coach (Instructor).  
B.S. (1950), Oregon State. At Oregon State since 1954.
- ARTHUR RICHARD TYNES, M.S.**, Instructor in Physics.  
B.S. (1950), Montana State; M.S. (1953), Oregon State. At Oregon State since 1954.
- FLORENCE MARION VASEY, M.Sc.**, Instructor in Foods and Nutrition.  
B.Sc. (1949), Manitoba; M.Sc. (1951), McGill. At Oregon State since 1956.
- PAUL BARTHOLOMEW VALENTI, B.S.**, Coach of Freshman Basketball and Baseball (Instructor).  
B.S. (1947), Oregon State. At Oregon State since 1949.
- EDNA MARJORIE VAN HORN, Ph.D.**, Associate Professor of Home Administration.  
B.A. (1923), Colorado College; M.A. (1932), Ph.D. (1953), Columbia. At Oregon State 1939-40, 1942, and since 1944. On sabbatical leave, spring term 1956-57.
- LILLIAN SCHROEDER VAN LOAN, Ed.M.**, Instructor in Psychology.  
B.A. (1950), Oregon College of Education; Ed.M. (1951), Oregon State. At Oregon State 1950-52 and since 1953.
- ANTONE CORNELIS VAN VLIET, B.S.**, Instructor in Forest Products.  
B.S. (1952), Oregon State. At Oregon State since 1955.
- WILLIAM ROY VARNER, E.E., Ph.D.**, Professor of Physics.  
B.S. (1912), M.S. (1932), Ph.D. (1939), Oregon State; E.E. (1914), Westinghouse. At Oregon State 1929-32, and since 1934.
- HAROLD GOODHUE VATTER, Ph.D.**, Associate Professor of Economics.  
B.A. (1936), Wisconsin; M.A. (1938), Columbia; Ph.D. (1950), California. At Oregon State since 1947. On leave 1956-57.
- EDWARD KEMP VAUGHAN, Ph.D.**, Professor of Plant Pathology; Plant Pathologist, Agricultural Experiment Station.  
B.S. (1929), New Mexico State; M.S. (1932), Oregon State; Ph.D. (1942), Minnesota. At Oregon State since 1947.
- ERNEST VANCOURT VAUGHN, Ph.D.**, Professor Emeritus of History.  
B.L. (1900), M.A. (1904), Missouri; Ph.D. (1910), Pennsylvania. At Oregon State since 1924.
- LYMAN RAY VAWTER, D.V.M., M.S.**, Veterinarian in Charge (Professor), Veterinary Diagnostic Laboratory, Agricultural Experiment Station.  
D.V.M. (1918), Kansas State; M.S. (1931), Cornell. At Oregon State since 1951.
- HAROLD ROTH VINYARD, Ph.D.**, Associate Professor of Physics.  
B.S. (in E.E.) (1924), M.S. (1928), Oregon State; Ph.D. (1938), Pennsylvania State. At Oregon State since 1938. On sabbatical leave 1956-57.
- FRANK VON BORSTEL, JR., M.A.**, Douglas County Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1948), Oregon State; M.Agr.Sc. (1952), University of New Zealand. At Oregon State since 1948.
- CAROL CHRISTINA VON KROSIGK**, Douglas County Extension Agent, Home Economics (Instructor).  
At Oregon State since 1956.
- STANLEY ELLIOTT WADSWORTH, B.S.**, Associate Professor of Floriculture; Associate Floriculturist, Agricultural Experiment Station.  
B.S. (1935), Cornell. At Oregon State since 1946.

- DAVID GERBEN WAGNER, B.S., Research Assistant (Instructor) in Horticulture, Agricultural Experiment Station.  
B.S. (1956), Oregon State. At Oregon State since 1956.
- GEORGE FORDYCE WALDO, M.S., Horticulturist (Professor), U. S. Department of Agriculture.  
B.S. (1922), Oregon State; M.S. (1926), Michigan State. At Oregon State since 1932.
- RODNEY KING WALDRON, M.A., Administrative Assistant (Assistant Professor), Library.  
B.A. (1950), M.A. (1950), Denver. At Oregon State since 1954.
- MAUD MORSE WALKER, M.S., Extension Specialist in Group Development (Professor).  
B.S. (1927), M.S. (1931), Oregon State. At Oregon State 1935-38, and since 1956.
- ALICE LOCKWOOD INGALLS WALLACE, M.S., Instructor in Speech.  
B.S. (1932), Oregon State; M.S. (1938), Northwestern. At Oregon State since 1954.
- ROBERT BOEN WALLS, M.S., Professor of Music; Director of Music; Head of Department.  
B.E. (1932), Minnesota State Teachers (Moorhead); M.S. (1936), North Dakota. At Oregon State since 1947.
- DON COIN WALROD, B.S., Columbia County Extension Agent (Associate Professor).  
B.S. (1942), Colorado A and M. At Oregon State since 1948.
- AUSTIN FREDERICK WALTER, Ph.D., Associate Professor of Political Science; Foreign Student Counselor.  
B.A. (1940), Carleton; M.A. (1942), Fletcher School of Law and Diplomacy; Ph.D. (1954), Michigan. At Oregon State since 1950.
- JAMES WYATT WALTON, III, LL.B., Assistant Professor of Business Administration.  
A.B. (1947), LL.B. (1950), Columbia. At Oregon State since 1951. Winter term only, 1956-57.
- JESSE SEBURN WALTON, B.S., Professor of Chemical Engineering; Head of Department.  
B.S. (1928), Iowa. At Oregon State since 1945.
- CHIH HSING WANG, Ph.D., Associate Professor of Chemistry; Associate Professor (Chemistry), Science Research Institute.  
B.S. (1937), University of Shantung, China; M.S. (1947), Ph.D. (1950), Oregon State. At Oregon State since 1950.
- RUPERT ALRED WANLESS, B.S., Professor (Chairman) of General Engineering.  
B.S. (1923), Oregon State. At Oregon State 1929-32, and since 1935.
- DONALD WILMORE WARDEN, B.S., First Lieutenant, Associate Professor of Military Science and Tactics.  
B.S. (1952), Virginia Military Institute. At Oregon State since 1956.
- MARGARET CHRISTIAN WARE, M.S., Assistant Professor of Foods and Nutrition.  
B.S. (1941), M.S. (1944), Oregon State. At Oregon State since 1945. On sabbatical leave 1956-57.
- HARRIET JANET WARNER, A.B., Assistant Reference Librarian (Assistant Professor), Library.  
A.B. (1919), Certificate of Librarianship (1930), California. At Oregon State since 1930.
- CHARLES EDWARD WARREN, M.S., Assistant Professor of Fish and Game Management; Assistant Fisheries Biologist, Agricultural Experiment Station.  
B.S. (1949), M.S. (1951), Oregon State. At Oregon State since 1953.
- REX WARREN, M.S., Extension Farm Crops Specialist (Professor).  
B.S. (1931), Utah State; M.S. (1933), Oregon State. At Oregon State 1934-35, and since 1947.

- ROSALIE MUELLER WARRICK, M.Ed., State Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1950), Montana State; M.Ed. (1954), Maryland. At Oregon State since 1955.
- ERNEST WILLIAM WARRINGTON, M.A., D.D., Professor Emeritus of Philosophy and Religion.  
A.B. (1905), Delaware; M.A. (1907), Princeton; D.D. (1944), Lewis and Clark. At Oregon State 1921-26, and since 1928.
- JOSEPHINE WASSON, M.A., Assistant Professor of Art and Architecture.  
B.A. (1925), Washington State; M.A. (1933), Columbia. At Oregon State since 1943.
- LOUIS ADDISON WATERS, JR., M.A., Instructor in English.  
A.B. (1940), Harvard; M.A. (1946), Lehigh. At Oregon State since 1955.
- JOHN LOWE WATSON, B.A., C.P.A., Assistant Comptroller, Oregon State System of Higher Education (Associate Professor).  
B.A. (1939), Washington; C.P.A. (1939), Washington, (1952), Oregon. At Oregon State since 1947.
- ROBERT STUART WATSON, B.S., Assistant Football Coach (Instructor).  
B.S. (1951), California (Los Angeles). At Oregon State since 1954.
- JACK LLOYD WAUD, B.S., Extension Certification Specialist (Instructor).  
B.S. (1955), Oregon State. At Oregon State since 1955.
- KENNETH EDWIN WAUD, B.S., Crook County Extension Agent (Assistant Professor).  
B.S. (1950), Oregon State. At Oregon State since 1953.
- LEONARD JOSEPH WEBER, B.S., Assistant Professor of Electrical Engineering.  
B.S. (1952), Oregon State. At Oregon State since 1954.
- EMMA LOUISE WEBSTER, B.S., Multnomah County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1930), Washington State. At Oregon State since 1953.
- ALICE ANN WEIGANT, B.A., Acting Extension Recreation Specialist (Assistant Professor).  
B.A. (1929), Oregon. At Oregon State since 1956.
- ERMA MARION WEIR, M.S., Associate Professor of Physical Education for Women.  
B.E. (1936), Minnesota State Teachers (Bemidji); M.S. (1941), Washington. At Oregon State since 1945.
- EARL WILLIAM WELLS, M.A., J.D., Professor of Speech; Chairman of Department.  
A.B. (1921), Iowa; M.A. (1927), Wisconsin; J.D. (1928), Iowa. At Oregon State since 1921.
- VERA LUCILE WELLS, M.S., Instructor in Clothing, Textiles, and Related Arts; Head Counselor, School of Home Economics.  
B.S. (1948), M.S. (1953), Oregon State. At Oregon State since 1948.
- WILLIBALD WENIGER, Ph.D., Professor Emeritus of Physics.  
B.A. (1905), M.A. (1906), Ph.D. (1908), Wisconsin. At Oregon State 1908-14 and since 1920. Head of Department until 1949. Dean of the Graduate School 1946-49.
- HAROLD ELDON WERTH, B.S., Benton County Extension Agent (Assistant Professor).  
B.S. (1948), Oregon State. At Oregon State 1949-51, and since 1956.
- WILLIAM IRVIN WEST, M.F., Professor of Forest Products; Head of Department.  
B.S.F. (1939), M.F. (1941), Washington. At Oregon State since 1946.
- HAZEL KELSEY WESTCOTT, B.S., Administrative Assistant (Assistant Professor), President's Office.  
B.S. (1920), Oregon State. At Oregon State 1919-21, and since 1926.

- WARREN CYRIL WESTGARTH, M.S., Assistant Professor of Civil Engineering.  
B.S. (1949), M.S. (1954), Oregon State. At Oregon State since 1949.
- CAROLYN JUNE WESTRUP, B.S., Lane County Extension Agent, 4-H Club (Instructor).  
B.S. (1955), Kansas State. At Oregon State since 1956.
- PAUL HENRY WESWIG, Ph.D., Associate Biochemist (Associate Professor), Agricultural Experiment Station.  
B.A. (1935), St. Olaf College; M.S. (1939), Ph.D. (1941), Minnesota. At Oregon State since 1941.
- LEWIS EDGAR WHEELER, JR., B.B.A., Captain USAF, Associate Professor of Air Science.  
B.B.A. (1950), Baylor. At Oregon State since 1953.
- ROBERT RODERICK WHEELER, M.S., Research Assistant (Instructor) Animal Husbandry, Squaw Butte Experiment Station.  
B.S. (1952), Colorado A and M; M.S. (1955), Oregon State. At Oregon State since 1955.
- WILLIAM PERRY WHEELER, M.F., Assistant Professor of Forest Management; Personnel Director, School of Forestry.  
B.S. (1948), M.F. (1949), Minnesota. At Oregon State since 1949.
- HAROLD H WHITE, M.S., Superintendent, Agronomist (Professor), Southern Oregon Branch Experiment Station.  
B.S. (1920), M.S. (1937), Oregon State. At Oregon State since 1931.
- LONDON PAGE WHITELAW, B.S., Captain, Assistant Professor of Military Science and Tactics.  
B.S. (1950), Virginia. At Oregon State since 1956.
- CHARLES EDWARD WICKS, Ph.D., Assistant Professor of Chemical Engineering.  
B.S. (1950), Oregon State; M.S. (1952), Ph.D. (1954), Carnegie Institute of Technology. At Oregon State since 1954.
- ERNEST HERMAN WIEGAND, B.S.A., Professor Emeritus of Food Technology.  
B.S.A. (1914), Missouri. At Oregon State since 1919.
- MIRIAM AUGUSTA WIGGENHORN, M.A., Associate Professor of Family Life.  
B.A. (1931), Nebraska; M.A. (1936), Columbia. At Oregon State since 1946. On leave 1956-57.
- CURTIS J WILDER, M.S., Assistant Professor of Food Technology; Assistant Food Technologist, Agricultural Experiment Station.  
B.S. (1940), M.S. (1941), Montana State. At Oregon State since 1944.
- WILLIAM DONALD WILKINSON, Ph.D., Professor of Geology.  
B.A. (1923), Ph.D. (1932), Oregon. At Oregon State since 1932.
- EARL CLARK WILLEY, M.S., Professor of General Engineering.  
B.S. (1921), M.S. (1941), Oregon State. At Oregon State since 1921.
- ALTON GUSTAVIUS WILLIAMS, B.S., Lieutenant Colonel, Associate Professor of Military Science and Tactics.  
B.S. (1942), Virginia Military Institute. At Oregon State since 1953.
- GEORGE ALFRED WILLIAMS, A.M., Professor of Mathematics.  
A.B. (1918), Illinois; A.M. (1926), California. At Oregon State since 1920.
- JESSAMINE CHAPMAN WILLIAMS, M.A., Professor Emeritus of Foods and Nutrition.  
B.S. (1906), M.A. (1921), Columbia. At Oregon State since 1923.
- MAX BULLOCK WILLIAMS, Ph.D., Associate Professor of Chemistry.  
B.S. (1936), M.S. (1938), Utah; Ph.D. (1941), Cornell. At Oregon State since 1941.
- ROY CHRISTOPHER WILLIAMS, Master Sergeant, Instructor in Military Science and Tactics.  
At Oregon State since 1955.

- RUSSELL WILLARD WILLIAMSON, M.A., Assistant Professor of Industrial Arts.  
B.S. (1935), Oregon State; M.A. (1948), Minnesota. At Oregon State since 1946.
- STANLEY ELLSWORTH WILLIAMSON, Ed.D., Professor of Science Education;  
Chairman of Department.  
B.A. (1931), Nebraska Wesleyan; M.A. (1936), Columbia; Ed.D. (1956), Oregon. At Oregon State since 1946.
- MAUD MATHES WILSON, A.M., Professor Emeritus of Home Economics Research.  
B.S. (1913), Nebraska; A.M. (1931), Chicago. At Oregon State since 1925.
- NORMAN WILLIAM WILSON, M.A., Assistant Professor of English.  
A.B. (1930), Linfield; M.A. (1940), Oregon. At Oregon State since 1947.
- ROBERT CLAUDE WILSON, Ed.M., Assistant Professor of Industrial Arts.  
B.S. (1949), Ed.M. (1955), Oregon State. At Oregon State since 1949.
- ROBERT LEE WILSON, M.F., Assistant Professor of Forest Engineering.  
B.A. (1942), Iowa; M.F. (1947), Colorado A and M. At Oregon State since 1952.
- GUSTAV HANS WILSTER, Ph.D., Professor of Dairying; Dairy Technologist,  
Agricultural Experiment Station.  
B.S. (1920), M.S. (1921), Ph.D. (1928), Iowa State. At Oregon State since 1929.
- EDNA MAE WIMSATT, B.S., Malheur County Extension Agent, Home Economics (Assistant Professor).  
B.S. (1950), Drexel Institute of Technology. At Oregon State since 1951.
- CARLYN REO WINGER, M.A., Associate Professor of Speech.  
B.A. (1928), Washington State; M.A. (1932), Wisconsin. At Oregon State since 1938.
- FRED EVERETT WINGER, D.Ed., Associate Professor of Business Education and Secretarial Science.  
B.S. (1934), Nebraska; M.A. (1938), Iowa; D.Ed. (1951), Oregon. At Oregon State since 1947.
- DOROTHEA EULA WINTERMOTE, B.S., Linn County Extension Agent, Home Economics (Associate Professor).  
B.S. (1938), Nebraska. At Oregon State since 1948.
- EUGENE PHILIP WINTERS, B.S., Wheeler County Extension Agent (Instructor).  
B.S. (1950), Oregon State. At Oregon State since 1954.
- JOANE SOPHIA WOHLGENANT, M.Ed., Instructor in Home Economics Education.  
B.S. (1948), Montana State; M.Ed. (1956), Colorado A and M. At Oregon State since 1956.
- FLOYD BYRON WOLBERG, M.S., Associate Professor of Dairying; Associate Dairy Husbandman, Agricultural Experiment Station.  
B.S. (1928), M.S. (1932), Wisconsin. At Oregon State since 1945.
- JOHN WILLIAM WOLFE, M.S., Associate Professor of Agricultural Engineering; Associate Agricultural Engineer, Agricultural Experiment Station.  
B.S. (1939), South Dakota State; M.S. (1940), Idaho. At Oregon State since 1947. On leave until January 1, 1957.
- GREGORY BURTON WOOD, Ph.D., Professor of Agricultural Economics, Head of Department; Agricultural Economist in Charge, Agricultural Experiment Station.  
B.S. (1938), Oregon; M.S. (1940), Oregon State; Ph.D. (1945), Wisconsin. At Oregon State since 1951.
- JACK HENRY WOOD, B.S., Clatsop County Extension Agent (Assistant Professor).  
B.S. (1947), Washington State. At Oregon State since 1948.

- ETHAN LINDEN WOODS, B.S.**, Crook County Extension Agent (Associate Professor).  
B.S. (1934), Oregon State. At Oregon State since 1934.
- KENDELL GENE WOODWARD, B.S.**, Research Assistant (Instructor), Pendleton Branch Experiment Station.  
B.S. (1956), Utah State. At Oregon State since 1956.
- ROBERT A WORK, B.S.**, Senior Irrigation Engineer (Professor), Irrigation Water Forecasting, U. S. Department of Agriculture (Portland).  
B.S. (1927), California. At Oregon State since 1929.
- CLYTIE MAE WORKINGER**, Assistant Professor Emeritus of Education.  
At Oregon State since 1910.
- GRACE IRENE WORKMAN, B.S.**, Portland City Extension Agent, 4-H Club (Assistant Professor).  
B.S. (1936), Oregon State. At Oregon State since 1957.
- OLIVER JACKSON WORTHINGTON, Ph.D.**, Associate Professor of Food Technology; Associate Food Technologist, Agricultural Experiment Station.  
B.S. (1924), Rhode Island; M.S. (1926), Ph.D. (1936), Wisconsin. At Oregon State since 1946.
- LEROY CLINTON WRIGHT, B.S.**, Baker County Extension Agent (Associate Professor).  
B.S. (1929), Oregon State. At Oregon State since 1929.
- THOMAS DELBERT WRISTON**, Sergeant First Class, Instructor in Military Science and Tactics.  
At Oregon State since 1956.
- SHOW YONG WU, B.S.**, Research Assistant (Instructor), Science Research Institute.  
B.S. (1944), Great China University (Shanghai). At Oregon State since 1956.
- SZU HSIAO WU, Ph.D.**, Research Assistant (Instructor) Animal Husbandry, Agricultural Experiment Station.  
B.S. (1941), National Central (China); M.S. (1949), Ph.D. (1952), Oregon State. At Oregon State since 1952.
- ROSALIND WULZEN, Ph.D., Sc.D.**, Professor Emeritus of Zoology.  
B.S. (1904), M.S. (1910), Ph.D. (1914), California; Sc.D. (1943), Oregon. At Oregon State since 1933.
- PHYLLIS WATT WUSTENBERG, M.S.**, Consultant, Fur Farming (Instructor), Fish and Game Management, Agricultural Experiment Station.  
B.S. (1949), M.S. (1951), Oregon State. At Oregon State since 1951.
- HO-YA YANG, Ph.D.**, Associate Professor of Food Technology; Associate Food Technologist, Agricultural Experiment Station.  
B.S. (1936), Nanking; M.S. (1940), Ph.D. (1943), Oregon State. At Oregon State since 1943.
- CHARLES THEODORE YERIAN, Ph.D.**, Professor; Head of Departments of Secretarial Science and Business Education.  
B.S. (1932), Oregon State; M.S. (1936), Ph.D. (1938), Iowa. At Oregon State since 1937.
- †**RAY ARNOLD YODER, M.F.**, Associate Professor of Forest Management.  
B.S. (1941), Oregon State; M.F. (1942), Harvard. At Oregon State since 1949. On leave 1956-58.
- DELOSS PALMER YOUNG, B.S.**, Professor of Speech.  
B.S. (1926), Oregon State. At Oregon State since 1927.
- JAMES ORVILLE YOUNG, M.S.**, Instructor in Dairying; Research Assistant, Agricultural Experiment Station.  
B.S. (1949), M.S. (1951), Oregon State. At Oregon State since 1950. On leave 1956-57.

† On detached duty, Kasetsart University, Thailand; see page 85.



- MARY KATHERINE YOUNG, B.S., Multnomah County Extension Agent, 4-H Club (Instructor).  
B.S. (1949), Michigan State. At Oregon State since 1956.
- ROY ALTON YOUNG, Ph.D., Professor of Plant Pathology; Plant Pathologist, Agricultural Experiment Station.  
B.S. (1941), New Mexico A and M; M.S. (1942), Ph.D. (1948), Iowa State. At Oregon State since 1948.
- CHESTER THEODORE YOUNGBERG, Ph.D., Associate Professor of Soils; Associate Forest Soils Scientist, Forest Experiment Station; Agricultural Experiment Station.  
B.S. (1941), Wheaton College; M.F. (1947), Michigan; Ph.D. (1951), Wisconsin. At Oregon State since 1952.
- TEH CHU YU, M.S., Research Assistant (Instructor) Food Technology, Agricultural Experiment Station, Seafoods Laboratory, Astoria.  
B.S. (1940), Fukien Christian University; M.S. (1951), Oregon State. At Oregon State since 1951.
- JOHN ALFRED YUNGEN, B.S., Research Assistant (Instructor) Soils and Farm Crops, Southern Oregon Branch Experiment Station.  
B.S. (1950), Oregon State. At Oregon State since 1950.
- EDWIN ARTHUR YUNKER, Ph.D., Professor of Physics; Chairman of Department.  
A.B. (1924), California; Ph.M. (1930), Wisconsin; Ph.D. (1940), Stanford. At Oregon State since 1925.
- AUGUSTO S R CORDEIRO ZAGALLO, Ph.D., Research Assistant (Instructor), Bacteriology, Agricultural Experiment Station.  
B.Sc. (1939), M.A. (1944), University of Lisbon (Portugal); M.S. (1950), Ph.D. (1952), Wisconsin. At Oregon State since 1956.
- ROBERT ZELINKA, B.S., Assistant Football Coach (Instructor).  
B.S. (1952), California (Los Angeles). At Oregon State since 1954.
- FRANKLIN ROYALTON ZERAN, Ph.D., Dean, School of Education; Director of Summer Session; Professor of Education, Head of Department.  
A.B. (1930), M.A. (1932), Ph.D. (1937), Wisconsin. At Oregon State since 1947.
- ADOLPH ZIEFLE, M.S., Ph.D., Professor Emeritus of Pharmacy.  
Ph.C. (1904), B.S. (1907), M.S. (1919), Michigan; Ph.D. (1928), Pittsburgh. At Oregon State since 1914. Dean of the School of Pharmacy 1914-45.
- QUENTIN BLISS ZIELINSKI, Ph.D., Associate Professor of Horticulture; Associate Horticulturist, Agricultural Experiment Station.  
B.S. (1941), Oregon State; M.S. (1942), Ohio State; Ph.D. (1947), Virginia. At Oregon State since 1947.
- FRED CASPER ZWAHLEN, JR., A.M., Assistant Professor of Journalism; News Bureau Assistant.  
B.A. (1949), Oregon State; A.M. (1952), Stanford. At Oregon State since 1950.

# Organization and Facilities

## History

**I**N THE DAYS before Oregon became a state, Corvallis had a community academy which in 1858 was incorporated as Corvallis College. "Collegiate" study began at about the time that W. A. Finley became president in 1865. By the end of the fifth collegiate year, 1869-70, two men and one woman had fulfilled requirements for the baccalaureate degree and became the first graduates.

Oregon had made an earlier attempt before statehood to establish a public university. In 1851 the legislature of Oregon Territory, comprising the vast area from California to Canada and from the Rocky Mountains to the Pacific Ocean, designated Corvallis (then called Marysville) as the site of the territorial university. Building materials were assembled on the selected site (where Snell Hall now stands), but before construction began the legislature of 1855 changed the location of the university to Jacksonville and ordered the materials sold.

Oregon as a state began its support of higher education on October 27, 1868, when it designated Corvallis College "the agricultural college of the State of Oregon" and began making appropriations to maintain the institution. In taking this action the legislature accepted the provisions of the First Morrill Act, which President Lincoln had signed on July 2, 1862. This Act provided grants of land to be used by the states for the sole purpose of establishing publicly controlled colleges. The Congress defined the purpose of the land-grant institutions in these words: "The leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."

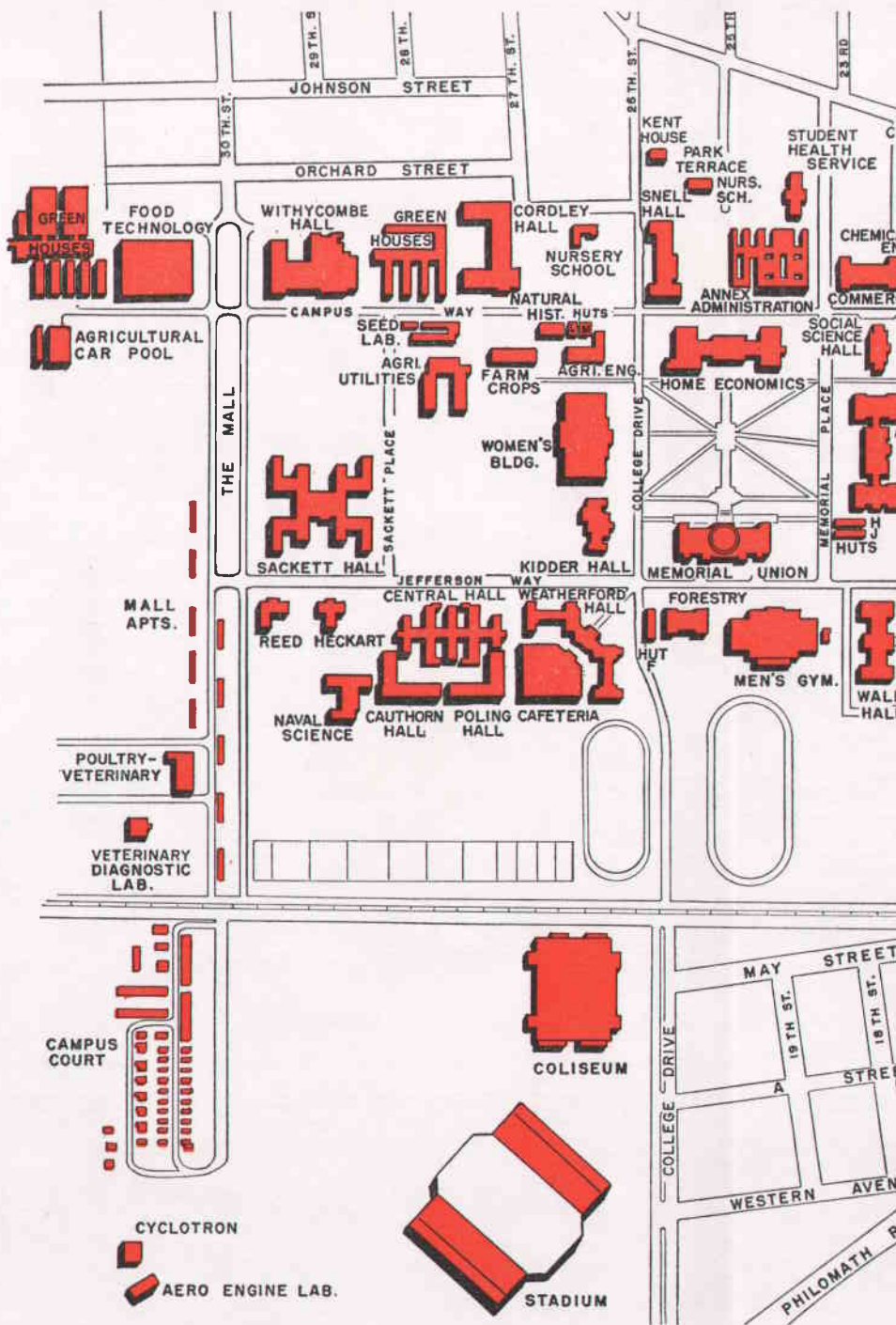
Another event makes the year 1868 especially significant. In August of that year Corvallis College was again incorporated, this time on a basis "not limited in duration but perpetual." This institution, maintained by the Methodist Episcopal Church, South, was partly state supported from 1868 to 1885 when the State assumed complete control.

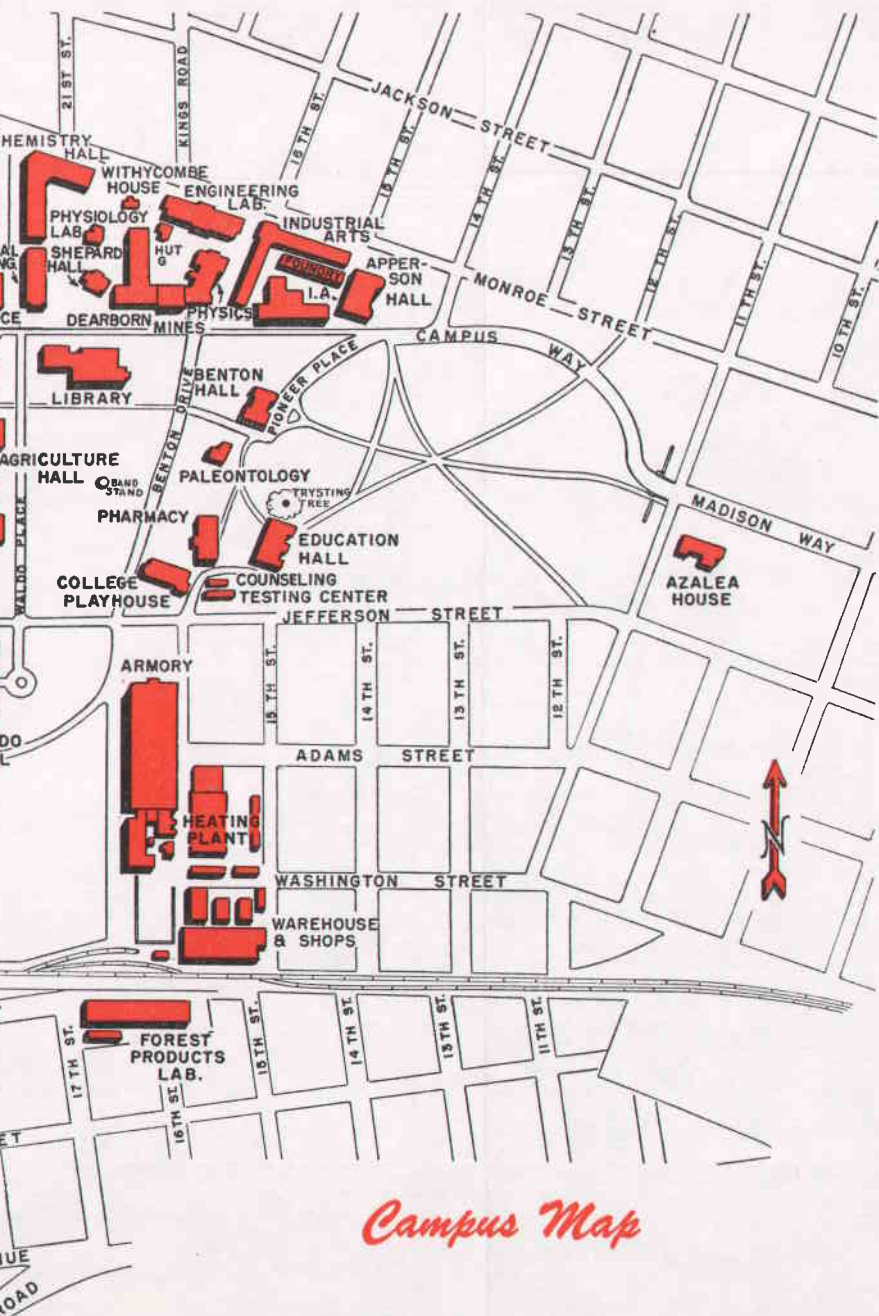
Subsequent Federal legislation—notably the Hatch Act of 1887, the Second Morrill Act of 1890, and the Smith-Lever Act of 1914—provided further for the teaching function of the institutions and also for programs of research and extension.

The Oregon legislature directed that "all students sent under the provisions of this Act shall be instructed in all the arts, sciences, and other studies in accordance with the Act of Congress."

Corvallis College originally occupied a corner at Fifth and Madison Streets. A farm of thirty-five acres, part of the present campus, was purchased in 1870. The College moved to the present campus, occupying Benton Hall, a gift of the citizens of Benton County, in 1889.

The curriculum of Corvallis College, typical of the liberal arts colleges of the period, provided a classical course leading to the bachelor of arts degree and a scientific course leading to the bachelor of science degree. The curriculum began to expand under the impetus of the land-grant act. Agriculture, largely conducted in the Department of Chemistry, was added in 1869. Four professorships (commerce, 1880, agriculture, 1883, household economy, 1889, and engi-





*Campus Map*

**OREGON STATE COLLEGE**

neering, 1889) grew into departments and resulted in the establishment in 1908 of four professional schools: Agriculture, Commerce, Engineering, and Home Economics. Schools added later included Forestry, 1913; Mines, 1913; Pharmacy, 1917; and Education, 1918. The first summer school was held in 1918. Extension work had its beginnings in 1889 when farmers' institutes were held at four places in the State.

In the organization of the State System of Higher Education in 1932 the State Board of Higher Education established freshman and sophomore work in liberal arts and sciences on a parallel basis at Oregon State College and the University of Oregon. Beyond the lower division years and in professional fields, the two institutions were differentiated. At Oregon State College the School of Science was established offering undergraduate and graduate work in the biological and physical sciences and mathematics. Work in mining was incorporated in the School of Engineering. The School of Commerce was discontinued; the School of Business and Technology was established (first as a "Division") in 1943.

The first advanced degree (A.M.) was awarded in 1876. The first Ph.D. degrees were conferred in 1935. A committee on advanced degrees appointed in 1910 was the precursor of the Graduate School.

General research is centered in the Graduate School. Other research divisions have been established as follows: Agricultural Experiment Station, 1888; Engineering Experiment Station, 1927; Science Research Institute, 1952; Forest Experiment Station, 1954. The Oregon Forest Products Laboratory, established in 1945, is located on the campus.

Oregon State College is a member of the Northwest Association of Secondary and Higher Schools. It was accredited by the Association of American Universities in 1926. It was accredited by the American Association of University Women in 1924. Its schools and departments are professionally accredited by the Engineers' Council for Professional Development, the Society of American Foresters, and the American Council on Pharmaceutical Education.

Presidents of Oregon State College since its founding are: W. A. Finley, 1865-71; B. L. Arnold, 1871-92; John M. Bloss, 1892-96; H. B. Miller, 1896-97; Thomas M. Gatch, 1897-1907; William Jasper Kerr, 1907-32; George Wilcox Peavy, 1934-40; Frank Llewellyn Ballard, 1940-41; Francois Archibald Gilfillan (acting), 1941-42; August Leroy Strand, from 1942.

## Income

The state law pertaining to the Board of Higher Education specifies that this body "shall control the use, distribution, and disbursement of all funds, appropriations and taxes, now or hereafter in possession, levied, and collected, received or appropriated for the use, benefit, support and maintenance of institutions of higher education." By virtue of this act, and beginning July 1, 1931, the Board has administered all funds for all state-supported higher educational activities, including Oregon State College, on the basis of a unified budget.

Funds for the support of higher education in Oregon are derived primarily from the following sources: a millage appropriation equal to 2.04 mills on all taxable property; certain continuing appropriations from the State for definite purposes; specified sums from the National Government assigned for definite purposes by Congressional acts; income from student tuition and fees; and other sources such as sales, service charges, gifts, etc.

## Campus

Corvallis (population 16,207, 1950 census) is situated in the heart of the Willamette Valley between the Cascade Mountains and the Coast Range, 85 miles south of Portland and 60 miles from the Pacific Ocean. The climate is equable, the average annual temperature being about 52° F. Rainfall, mostly during the winter months, averages about 39 inches annually.

Development of the Oregon State College campus during the past forty years has been in accordance with a permanent plan prepared for the institution by consulting landscape architects of national recognition (John C. Olmsted in 1908, A. D. Taylor in 1925 and 1945).

The buildings are arranged first as colleges or schools, and further are grouped in quadrangles, so planned that expansion can take place without injury to established buildings and campus areas. Each quadrangle is planted with ornamental trees and shrubs, which serve as living laboratory material for students engaged in landscape and horticultural studies.

The area from near 9th Street to 14th Street, known as the East Campus, provides a recreation park and a surveying laboratory for engineering students. Directly west are the East Quadrangle and Engineering Quadrangle, the West Quadrangle (center of the present campus), the men's and women's quadrangles, and the Mall (30th Street), with farms beyond.

Present buildings, with dates of original erection and later additions or remodeling are given below. For temporary buildings the dates indicate either date of erection or date acquired by Oregon State College.

Administration (1947)	Industrial Arts (1908, 1949)
Administration Annex (1948)	Industrial Research (1947)
Aero Engine Laboratory (1953)	Kent House (1924)
Agricultural Car Pool (1954)	Kidder Hall (1892, 1936)
Agricultural Engineering (1912, 1939)	Library (1918, 1941)
Agricultural Utilities (1909)	Margaret Snell Hall (1921, 1951)
Agriculture Hall (1909, 1913)	Memorial Union (1928)
Apperson Hall (1898, 1920, 1950)	Men's Dormitory (1928)
Armory (1910, 1911)	Men's Gymnasium (1915, 1921, 1953)
Azalea House (1953)	Mines (1913)
Beatrice Walton Sackett Hall (1948)	Natural History (1948)
Benton Hall (1889)	Navy ROTC Armory (1946, 1954)
Central Hall (1946-1947)	Orchard Street Nursery School (1939)
Chemical Engineering Building (1955)	Paleontology Laboratory (1899)
Chemistry Hall (1939)	Park Terrace Nursery School (1918)
Coliseum (1950)	Pharmacy (1924)
College Playhouse (1899, 1950)	Physical Plant Warehouse (1948, 1952)
Commerce Hall (1922)	Physics (1928)
Cyclotron (1952)	Physiology Laboratory (1912)
Dearborn Hall (1949)	Poultry-Veterinary (1927)
Education Hall (1902, 1940)	Reed Lodge (1954)
Engineering Laboratory (1920)	Shepard Hall (1908)
Engineering Service (1947)	Social Science Hall (1912, 1951)
Farm Crops (1919, 1924, 1951)	Stadium (1953)
Food Technology (1951)	Student Health Service (1936)
Forestry (1917)	Veterinary Diagnostic Laboratory (1952)
Foundry (1899)	Waldo Hall (1907)
Greenhouse (1928, 1951, 1954)	Withycombe Hall (1952)
Heating Plant (1923, 1949, 1953)	Withycombe House (1918)
Heckart Lodge (1954)	Women's Building (1926)
Home Economics (1914, 1920, 1952)	

## Forest and Farm Lands

For research and instruction in agriculture, the State owns and leases lands including the main campus and adjoining areas consisting of approximately 4,000 acres. The Agricultural Experiment Station, including the eight branch stations and the five experimental areas, utilizes approximately 24,000

acres, much of which is owned by the counties or the Federal Government.

The School of Forestry owns and administers a total of about 13,300 acres of forest land included in the Peavy Arboretum, the McDonald Forest, and the Adair, Blodgett, and Spaulding tracts. The Peavy Arboretum and the McDonald Forest are located seven miles north of the campus and provide easily accessible areas for instruction and research. Laboratory classes in many of the forest management and forest engineering courses are held on these adjacent forest lands. Research studies have been in progress on these areas since 1928.

## Library

The Library of Oregon State College contains approximately 326,000 volumes housed in a central stack unit, the Main Reference Room, and three divisional Reading Rooms. Books in the pure and applied sciences, numbering 57,700 volumes, are easily available in an attractive open-shelf arrangement in the Science Room. The Engineering and Applied Technology collection of 33,400 volumes is similarly arranged on open shelves in a separate reading room. The Beaver Book Room, also in an open-shelf arrangement, houses all the books in the various literatures, as well as a representative browsing collection. Books in which required readings are assigned are housed in the Reserve Reading Room. Reading room seating capacity exceeds 900.

In the Mary J. L. McDonald Room the Library has a collection of fine and rare editions, numbering 3,138 volumes. This collection and the attractively decorated and furnished room which houses it came to the Library by gift of Mrs. McDonald.

**Collections.** The books in the Library, and the 12,000 or more volumes added annually, are closely coordinated with the teaching and research conducted by the College. The collections are therefore primarily technical and scientific, but sufficient books in the humanities and the social sciences are owned to give the Library a good cultural and literary balance. Subjects in which special strength has been developed are textiles, costume design, nutrition, mathematics, and the history of horticulture. Collections of some distinction are also being built up in biology, food technology, chemistry, plant pathology, mycology, and entomology. Over 3,000 periodicals are received currently and a large portion of the Library's holdings are consequently bound journal volumes.

The Library is a designated depository for publications of the United States Government, Carnegie Institute of Washington, U.S. Atomic Energy Commission, Atomic Energy Research Establishment of Great Britain, Rand Corporation of Santa Monica, California, and official publications of the State of Oregon. It is also a depository for U. S. Army maps and has a total map collection of over 41,000 items. The picture collection includes 64,000 pieces. Newspapers received currently, some of which are on microfilm, total 114.

All the books, numbering 1,105,000 volumes, in the libraries of the several state institutions of higher education are available, through unified administration, to the students and faculty of Oregon State College. In addition, chiefly through the facilities of the Pacific Northwest Bibliographic Center, books are borrowed from and lent to other libraries in the Pacific Northwest and throughout the nation.

Books may be taken for home use by anyone connected with Oregon State College and by others on permission. Students may keep books for two weeks, with privilege of renewal. Faculty members may borrow for more extended periods. Graduate students and seniors are admitted to the stacks by permission of the Librarian.

**Unified Facilities.** Library facilities of the State institutions of higher education in Oregon are coordinated through a director of libraries. The director is also librarian of Oregon State College, where central offices of the library system are located.

The collections at the several institutions are developed to meet special needs on each campus; but the book stock of the libraries, as property of the State, circulates freely to permit the fullest use of all books. A combined author list of all books and periodicals in the State System is maintained in the central office to facilitate a better distribution of the book stock and to eliminate unnecessary duplication of material.

## Museums and Collections

Special exhibits and loan collections are displayed frequently in the Memorial Union, Kidder Hall, the Library, Home Economics Building, and Horner Museum. Permanent museums and collections include the following:

**The Horner Museum of the Oregon Country** (LULA MARY STEPHENSON, curator) contains valuable collections of historic, scientific, and artistic interest. Located on the ground floor of the Coliseum, the displays include, for example, the famous Hank Monk stage coach and many weapons and tools of pioneer Oregon, displays of antique glass and china, objects of art from foreign countries, Indian artifacts, mineral collections, mounted birds and animals, a replica of the U.S. Capitol, and many other types of exhibits, approximately 12,000 articles in all. Visitors to the Museum exceed 30,000 each year.

**The William Henry Price Memorial Collection of Paintings** includes 53 paintings, chiefly western landscapes and marines, by the late William Henry Price. All but two of these distinctive paintings are on permanent display within the Memorial Union.

**The Entomological Collection** (FRANK F. HASBROUCK, curator) contains approximately 200,000 specimens of insects, about 80 per cent of them from Oregon, and most of them on pins. The collection includes 4,100 microscope slides and life histories of many economically important insects in 480 glass-topped Riker mounts. The collection is housed in Agriculture Hall.

**The Geological Collections**, housed in Education Hall, include minerals, ores, rocks, invertebrate fossils, some vertebrate fossils, and a large number of fossil plants. More than 800 mineral species are arranged according to the Dana classification, and ore samples are arranged according to the Lindgren classification of ores. A paleontological collection in the Paleontology Laboratory supplements the other collections.

**The Herbarium** (ALBERT NEWTON STEWARD, curator), housed on the second floor of the Coliseum, contains about 146,000 named specimens of seed plants, ferns, mosses, algae, and fungi. Among the special items contributing to the usefulness of the herbarium are a seed collection of 2,800 numbers, and 250 photographs of types of Northwest vascular plants.

**The Natural History Collection** (FRANK W. STURGES, in charge) includes nearly 34,000 specimens of terrestrial vertebrates and nearly 800 mounts of birds and mammals. Housed in the Natural History Building, the collection includes the Braly Ornithological Collection, the Alex Walker Waterfowl Collection, the Oregon State Game Commission Collection, and the Grace McCormac French collection of ornithological notes and literature.



## Official Publications

Through its Office of Publications, Oregon State College publishes:

- OREGON STATE COLLEGE BULLETIN (Catalogs, Newsletters, and other announcements—seven issues a year.)
- MONOGRAPHS, including studies in botany, economics, education and guidance, entomology, geology, history, literature and languages, mathematics and statistics, political science, and zoology, and MONOGRAPH REPRINTS.
- BIOLOGY COLLOQUIUM PROCEEDINGS (annually)
- IMPROVING COLLEGE AND UNIVERSITY TEACHING (quarterly)
- BULLETINS and CIRCULARS of the Engineering Experiment Station
- BULLETINS, TECHNICAL BULLETINS, and CIRCULARS of the Agricultural Experiment Station
- OREGON'S AGRICULTURAL PROGRESS (quarterly)
- BULLETINS, CIRCULARS, OUTLOOK CIRCULARS, and 4-H Club publications of the Federal Cooperative Extension Service
- LABORATORY NOTES, BULLETINS, and CIRCULARS of the Oregon Forest Products Laboratory
- CIRCULARS and other publications of the School of Forestry and the Forest Experiment Station.

## Cooperation With Kasetsart University

Oregon State College and Kasetsart University in Thailand entered into a contract under the U.S. State Department's International Cooperation Administration on October 14, 1954. Arrangements parallel those of other American universities who are cooperating with educational institutions in foreign lands.

Kasetsart was founded as a department of government under the Ministry of Agriculture by an act of the Thai Parliament in 1943. Its main campus at Bangkok, 14 kilometers north of Bangkok, includes 480 acres. There are about 1,000 students in agriculture, forestry, cooperative science, fisheries, veterinary science, and irrigation engineering. Work in home economics and agricultural economics is being organized. Rector Luang Suwan heads a faculty of 115.

Under terms of the contract, which is being carried out without any expense to the State of Oregon, the College is maintaining in residence at Kasetsart a staff of six professional and technical people to assist the university in improving teaching methods, curriculum, facilities, agricultural research, and extension and demonstration projects.

Staff members serving in Thailand in 1957 included Professor G. R. Hoerner, chief adviser; Dr. Duis D. Bolinger, physics; Professor Agnes Kolshorn, home economics; Professor Ray A. Yoder, forestry; Professor E. E. Easton, business administration and accounting; and Dr. H. D. Reese, chemistry. Dr. Grant E. Blanch, agricultural economist, is associated with the Kasetsart group under a grant from the Council for Economic and Cultural Affairs, New York.

An important phase of the program provides for further education of the Kasetsart staff. Under this phase, twelve young men and women have come to the United States for professional training. Nine of these instructors have attended Oregon State College, two the University of Wisconsin, and one the University of Florida.

# Procedures and Requirements

**S**TUDENTS are held responsible for familiarity with requirements governing such matters as the routine of registration, academic standards, student activities, organizations, etc. Complete academic regulations are included in the *Schedule of Classes*, a copy of which is available to each student at the Registrar's Office.

## Admission

Oregon State College accepts students of good moral character who provide evidence of suitable preparation for work at the college level. To be admitted for any regular term an applicant must present to the Registrar a formal application and certified satisfactory records of all of his high school and other academic work. These records become the property of Oregon State College. For failure to have submitted complete records the College may cancel the student's registration.

Students may enter at the beginning of any term. It is important that freshmen and transferring students entering in the fall term be present for New Student Week. A detailed calendar for the current year will be found on pages 8-9.

All application materials should be filed four weeks before the applicant expects to enter the institution. Unavoidable delay in registration may result if materials are filed later. The Registrar will examine the records submitted and will notify the applicant of his admission status. When the College is unable to accommodate all qualified persons who apply, preference will be given to Oregon residents.

- **Oregon residents** being admitted to first-year (freshman) standing must have completed the following uniform entrance requirements approved by the institutions of higher education in Oregon:

Graduation from a standard high school with 16 units, including 3 units in English, 2 units of social science, 1 unit in health and physical education, 1 unit of mathematics, and 1 unit in the natural sciences.

Graduates of standard Oregon high schools normally meet the requirements mentioned above.

- **Out-of-State residents** entering as freshmen are required to present the same distribution of subject-matter units as Oregon residents. The minimum acceptable basis for the admission of a nonresident freshman shall be a performance record or a score on a college aptitude test which would place him in the upper half of his class.

- **Transfers from other colleges**, regardless of residence, are required to present a 2.00 (C) grade average. Transcripts for transfers must include honorable dismissal, indicating that the applicant is in good standing.

Beginning with fall term 1958, graduates of Oregon high schools must (1) have a "C" average or above in all high school subjects taken for graduation, or (2) pass a standard college aptitude test with a score within the upper 60 per cent, or (3) achieve a minimum grade-point average of 2.00 ("C" average) on a full load of study in a regular collegiate summer session.

### **Admission With Graduate Standing**

An applicant must present to the Registrar official transcripts of his undergraduate and graduate academic work. Students who have earned their bachelor's degree from an accredited institution, who have achieved a minimum 2.50 grade-point average,\* and who have suitable preparation for their intended field of study are eligible for admission. Admission to the Graduate School and candidacy for advanced degrees are achieved separately.

### **Admission to Summer Session**

The only requirement for admission to the Summer Session is ability to do the work. Those persons who wish to earn degrees and those who expect to attend regular sessions must meet standard admission requirements.

### **Admission as Special Student**

Persons who have not completed high school but who qualify by maturity and experience may be admitted as special students. To apply for admission as a special student a person must be 21 years of age or over and must file with the Registrar documentary evidence sufficient to prove his special fitness to pursue the subjects desired. Procedure for changing from special to regular student status is outlined in *Schedule of Classes*.

### **Admission from Unaccredited Institutions**

Admission to undergraduate or graduate standing involving work done in an unaccredited institution is determined by the Admissions Committee. If a student is admitted on probation, credit for work done in an unaccredited institution is withheld until validated on this campus.

## **Placement Examinations**

An entering student takes no *entrance* examination; he does, however, take *placement* tests. These tests provide the faculty with information as a basis for advising and assisting students in planning their college programs and for determining which courses they may take. Students do not register for courses until all test results are available for counseling purposes. Any student entering Fall Term and not present during New Student Week, when the tests are taken, will be delayed in registration.

The psychological examination gives an indication of ability to do college work. The results are used in planning the student's educational and vocational programs. It is required of all undergraduate students.

The English examination covers the fundamental principles of grammar, and it tests the student's ability to apply these principles in writing. Students who make the best scores in this examination may be exempt from the first term of English Composition. Students failing to obtain a satisfactory rating in this examination are required to pass Wr 10 before registering for work in English Composition. This test is required unless a student's Advanced Standing Report shows accepted credit for college English composition.

\* See GRADING SYSTEM, page 91.

The **mathematics examination** covers the fundamentals of general mathematics and algebra. Results of this examination normally take precedence in course placement over units or credits earned. This test is required of all entering students except those whose Advanced Standing Report shows credit for college trigonometry, analysis, or calculus.

**Other placement examinations** may be required in certain majors. Engineering students whose placement test scores indicate a deficiency in mathematics will be classified as "pre-engineering" and registered in mathematics courses compatible with the test results. Forestry students may receive similar special consideration.

The **medical examination** required of all students entering Oregon State College for the first time includes tuberculin test, vaccination against small-pox, and other tests. It provides a scientific basis for adjustment of the student's physical education to his individual needs. It also provides a safeguard both to the student and to the institution. For the student, it may result in the discovery and correction of defects which, if allowed to continue, might seriously impair his health; for the institution it may result in the prevention of epidemics which might develop from undiagnosed cases of contagious disease.

## Degrees and Certificates

Oregon State College offers curricula leading to junior standing on the completion of two years' work, and to the following baccalaureate and graduate degrees:

Science, *B.A., B.S., M.A., M.S., Ph.D.*

Agriculture, *B.S., B.Agr., M.Agr., M.S., Ph.D.*

Business and Technology, *B.A., B.S.*

Education, *B.A., B.S., Ed.B., M.A., M.S., Ed.M., Ed.D.*

Engineering and Industrial Arts, *B.A., B.S., M.A., M.S., A.E., Ch.E., C.E., E.E., I.E., M.E., Min.E., Ph.D.*

Forestry, *B.S., B.F., M.S., M.F., F.E.*

Home Economics, *B.A., B.S., M.A., M.S., M.H.Ec., Ph.D.*

Naval Science, *B.A., B.S.*

\*Nursing Education, *B.A., B.S.*

Pharmacy, *B.A., B.S., M.A., M.S., Ph.D.*

Physical Education (through School of Education), *B.A., B.S., Ed.B.*

Air Science, Military Science and Tactics, or Naval Science may be taken by men as a comajor in any school.

Work leading to the degree of *Master of Arts (General Studies)* is offered under the direction of the Graduate School.

Lower division work leading to certificates (*Junior Certificate, Junior Certificate with Honors Privileges, Lower Division Certificate*) is offered in liberal arts and sciences, in the professional and technical fields listed above, and in architecture and allied arts, journalism, and music. Approved preparation is offered also for the degree curricula in medicine, dentistry, and nursing education at the University of Oregon Medical and Dental schools in Portland.

\* Conferred upon completion of Preparatory Nursing Curriculum at Oregon State College and the nursing curriculum at the Medical School in Portland.

### Requirements for Bachelor's Degree

To earn a Bachelor of Arts or a Bachelor of Science degree a student must first receive *junior standing* (requirements for which he should satisfy by the end of his sophomore year) and, second, satisfy *institutional graduation requirements*. Deviations in these requirements may be made only with the approval of the dean of the school in which the student is enrolled and the Academic Requirements Committee.

#### Requirements for junior standing

- a. Term Hours: Minimum, 93. (Engineering and Forestry, 96.)
- b. Grade-Point Average: Minimum, 2.00.
- c. English Composition: 9 term hours unless excused. Any student whose work meets the standards aimed at may, at the end of any term, with the consent of the head of the Department of English, be excused from further required written English. Freshmen who receive unsatisfactory ratings in English placement examination must take and pass Wr 10.
- d. Physical Education: 5 terms in activity courses.
- e. Military Science: 6 terms for men. Veterans may receive some credit for military experience. Application should be made to the Registrar after satisfactory completion of one term's work at Oregon State College.
- f. General Hygiene.

#### Graduation requirements (institutional)

When a student has satisfied all requirements for junior standing, he is classified as an upper division student and may become a candidate for a bachelor's degree in the college or school of his choice. Requirements for a bachelor's degree (including both lower and upper division work) are as follows:

- a. Term Hours: Minimum, 192 (204 in Engineering and Forestry), including:
  - (1) Hours in upper division courses: Minimum, 45.
  - (2) Hours in the major: Minimum, 36, including at least 24 in upper division courses.
  - (3) Hours after receipt of junior standing: Minimum, 45.
- b. Distribution of hours for Baccalaureate Degrees:
  - (1) Bachelor of Arts: 36 hours in English, modern languages, and speech, including two years (normally 24 term hours) of college work in a foreign language, or one year (9 hours of review grammar and reading) of college work in a foreign language at the second year or higher level.
  - (2) Bachelor of Science: 36 hours in science, or 36 hours in social science, or 45 hours in science and social science.
  - (3) Professional bachelor's degree (Ed.B., B.F., B.Agr.): Fulfillment of all major requirements.
- c. Group Requirements:
  - (1) For students in the School of Science: 9 term hours approved by the dean in each of two groups: (1) language, and (2) social science.
  - (2) For students in the professional and technical schools: 9 term hours approved by the dean in each of two of the following groups: (1) language and literature; (2) sciences; and (3) social science.
- d. Grade-Point Average: Minimum of 2.00 on all of the following:
  - (a) All college work.
  - (b) All work taken in residence at this institution.
  - (c) Last 45 hours for which registered.

- e. Residence: Minimum, 45 term hours (normally the last 45). A maximum of 33 hours of residence credit may be earned through attendance at centers of the General Extension Division.
- f. Dean's Recommendation: Certifying fulfillment of all requirements of major department or school. (For details see school advisers and deans.)
- g. Restrictions:
- (1) Correspondence Study: Maximum, 60 term hours.
  - (2) Law or Medicine: Maximum, 48 term hours.
  - (3) Music: Applied Music: Maximum, 12 term hours.

#### Concurrent degrees

A student may receive two or more baccalaureate degrees (for example, B.A. or B.S. with same or different majors) at the same or subsequent graduation exercises provided that (1) he meets the requirements of the curricula represented by the degrees; (2) he completes for each additional degree a minimum of 32 term hours more than the 192 term hours or 204 term hours required by the first degree (the additional term hours may be taken concurrently with 192 or 204 term hours); (3) he is registered during last three terms before his graduation at least one term in each appropriate school or department.

#### Requirements for Certificates

These certificates may be granted on completion of approved programs:

**Junior Certificate**, granted on application and completion of requirements for junior standing and with dean's approval.

**Junior Certificate with Honors Privileges**, granted on application and completion of requirements for Junior Certificate with a grade-point average of at least 2.75 and with approval of dean.

**Lower Division Certificate**, granted on application and completion of two years of lower division work and with approval of dean.

**Certificate in Agriculture**, granted on application and completion of two-year curriculum and with approval of dean.

**Certificate in Engineering**, granted on application and completion of two-year curriculum and with approval of dean.

#### Requirements for Advanced Degrees

For advanced degree requirements see GRADUATE SCHOOL section of this Catalog. Students who, before they have received baccalaureate degrees, take courses they wish to apply toward an advanced degree may have a limited number of credits by petition. See "Reserving Credits" under GRADUATE SCHOOL.

### Definitions

**ACADEMIC YEAR**: three terms of approximately 12 weeks each, September to June.

**SUMMER SESSION**: an 8-week session from late June to mid-August.

**COURSE**: a subject, or an instructional subdivision of a subject, offered through a single term.

**YEAR SEQUENCE**: three closely articulated courses extending through the three terms of the academic year.

**CURRICULUM**: An organized program of study arranged to provide integrated cultural or professional education.

**TERM HOUR:** the unit of credit, representing three hours of the student's time each week for one term. This time may be assigned to work in classroom or laboratory or to outside preparation. The number of meetings per week for any course may be found in the course descriptions in this Catalog or in the separately published **SCHEDULE OF CLASSES**.

**PERIOD:** a class meeting for discussion, lecture, laboratory, etc., and may be for one or more hours.

The number of class meetings per week for each course in this Catalog is indicated by use of symbols indicating length of periods. ① indicates a one-hour period, ② a two-hour period, ③ a three-hour period, etc. For example: 2 ① 1 ③ indicates 2 *one-hour periods and one three-hour period*..

### Course Numbering System

Courses throughout the State System of Higher Education are numbered as follows:

- 1-99. Courses in the first two years of foreign language, elementary algebra, or other courses of similar level.
- 100-110, 200-210. Survey or foundation courses that satisfy group requirements in the language and literature, science, and social science groups.
- 111-199, 211-299. Other courses offered at first-year and second-year level.
- 300-399. Upper division courses primarily for juniors.
- 400-499. Upper division courses primarily for seniors. Courses numbered 400-499 if approved for graduate *major* credit are designated (*G*) following the title. Courses approved for graduate *minor* credit only are designated (*g*).
- 500-599. Courses primarily for graduate students but to which seniors of superior scholastic achievement may be admitted on approval of instructor and department head concerned.
- 600-699. Courses that are highly professional or technical in nature and may count toward a professional degree only and cannot apply toward an advanced academic degree as M.A., M.S., or Ph.D.

Certain numbers are reserved for courses that may be taken through successive terms under the same course number, credit being granted according to the amount of acceptable work done. These blanket numbers are as follows:

- 301, 401, 501. Research or other supervised original work.
- 303, 403, 503. Thesis (reading or research reported in writing).
- 305, 405, 505. Reading and Conference (individual reading reported orally to instructor).
- 307, 407, 507. Seminar.

### Grading System

**Grades.** The grading system consists of four passing grades, *A, B, C, D*, and of others listed below. *A* denotes exceptional work accomplished; *B*, superior; *C*, average; *D*, inferior.

A student who has done acceptable work to the time of the final examination, but does not take it will receive an *E*. The *E* may be removed upon presentation to a faculty committee of an acceptable reason for not taking the final examination. An *E* not removed within the first term after the student's return to the institution will be changed to an *F*. For failure in a course, the grade of *F* is given. When the quality of the work is satisfactory, but some minor but essential requirement of the course has not been completed, for reasons acceptable to the instructor, a report of *I* may be made and additional time granted. Students may withdraw from a course by filing the proper blanks at the Registrar's Office in accordance with State College regulations; in such cases a report of *W* is made. A student who discontinues attendance in a course without official withdrawal receives a grade of *F* in the course.

**Points.** Grade points are computed on the basis of 4 points for each term hour of *A* grade, 3 points for each term hour of *B*, 2 points for each term hour of *C*, 1 point for each term hour of *D*, and 0 points for each term hour of *F*.

Marks of *I*, *W*, and *E*, are disregarded in the computation of points. The grade-point average (GPA) is the quotient of total points divided by total term hours in which *A*, *B*, *C*, *D*, and *F* are received. The grade-point average that is used as a standard of acceptable scholarship and as a requirement for graduation is computed on all work for which the student receives permanent grades, including work for which credit is transferred, correspondence study, and work validated by special examination.

### Scholarship Regulations

The faculty Committee on Academic Deficiencies has discretionary authority to suspend or place on probation any student not achieving profitable and creditable progress toward graduation (a minimum grade-point average of 2.00 or *C* for both the term and cumulative record). Application of this rule results in the following practices:

**PROBATION.** Any student achieving a grade-point average below 2.00 or *C* either for a term or cumulative will be placed or continued on probation (unless subject to suspension).

**SUSPENSION.** A student is subject to suspension any time it is apparent that he is not satisfactorily meeting graduation requirements. Most suspensions occur when a student is 12 or more grade points deficient. (Hours taken times 2 subtracted from grade points earned.) If other factors so indicate, a student may be suspended with fewer than 12 points deficiency. Also, a student 12 or more points deficient for his last two or more terms may be suspended even though he may have a cumulative average above 2.00, if other factors so indicate. (This applies to resident and/or transfer students of sophomore, junior, or senior standing.)

**RELEASE FROM PROBATION.** Any student on probation may achieve good standing by earning both term and cumulative 2.00. This statement applies to resident credit alone and to resident plus transfer credit.

The scholarship requirements for participation in student cocurricular activities are printed in section on STUDENT INTERESTS.

### Fees and Deposits

Students at Oregon State College and the University of Oregon pay the same tuition, fees, and deposits. The State Board of Higher Education reserves the right to make changes in the rates quoted without notice.

#### Regular Fees

Undergraduate students pay regular fees each term as follows: tuition, \$10; laboratory and course fee, \$30; incidental fee, \$17; and building fee, \$8, a total of \$65 per term—\$195 a year.

Payment of these fees entitles a student to all services maintained by Oregon State College for the benefit of students. These services include: use of the Library; use of laboratory and course equipment and materials; medical attention and advice at the Student Health Service; use of gymnasium equipment, including gymnasium suits and laundry service; a subscription to the student newspaper; admission to athletic events; and admission to concerts and lectures sponsored by the College. No reduction in fees is made to students who may not desire to use some of these privileges.

#### Out-of-State Tuition

Undergraduate students who are not residents of Oregon, Alaska, or Hawaii pay regular fees and in addition pay a nonresident fee of \$70 per term, or \$210 per year—a total of \$405 per year for fees and tuition.

The Oregon State Board of Higher Education has ruled that any person who comes into the State of Oregon for the purpose of attending one of



the institutions under the control of the Board, and who for any reason is not qualified for classification as a resident of the State of Oregon, shall pay the nonresident fee, *except*: a student holding a degree from an accredited college or university and registered in a curriculum other than dentistry, law, or medicine; a student attending Summer Session; a student paying the part-time fee; a student whose parent is a regular employe of the Federal Government stationed in Oregon; a student whose father is domiciled in the State of Oregon; a student who is a resident of Alaska or Hawaii.

Residence or domicile of a student is normally that of his father; if his father is not living, it is normally that of his mother. In case of parents' divorce, the domicile of a student is generally determined by the residence of the parent to whom custody is granted by the court. Domicile of a wife is normally that of her husband; if both are students, the wife's residence status is determined by that of the husband. An alien cannot begin to establish residence until he has demonstrated his intention to become an American citizen.

Residents of Alaska and Hawaii are defined as "students who have been residents of their respective territories for the major part of the two years prior to registration at a state system institution."

The Board has established the following rules to be observed in determining the residence status of students:

(1) Residence and domicile are synonymous and domicile shall be considered to be a fixed permanent residence to which the student has the intention of returning. The fixed permanent residence must normally have been maintained for at least twelve months prior to the school term for which resident classification is sought, and must be a bona fide residence which the student has no intention of changing when the school period has expired. Proved actual residence and intention to remain must exist simultaneously. Factors used in determining intent include age and family status of the student, residence of near relatives, place of voting, ownership of property, sources of financial support, length of time within the State, record of employment and schooling (intent cannot be demonstrated by school attendance alone).

(2) A student whose official records show his own or his parents' domicile to be outside of Oregon is prima facie a nonresident and the burden is upon the student to prove the contrary. If his official transcripts of academic record show attendance at a school outside of Oregon, he may be required to furnish further proof of Oregon domicile.

(3) A nonresident at the time of enrollment is held to that classification throughout his attendance as a student, except where he can prove that his or his parents' previous domicile has been abandoned and a new one established in Oregon in accordance with these regulations. A resident student will be reclassified as nonresident at any time his Oregon domicile is lost.

### Graduate Fees

Graduate students registered for 7 term hours of work or more pay tuition and fees of \$65 a term. Graduate students do not pay nonresident fee. Graduate or research assistants or fellows pay \$25 per term. Graduate students registered for 6 hours of work or less pay the regular part-time fee. Payment entitles the student to all services maintained by the College for benefit of students.

### Deposits

Persons who enroll for academic credit (except staff members) must make a deposit of \$10, payable once each year at the time of first registration. This is required as a protection against loss or damage of institutional property such as dormitory equipment, laboratory equipment, military uniforms, library books, locker keys. If at any time charges against this deposit become excessive, the student may be called upon to reestablish the original amount.

**Refund.** The deposit, less any deductions, is refunded about one month after close of academic year. Students who discontinue work before end of year may receive refunds upon petition to the Business Office.

### Special Fees

Special fees are paid by students under the conditions indicated:

Part-Time and Auditor's Fee.....	per term hour, \$8.00
Students (undergraduate or graduate) enrolled for 6 term hours of work or less pay, instead of regular registration fees, a part-time fee in accordance with the following scale: 1-2 term hours, \$16; 3 term hours, \$24; 4 term hours, \$32; 5 term hours, \$40; 6 term hours, \$48. Nonresident fee does not apply. Payment of fee entitles students to all usual services and use of facilities of Oregon State College. An auditor is a person who has obtained permission to attend classes without receiving academic credit. The auditor's fee is payable at the time of registration and entitles the student to attend classes but to no other institutional privileges. Students regularly enrolled in Oregon State College may be granted the privileges of an auditor without paying the auditor's fee. Maximum for auditors is \$65.	
Staff Fee.....	per term hour, \$3.00
On approval of the President's Office, staff members may register for College courses at a \$3-per-term-hour rate. Full-time staff are limited to a maximum of 5 hours per term. Academic staff who have appointments with full-time equivalent of .50 or more (but less than full-time) may taken up to 10 hours a term at this rate. Payment of fee entitles member to instructional and library privileges only.	
Late-Registration Fee.....	per day, \$1.00
Students registering after scheduled registration dates of any term pay a late-registration fee of \$1 a day. Part-time students pay \$1 a week. Auditors are not required to pay late-registration fees.	
Return-of-Check Fee.....	per day, \$1.00
If institutional charges are met by a check which is returned because of any irregularity for which student is responsible, a fine of \$1 per business day will be charged. Maximum penalty: \$5.	
Change-of-Program Fee.....	\$1.00
The student pays this fee for each change in his official program after the scheduled last day for adding courses.	
Reinstatement Fee.....	\$2.00
If for any reason a student has his registration canceled during a term for failure to comply with the regulations of the institution, but is later allowed to continue his work, he must pay the reinstatement fee.	
Special-Examination Fee.....	per term hour, \$1.00
A student pays a fee of \$1 per term hour for the privilege of taking an examination for advanced credit, or other special examinations.	
Registration-in-Absentia Fee.....	per term hour, \$8.00
Minimum fee \$16.	
Transcript Fee.....	\$1.00 and \$1.50
Charge for first copy at any one time is \$1; charge for each additional copy furnished simultaneously is 50¢.	
Counseling and Testing Service Fee.....	\$5.00
Graduate Qualifying Examination Fee.....	\$1.00 to \$15.00
Microfilming Doctoral Thesis.....	\$20.00
Placement Fee (See SCHOOL OF EDUCATION).....	\$5.00 and \$2.50
Applied Music Fees (See MUSIC).....	per term, \$20.00 to \$50.00
Horseback Riding Fee (See PHYSICAL EDUCATION).....	per term, \$20.00

**Fee Refunds.** Students who withdraw from college and who have complied with regulations governing withdrawals are entitled to certain refunds of fees paid, depending on time of withdrawal. Refund schedule established by the State Board of Higher Education is on file in Registrar's Office.

Any claim for refund must be made in writing before the close of the term in which the claim originated. Refunds are calculated from date of application for refund and not from date when the student ceases attending classes, except in unusual cases when formal withdrawal has been delayed through causes largely beyond the control of the student.

# Student Interests

**A** STUDENT attending Oregon State College has an opportunity for wholesome growth in congenial, stimulating surroundings. All faculty members participate in some measure in the process of all-round student development. In addition, certain members of the faculty, certain offices, and several committees serve in special ways.

The Dean of Women and the Dean of Men seek to promote high standards of student life and welfare. They help coordinate social and activity programs; they provide housing and employment services. They work closely with student organizations and councils in developing sound student leadership and participation in student self-government. They counsel students on matters of both general and personal welfare.

Each school has a head counselor and a number of specially selected advisers. The advisers assist students in their courses and programs of study. When asked to do so the advisers and head counselors aid in finding solutions to personal problems. Both groups work closely with the Academic Deficiencies Committee to learn causes for poor student accomplishment and to promote policies and procedures for improvement of student scholarship. The Personnel Coordinator assists in developing an efficient student personnel service in each school and in coordinating various advising and counseling agencies.

The Counseling and Testing Center, when requested to do so, conducts personal interviews and various tests to help students determine interests and aptitudes for various vocational fields, ability to do college work, and causes of difficulties they may have in course work. For some of its services the Center charges a nominal fee.

Sometimes a student needs assistance in addition to that provided by regular advisers and counselors. The following agencies offer clinical or advisory services: Student Health Service, Departments of Psychology, Religion, Speech, English (for remedial reading), Family Life and Home Administration (for marriage and family life problems), and the School of Education (for methods of study).

The Committee on Student Life, a student-faculty group, assists students with social and living problems. The Committee on Student Housing assists in making adjustments relative to housing and boarding. The Committee on Religious Activities coordinates various campus religious agencies and serves as connecting link between the campus and churches of the community. The Committee on Educational Activities promotes and supervises student activities.

As a student nears the end of his curriculum, the school in which he is registered helps him find appropriate employment. As a service both to the professions and to its graduates, each school maintains a placement office which tries to get the right man into the right job.

## New Student Week

A program of orientation required for entering undergraduate students is held annually the first week of fall term. By means of general assemblies, group lectures and discussions, individual conferences, and examinations and tests, an effort is made to assist every new student in getting the best possible start in his new life. During New Student Week students become acquainted with the aims of higher education, principles governing wise use of time and

money, methods of study, and ideals and traditions of Oregon State College. Directions concerning New Student Week and registration are sent 4 weeks before the term opening to each new student accepted for admission.

## Student Living

Living conditions of the right kind play a vital, constructive part in a college education. Students living in groups, working, studying, and enjoying recreation together gain much from each other. The conversations, good fellowship, and activities experienced in group living contribute to a person's whole development. Participation in self-governing living activities brings about a phase of education gained in no other way.

Oregon State College accepts its responsibility to provide to the extent possible comfortable, healthful, and congenial living conditions for all students. All students have opportunity to belong to some social organization. Each living group on the campus, including residence halls, cooperatives, sororities, and fraternities, has its own self-government and social activities.

All living arrangements must be approved by the Dean of Men or the Dean of Women. Although much of the correspondence between a student or prospective student and Oregon State College will be directed by the Registrar's Office, he may expect to hear regarding housing from the Dean of Men, the Dean of Women, or the Director of Dormitories. The latter supervises the operation of all residence halls and their facilities.

## College Dormitories

**Men's Residence Halls.** Weatherford Hall houses 404 men in seven living groups organized as clubs. Some single rooms are available but most are for double occupancy. Double rooms have single, double-decked beds. One living group has sleeping porches.

Two new men's units, Poling and Cauthorn Halls, are scheduled for occupancy in September 1957. Each will accommodate 314 men, organized into five living groups of about 60 students each. Some single rooms are available, but most are for double occupancy. Single beds are provided in each room.

The temporary building, Central Hall, provides housing for 355 men in single and double rooms. This dormitory is also divided into five units which are organized as living-group clubs.

Facilities provided in all men's dormitories include lounge and recreation rooms, laundry and drying rooms, and bathrooms and showers on each floor of each building. The dormitory furnishes a mattress, mattress pad, two sheets, two single blankets, a pillow and pillowcase for each bed, study table, chair, and dresser or wardrobe. Occupants are responsible for the care and cleanliness of their rooms. Dining facilities are provided in the Memorial Union and in the new cafeteria.

**Women's Residence Halls.** Sackett Hall houses about 450 girls in four separate wings. Each of the four living groups has its own living, dining, and lounge rooms, its own beau room, separate kitchenettes, laundry room, recreation room, and sun deck. Most rooms have a 3-in-1 combination for 3 girls: a study room, a sleeping room, and a closet and dressing room. Some have sleeping and study rooms combined. A 3-room connected bathroom with tubs and showers is available for each 20 girls.

Waldo Hall houses 300 in large, comfortable rooms accommodating 2 to 4 girls. Facilities include living, dining, and recreation rooms, snack kitchens,

bathrooms with showers on each floor, and laundry and drying facilities on the first floor.

Dormitories provide for each occupant a bed (some double or triple decked), mattress, mattress pad, two sheets, two single blankets, pillow and pillowcase, 2 towels, study table, chair, and dresser or wardrobe. Bed linen and towels are laundered weekly. Occupants are responsible for the care and cleanliness of their rooms.

#### Dormitory Rates

Board per month in all college-operated dormitories.....	\$48.00	
<i>Room rent per term in</i>	<i>Single rooms</i>	<i>Multiple unit</i>
Waldo Hall and Weatherford Hall.....	\$90.00	\$60.00
Central Hall.....	72.00	57.00
Sackett Hall, Poling Hall, and Cauthorn Hall.....	112.50	75.00

Room and board charges are due the first day of each month. Students paying after the first are charged a late fee of \$1 for the first day and \$1 for each additional day until a maximum of \$5 is reached. In exceptional cases, extension of time may be given by the Director of Dormitories, if application therefor is made before the first day of the month. If bill is not paid by the 10th of the month, student's registration may be canceled.

The right is reserved to increase or decrease the charge for room and board should changes in costs dictate such change.

#### Reserving a Room

To reserve a dormitory room obtain an application blank from the Registrar, fill it out, and mail it with a \$15 deposit to the Business Office, Oregon State College. The deposit may be money order or check payable to Oregon State College.

Reservations should be made early, even though official admission may be delayed. A student requesting a dormitory reservation will be assured of a room unless the deposit is returned. If a student is found ineligible for admission after he has made the \$15 deposit, it will be returned to him. Charges reported by the dormitory for damage or loss of dormitory property and for unpaid hall dues may be made against the room deposit. Any balance remaining after all charges have been deducted will be refunded in about 6 weeks after termination of occupancy.

When a student makes his \$15 deposit to reserve a room he is holding that room for a term and is responsible for the cost of the room unless he cancels his reservation.

#### Cancellation, Assignment, and Refunds

Cancellation of a room reservation (or transfer of deposit to a later term) must be made before August 15 for fall term and not later than 14 days before the opening of winter or spring terms. If cancellation is made within the proper time limit, the deposit will be refunded. If the depositor registers and has not canceled his reservation as indicated above, he will be required to live in the dormitory. If he does not register and has not canceled his reservation, the deposit is forfeited in total. Requests for cancellation or transfer should be directed to the Business Office.

**Assignment** to a particular hall will be made after the student has been officially admitted to Oregon State College. Room assignment is made after he

arrives on campus. Dormitories will open for students and for receiving baggage at 10:00 a.m. Sunday, the first day of New Student Week.

Board refunds may be made for absences of 10 or more consecutive full days but none will be made for shorter periods. No refunds are made for the examination period. Room rents are not refunded regardless of length of absence.

### Sororities and Fraternities

Affiliation with fraternities and sororities is by invitation. The standards of scholarship maintained by these groups require study conditions that will promote achievement in academic growth. Board and room charges in these living groups approximate those of the dormitories (see page 97). Cost of membership, social fees, and sometimes building fees are extra.

Both fraternities and sororities have specified times during the year when "rushing" (selection of prospective members) takes place. Both groups "rush" some time during New Student Week and possibly at later periods.

Sororities provide supervised living accommodations for sophomore and upperclass women. Freshman women, even though pledged, do not live in chapter houses. Pledges living outside sorority houses should plan on financial obligations to the social group in addition to obligations incurred where they live. A pamphlet on sororities may be obtained from the Panhellenic Council, Memorial Union, Oregon State College.

Sororities at Oregon State College: Alpha Chi Omega, Alpha Delta Pi, Alpha Gamma Delta, Alpha Omicron Pi, Alpha Phi, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Gamma, Delta Zeta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Delta, Kappa Kappa Gamma, Pi Beta Phi, Sigma Kappa.

Phrateres is a national social society for college women.

Fraternities provide comfortable, supervised accommodations for men. Freshman men pledged to a fraternity may live in the chapter house; in fact, if they do not have other housing arrangements they are expected to live in the house. If, however, a pledge has made other housing commitments he must fulfill them before moving into the fraternity house. The booklet, *Is It Greek to You?* is available from the Dean of Men, 111 Commerce Hall.

Fraternities at Oregon State College: Acacia, Alpha Chi Rho, Alpha Gamma Rho, Alpha Sigma Phi, Alpha Tau Omega, Beta Theta Pi, Chi Phi, Delta Chi, Delta Sigma Phi, Delta Tau Delta, Delta Upsilon, Kappa Delta Rho, Kappa Sigma, Lambda Chi Alpha, Phi Delta Theta, Phi Gamma Delta, Phi Kappa, Phi Kappa Psi, Phi Kappa Sigma, Phi Kappa Tau, Phi Sigma Kappa, Pi Kappa Alpha, Pi Kappa Phi, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Sigma Pi, Tau Kappa Epsilon, Theta Chi, Theta Xi.

### Cooperatives

In cooperative houses students achieve desirable group and social life for about \$15 a month less than in other types of living groups. Students share all housework responsibilities. Each house has a hostess and a cook. Room rent for the year at all cooperatives is about \$195 and total board and room for a year is estimated at \$500. Rules on keeping reservations, making cancellations, or moving apply in cooperatives as in other living organizations.

**Women's Cooperative Houses.** Azalea House on the East Campus accommodates 58 women. This "home away from home" is the result of

cooperative efforts of women in the home economics extension program in Oregon, who raised funds making construction possible. Applications for residence should be made to county extension agents in home economics.

Coed Cottage, on the edge of the campus on North 26th Street, provides housing for 40 women. Application is made in the same way as for dormitory housing.

Co-Resident Women is an incorporated organization of off-campus cooperatives. Four units at the present time provide a type of living gratifying both to the women themselves and to the College. A council of Co-Resident Women fosters cooperative living. Applications should be made to the Dean of Women.

**Men's Cooperative Houses.** Reed and Heckart Lodges located on campus, house 60 men each. Each lodge requires its residents to work approximately four hours per person each week in kitchen and housekeeping. Applications should be made to the Dean of Men.

Four off-campus cooperatives provide additional housing for men. For information contact the Dean of Men.

### **Rooms in Private Homes**

Listings of approved private homes are maintained by the Dean of Men and the Dean of Women. The Housing Committee urges that a written agreement be made between student and householder. Blank contract forms may be obtained from the Dean of Men or the Dean of Women. Such agreements, if properly filed by householder, will be binding upon both householder and student for one term and will be enforced by the Housing Committee. Housing agreements whether oral or written will be enforced when satisfactory facilities are provided.

Agreements may be terminated: (a) If the student properly withdraws from college. (b) Upon mutual agreement and satisfaction to the student and householder with written notice to the Dean of Men or the Dean of Women by the householder. (c) By action of the Housing Committee. Since it is mutually beneficial for both householder and student to meet each other before commitments are made, reservations in private homes are not made by the College. Housing in a private home for fall term should be arranged for soon after June 15. Costs in private homes are comparable to those in dormitories.

### **Housing for Married Students**

The College maintains a number of furnished apartments for married students. Rentals range from \$30 to \$53 per month with water and garbage disposal service furnished. Application should be made to the Director of Dormitories.

**Off-Campus Apartments.** A married student wishing to find living accommodations off campus should consult the Housing and Employment Secretary, 108 Commerce Hall.

### **Housing Regulations**

Each student is responsible for knowledge of housing regulations and for arranging individually for acceptable housing accommodations.

a. Living arrangements must be approved by the Dean of Men (men students) or the Dean of Women (women students) normally at the time of registration. Reservations in approved housing made by new students are tentative until official admission to Oregon State College has been granted.

b. All unmarried students must live in approved housing. (Hotels, motels, and apartments are not approved housing for unmarried students.)

c. A graduate or married student (or anyone not a regular full-time student) normally lives in private housing. Official approval is required if such students are to live in any type of College housing. The College is not, in general, responsible for the housing of married students.

d. All living arrangements in approved housing are for one full college term. Students making duplicate housing arrangements and not making proper cancellations are financially responsible for such arrangements.

e. Prior to any change of address or residence, approval must be obtained from the Dean of Men or the Dean of Women.

f. Should a request to move during the term be granted by the Housing Committee, the student must expect to pay a term's room rent for a room reserved but not occupied.

g. College rules regarding student conduct apply to all housing, on or off campus.

For more detailed information see the official pamphlet "Student Housing, Regulations and Information" available from the Director of Dormitories.

## Student Health Service

Through the Student Health Service, Oregon State College does all in its power to safeguard the health of its students. This protection is accomplished through health education, detection of incipient diseases, medical treatment of acute diseases, and the maintenance of hygienic living conditions.

Students registered for credit may receive general medical attention and advice at the Student Health Service during dispensary hours. The Health Service does not provide house-call service at any time or medical service outside of dispensary hours. Students who desire such attention should employ private physicians at their own expense. This does not apply to those who are already under care of the Health Service as infirmary in-patients. Limited hospital facilities are maintained for emergency cases which require hospitalization for general medical care. Such patients are admitted only upon advice of Health Service physicians. Fifteen days is maximum period of hospitalization available to a student during any one academic year. Extra charges sufficient to cover costs are made for overtime in the infirmary.

All expenses connected with surgical operations, fractures, specialized medical care, and special nursing must be met by the student who requires such attention. In no case will the Health Service pay or be responsible for bills from private physicians or private hospitals.

Health Service privileges are not available to members of the faculty.

All activities pertaining to medical care of students are centered in the Student Health Service building. On the ground floor are dining room, kitchen, and refrigeration unit. The clinic occupies the entire second floor and includes physicians' offices, examining rooms, X-ray and clinical laboratories, pharmacy, and minor surgery. On the third floor are 30 beds in two-bed and four-bed wards for students requiring confinement for general medical care or isolation for contagious and communicable diseases. The staff includes physicians, registered nurses, a laboratory technician, and an X-ray technician.

**Vaccination.** Under ruling of the State Board of Higher Education, students are required, as a condition of entrance to any of the institutions in the State System, to satisfy the institutional physician of immunity to smallpox (by evidence of having had the disease or successful vaccination). Exception is made, however, for students who decline vaccination because of religious convictions. Such students may be admitted, but only on the condition that they or (in case of minor or dependent students) their parents or guardians agree in writing to assume all expenses incident to their care or quarantine, should they fall ill with smallpox while students at the institution.



## Student Automobiles

All cars operated by students must be registered and must display campus registration stickers. Freshmen are not permitted to operate cars on campus at any time and other students are restricted to certain hours. Parking space for students living in dormitories is not sufficient to accommodate all cars controlled by dormitory students. A reservation in a dormitory does not guarantee parking privileges. Nearly all living accommodations are close to the campus and within walking distance.

For these reasons, students are urged to leave cars at home.

## Student Expenses

In thinking of the cost of a year in college, a student usually has in mind the amount which he will spend from the time he leaves home until he returns at the close of the year. Such an estimate includes, of course, such personal items as clothing, travel, and amusements, items which vary according to the thrift, discrimination, and habits of the individual.

The table below gives estimated *average* expenses for a year and for the first term. Board and room costs are based on charges in the halls of residence. The incidental item varies greatly with the individual. Cost of clothing is not included. Some courses of study require more expensive books and supplies than others. Drawing instruments and slide rule for engineering students cost about \$75.

Average expenses per month may vary from \$80 to \$110, but a student meets large financial demands in the first two weeks of college. He pays registration fees for the whole term, room rent for at least half a term in advance, and board a month in advance, and he must buy books at the beginning of the term. For this reason students from Oregon, including veterans whose first subsistence check will arrive at a late date, should come prepared for an initial expense of at least \$185. Out-of-state students should be prepared for an initial outlay of at least \$240. Personal checks in the exact amount provide the most convenient and safest method of payment.

### First Year Expenses

Expenses	First term	First year
Tuition and regular fees		
Tuition .....	\$10.00	
Laboratory and course fee .....	30.00	
Incidental fee .....	17.00	
Building fee .....	8.00	
	\$ 65.00	\$ 195.00
Deposit to cover breakage (returnable at end of year) ..	10.00	10.00
Books, supplies, etc., (estimate) .....	35.00	60.00
Board and room (average) .....	203.00	580.00
Incidentals .....	25.00	75.00
<b>Total for Oregon, Alaska, and Hawaii residents ....</b>	<b>\$ 328.00</b>	<b>\$ 890.00</b>
Out-of-State tuition .....	70.00	210.00
<b>Total for nonresident students .....</b>	<b>\$ 398.00</b>	<b>\$1,100.00</b>

### Opportunities for Employment

To assist students desiring to find work, the Dean of Men conducts an Employment Bureau for Men in 108 Commerce Hall and the Dean of Women conducts a similar service for women in 114 Commerce Hall.

Some men and women living in dormitories find employment in cafeterias or dining rooms, where they earn most of their board and room. For information on this type of employment contact the Director of Dormitories.

Some women earn a large part of their expenses working for room and board in private homes. They give their employer approximately three hours work per day. For information contact the Dean of Women.

Some men work as house boys or furnace boys in private homes, sororities, or boarding groups. Others work in garages, shops, mills, barbershops, and offices. For information contact the Dean of Men's employment bureau, 108 Commerce Hall.

### Student Loan Funds

The Student Loan Fund, a perpetual, revolving trust fund established for the purpose of lending money to worthy students attending Oregon State College, is administered by the Student Loan Fund, a membership organization, incorporated under the laws of the State of Oregon. Trustees are appointed by the President of the College. This fund has arisen through the generosity of friends of the institution and through the accumulation of interest on loans.

The purpose, as expressed by one of the donors, is "not to induce students to attend school by providing money that can be obtained easily, but rather to aid those who are determined to secure an education and are paying the cost wholly or in part from their own earnings." Students are eligible to loan aid after they have been in attendance at the College *at least one term*.

In making loans the trustees follow these fundamental principles:

- Care in the selection of student character as a credit basis.
- Detailed budgeting of expenses and receipts to assure that the sums borrowed are not disproportionate with the student's capacity to pay.
- Insurance against loss by a "Contract of Guaranty" signed by the parent or guardian.
- Effective follow-up system in collections.

Applications for loans should be made at the Student Loan office, 102 Memorial Union, where the information is given on the different loan funds available and the procedure for obtaining a loan.

**Other Loan Funds** administered by the trustees of the Student Loan Fund include the following:

J. T. APPERSON EDUCATIONAL FUND: for residents of Oregon.

CIVIL ENGINEERING LOAN FUND: for students in civil engineering.

CRAWFORD LOAN FUND: for native-born male citizens of the United States.

HARDING MCKINNEY FUND: for junior and senior electrical engineering students.

GEORGE W. PEAVY MEMORIAL LOAN FUND: for students in forestry.

FRED A. ROSENKRANZ LOAN FUND: primarily for members of Delta Chi fraternity at Oregon State College; also available to other students with approval of president of Delta Chi.

BEN SELLING SCHOLARSHIP LOAN FUND

JAMES AND DELMER SHAVER LOAN FUND: for senior men and women.

The trustees also cooperate in the administration of the following funds:

**A. W. S. EMERGENCY LOAN FUND FOR WOMEN STUDENTS:** Administered by the Dean of Women.

**OREGON STATE PHARMACEUTICAL ASSOCIATION EDUCATIONAL FUND:** Administered by the School of Pharmacy.

**P.E.O. EDUCATIONAL LOAN FUND:** Available to undergraduate or graduate women students (not more than \$1,000 for more than five years). Contact through Dean of Women.

## Scholarships and Fellowships

Students of ability and promise may have part of their college expenses paid through one of the scholarship or fellowship funds. Scholarships listed below are awarded to well-qualified students who need help in meeting minimum college expenses.

To apply, a student should use the application form available from the Registrar of Oregon State College or from his high school principal. Applicant should record all qualifications carefully to assure that he will be considered for all scholarships for which he may be qualified. He should list all his special activities, interests, and abilities. Application blanks accompanied by transcripts of all academic work to the date of application should be forwarded to the Registrar by March 1 of each year. Exceptions to this rule are certain private scholarships such as those listed on pages 106-107, which require special application forms.

Additional information about all scholarships may be obtained from the Registrar, Oregon State College, Corvallis.

### Undergraduate Scholarships

- ASSOCIATED WOMEN STUDENTS SCHOLARSHIP:** Tuition and fees to an undergraduate woman in recognition of outstanding campus service and high scholarship.
- BASH SCHOLARSHIP:** \$195 provided by the Portland chapter of the Oregon State College Mothers Club for an outstanding freshman woman from an Oregon high school, in memory of the late Dean of Women, Mary Bash.
- COLLINS SCHOLARSHIP:** Scholarships provided as a memorial to James Harrison Collins for graduates of Columbia County high schools. Each awardee must be in top 15% of his graduating class, be of excellent character, have an outstanding record of service to school and community, and show promise of future meritorious achievement.
- CORVALLIS ELKS SCHOLARSHIP:** \$250 for a male junior selected on the basis of leadership, citizenship, scholarship, and general proficiency in athletics. Application through Committee on Scholarships.
- DALY SCHOLARSHIPS:** A limited number of scholarships awarded annually to worthy young men and women of Lake County by the Bernard Daly Educational Fund, established through the will of the late Dr. Bernard Daly of Lakeview, Oregon. Fund is administered by a board of trustees including a representative of Oregon State College. Selections are made on the basis of a qualifying examination held in Lake County.
- DELTA DELTA DELTA SCHOLARSHIP:** Two \$150 scholarships given by Delta Delta Delta, national sorority, to worthy undergraduate women.
- DOUGLAS COUNTY HOME EXTENSION SCHOLARSHIP:** Annual tuition and fee scholarship awarded to a worthy man or woman graduating from a Douglas County high school and planning to enter freshman class at Oregon State College. Application through high school principal with approval of local unit extension officers.
- HOLMES SCHOLARSHIP:** About \$250 awarded annually to a worthy male graduate of a Jackson County high school; provided by Harry and David Holmes of Medford.
- INTERFRATERNITY COUNCIL SCHOLARSHIPS:** Five at \$100 each awarded to high school seniors for freshman year in college; recipients chosen on basis of character, leadership, and scholarship; final selection by Interfraternity Council from nominations by Committee on Scholarships.
- INTERHALL SCHOLARSHIP:** \$65 provided by the residents of women's halls for a resident of the halls, selected by the Committee on Scholarships from nominations made by a special committee. Recipient must be 50 per cent self-supporting, have a grade-point average of at least 2.5, and demonstrate service to the campus.
- JUNIOR ACHIEVEMENT SCHOLARSHIP:** To an outstanding participant in Junior Achievement of Portland, Inc. Application through the Portland Junior Achievement office.

- LEONORA H. KERR-FOLK CLUB SCHOLARSHIP:** \$195 to outstanding freshman woman from an Oregon high school; provided by a fund established as a tribute to Mrs. William Jasper Kerr and supplemented by the College Folk Club.
- MORTAR BOARD SCHOLARSHIP:** \$100 for an outstanding woman student worthy of financial assistance.
- NAVAL ROTC SCHOLARSHIPS:** Tuition, textbooks, laboratory and other instructional fees, and \$50 per month to cover living expenses for twelve months per year for four years, provided by the United States Navy.
- OREGON STATE COLLEGE EDUCATIONAL FOUNDATION, INC:** \$500 annually to provide scholarships for two or three outstanding students in need of financial assistance.
- OREGON STATE COLLEGE FOUNDATION:** Partial and full-tuition scholarships as made available through contributions to the Oregon State College Foundation.
- OREGON STATE DADS CLUB SCHOLARSHIPS:** Tuition and fees awarded by Committee on Scholarships from nominations of the Dean of Men and Dean of Women. Recipients must have received good grades for at least two terms and must be in need of financial aid. Usually, additional scholarships and \$25-to-\$50 grants to high school seniors are also provided by the Dads Club.
- OREGON STATE MOTHERS CLUB SCHOLARSHIPS:** Tuition and fees to men and women nominated by Dean of Men and Dean of Women and approved by Committee on Scholarships. Recipients must need financial aid, must be of high character, must have average or above grades. Honor scholarships will be given to a man and a woman with grade-point averages above 3.00. If a woman recipient marries, she relinquishes the scholarship.
- PHI SIGMA KAPPA FRATERNITY SCHOLARSHIP:** \$100 annually to a male high school senior for his freshman year in college. Recipients selected by Phi Sigma Kappa fraternity on basis of scholarship, character, and financial need, without regard to academic major, from nominations by Committee on Scholarships. Applicants write to Oregon State Chapter of Phi Sigma Kappa.
- SCABBARD AND BLADE SCHOLARSHIP:** Tuition and fees for one term for a junior in ROTC provided by local company of Scabbard and Blade society. Selection made by Committee on Scholarships from nominations from each service unit.
- STATE SCHOLARSHIPS:** \$40 per term or \$120 a year toward tuition and fees provided by the Oregon State System of Higher Education. At least 50% of these scholarships go to entering freshmen who rank in upper third of their high school graduating classes. Other applicants must have at least a 2.5 grade-point average. Available only to residents of Oregon.
- VARSITY O SCHOLARSHIP:** \$75 annually to a male high school senior planning to enter OSC. Selection on basis of leadership, citizenship, scholarship, and proficiency in athletics, specifically in golf, tennis, wrestling, or swimming.
- WALDO HALL SCHOLARSHIP:** \$100 awarded on the basis of need, character, and scholarship, to a resident of Waldo Hall who is at least 50% self-supporting. Selection by Scholarship Committee from nominations made by Executive Council of Waldo Hall. Recipient must have a 2.5 grade-point average and have participated in hall activities.

#### LOWER DIVISION

- CORVALLIS ELKS LODGE SCHOLARSHIP FOR INSTRUMENTALISTS:** Two full-tuition scholarships to students participating in the Oregon State College band or orchestra who have at least 2.50 grade-point averages.
- EUTERPE MUSIC SCHOLARSHIP:** \$90 to cover fee for individual instruction in piano for a member of Euterpe.
- MUSIC-STUDY SCHOLARSHIPS:** Five scholarships annually of \$60 to \$90 each, established by friends of the Music Department, to cover special fees for individual instruction in piano, organ, voice, stringed instruments, and wind instruments. Open to all students. Application through the Music Department.

#### SCHOOL OF SCIENCE

- COPSON SCHOLARSHIP:** Approximately \$200 annually from a gift of June Seeley Copson '15 to establish a scholarship in memory of her husband Godfrey Vernon Copson '11, for many years head of the Bacteriology Department. Recipient must be a junior or senior with outstanding promise in School of Science.
- CROWN ZELLERBACH FOUNDATION SCHOLARSHIP IN HONOR OF LEO FRIEDMAN:** \$1,000 to an upper division student in chemistry, preferably wood chemistry or pulp and paper chemistry. A memorial to Dr. Leo Friedman, for many years on the Chemistry faculty, a pioneer in wood chemistry in Oregon.
- GENERAL PETROLEUM CORPORATION SCHOLARSHIP:** \$400 plus registration fees provided by Socony Mobil Oil Company to a qualified senior or graduate student in geology or geophysics.
- LONGVIEW FIBRE COMPANY PULP AND PAPER SCHOLARSHIP:** \$200 to a sophomore and \$200 to a junior in chemistry. Recommendations of chemistry faculty confirmed by Committee on Scholarships. Final selection by donor.
- SIMMONS SCHOLARSHIP:** \$200 scholarship, established by the widow and friends of the late Professor Joseph E. Simmons, for a worthy, promising junior in bacteriology, in need of financial assistance for the senior year.

#### SCHOOL OF AGRICULTURE

- BORDEN SCHOLARSHIP:** \$300, provided by the Borden Company Foundation, for a senior in agriculture who has completed six term hours in dairying and who among all similarly eligible students has the highest grade-point average.

- MCKENZIE SCHOLARSHIP:** \$150 provided as a memorial to Gary McKenzie by his parents, for a freshman in agriculture who has been an active member of Future Farmers of America.
- MULTNOMAH HUNTERS AND ANGLERS CLUB SCHOLARSHIP:** \$150 for a male student, junior or senior, majoring in fish and game management to assist him in continuing his studies in wildlife conservation and management.
- OREGON DAIRY INDUSTRIES SCHOLARSHIP:** \$195 to an outstanding freshman in milk processing or milk industry management to assist him during the sophomore year in continuing his studies in one of these fields. Application through Dean of Agriculture or Department of Dairying.
- OREGON FEDERATION OF GARDEN CLUBS SCHOLARSHIP:** \$200 grant-in-aid for sophomore or upperclassman in ornamental horticulture. Selection by Committee on Scholarships from nominations by horticulture faculty.
- PACIFIC NORTHWEST PLANT FOOD ASSOCIATION SCHOLARSHIP:** \$100 to an outstanding junior or senior majoring in soils.
- RALSTON PURINA COMPANY SCHOLARSHIPS:** \$500 each, annually, to outstanding seniors in agriculture in land-grant colleges of the United States. Oregon State College seniors in this field, who rank in the upper 25 per cent of the class and who have financial needs, may apply through Dean of Agriculture.
- SEARS ROEBUCK SCHOLARSHIPS:** \$2,700 for scholarships provided by Sears Roebuck Foundation for men in agriculture who have been farm reared in Oregon. Recipients must show good character, scholastic attainment, leadership ability through participation in 4-H Club, Future Farmers, or community activities.
- VAN WATERS AND ROGERS, INC. SCHOLARSHIP:** \$200 annually to a junior man in agriculture, who qualifies on the basis of leadership, scholarship, and interest in the wholesale selling field. Selection made by the Committee on Scholarships on nomination by the School of Agriculture.
- VAUGHAN SCHOLARSHIPS:** \$500 annually, a memorial to Sara Rehnberg Vaughan, for one or more juniors or seniors in fish and game management: provided by Nutrilite Foundation of California.

#### SCHOOL OF BUSINESS AND TECHNOLOGY

- PACIFIC INTERMOUNTAIN EXPRESS COMPANY SCHOLARSHIP:** \$250 to a junior in business and technology for use in his senior year. Selection based on scholarship, character, and interest in the transportation industry as a future career.

#### SCHOOL OF EDUCATION

- PARENT-TEACHER SCHOLARSHIPS:** \$195 annually from the Oregon Congress of Parents and Teachers to encourage capable young people to enter elementary teacher training in Oregon. Open to freshmen, sophomores, and juniors; award based on scholarship, character, personality, leadership, school citizenship, and sound health.

#### SCHOOL OF ENGINEERING AND INDUSTRIAL ARTS

- AERO CLUB SCHOLARSHIP:** \$200 scholarships for majors in aeronautical engineering, for freshmen, sophomores, or juniors. Applicants must show aeronautical interest, engineering aptitude, and ability in physical science and mathematics and must need financial assistance.
- AMERICAN PULP AND PAPER SCHOLARSHIP:** \$150 annually to an outstanding high school graduate entering chemical engineering, provided by the Pacific Coast Division of the American Pulp and Paper Mill Superintendents Association. Award made on the basis of scholarship, adaptability to engineering training, and financial need.
- ASSOCIATED GENERAL CONTRACTORS OF AMERICA SCHOLARSHIP:** Five scholarships annually of \$300 each to juniors and seniors in civil, electrical, or mechanical engineering. Provided by Portland chapter of Associated General Contractors of America, Inc. Application through Dean of Engineering.
- BECHTEL CORPORATION SCHOLARSHIP:** Two of \$500 each provided by Bechtel Corporation for seniors in chemical engineering selected by chemical engineering staff and Committee on Scholarships; recipients must be under 26 years of age and anticipating careers in private industry.
- FREIGHTLINER SCHOLARSHIPS:** Two scholarships of \$500 each provided by the Freightliner Corporation of Portland to a junior and a senior, one in civil engineering and one in mechanical engineering. Applications through the School of Engineering.
- GENERAL ELECTRIC COMPANY SCHOLARSHIPS:** \$650 each to two engineering students selected from Northwestern institutions including Oregon State College, Montana State College, the State College of Washington, University of Washington, and University of Idaho.
- HERMANN SCHOLARSHIP:** \$150 annually to an outstanding senior in civil engineering in memory of the late Otto Hermann, a graduate of the School of Engineering. Nominations made to Committee on Scholarships by faculty in Civil Engineering.
- LEEDY SCHOLARSHIP:** \$200 for tuition and other expenses for a student in aeronautical engineering; a memorial to Lt. William Clark Leedy established by his parents, Jay Clark Leedy, '12, and Mildred W. Leedy, '14, of Brooks, Oregon, and his wife Meredith Ann Leedy.
- LONGVIEW FIBRE COMPANY PULP AND PAPER SCHOLARSHIP:** \$200 each to three sophomores and three juniors in mechanical or chemical engineering. Recommendations of engineering faculty confirmed by Committee on Scholarships. Final selection by donor.
- STANDARD OIL COMPANY OF CALIFORNIA UNDERGRADUATE SCHOLARSHIP:** \$750 provided by Standard Oil Company of California for an undergraduate scholarship to a student in chemical engineering. Selection made by Committee on Scholarships on nomination by head of the department.

- WEST COAST ELECTRONIC MANUFACTURERS' ASSOCIATION SCHOLARSHIP:** \$600 to a student in electrical engineering, preferably to an incoming freshman, sophomore, or junior transfer.
- WESTERN ELECTRIC COMPANY SCHOLARSHIP:** \$300 to a student in electrical or mechanical engineering above the freshman level, preferably a junior.
- WESTINGHOUSE ACHIEVEMENT SCHOLARSHIP:** \$500 per year to junior in electrical or mechanical engineering on basis of high achievement in academic work and demonstrated qualities of leadership.

#### SCHOOL OF FORESTRY

- AUTZEN FOUNDATION SCHOLARSHIP:** \$500 for an outstanding student in forestry.
- CROWN ZELLERBACH FOUNDATION SCHOLARSHIP:** \$500 provided by Crown Zellerbach Foundation for an outstanding forestry junior or senior student in need of scholarship aid.
- HART SCHOLARSHIP:** Income from an endowment fund, a memorial to Floyd Hart, prominent Oregon lumberman, for a senior in forestry.
- SOUTH SANTIAM EDUCATIONAL AND RESEARCH PROJECT SCHOLARSHIPS:** \$1500 annually, provided by Louis W. and Maud Hill Family Foundation for three Oregon students in forestry in the sophomore, junior, or senior years.
- TUCKER SCHOLARSHIPS:** Three \$1,000 scholarships, provided by the will of Max D. Tucker, for Oregon students in forestry.
- VAUGHAN SCHOLARSHIPS:** \$500 annually, a memorial to Sara Rehnberg Vaughan, for one or more juniors or seniors in conservation; provided by Nutrilite Foundation of California.

#### SCHOOL OF HOME ECONOMICS

- BORDEN SCHOLARSHIP:** \$300, provided by the Borden Company, for a senior in home economics who has completed two or more courses in foods and nutrition and who, among all similarly eligible students, has the highest grade-point average.
- FHA SCHOLARSHIP:** \$150 for a home economics student provided by the Oregon Association of Future Homemakers of America for a graduate of an Oregon high school.
- JOHNSON SCHOLARSHIP:** Approximately \$50 annually provided as a memorial to Miss A. Grace Johnson, professor of household administration (1915-1933), for a home economics junior or sophomore whose grade-point average is above student body average.
- LEE SCHOLARSHIP:** Approximately \$50 annually provided as a memorial to Mrs. Minnie E. Lee and Mr. J. B. Lee, awarded each year to a junior in home economics who has shown improvement in her college work, stability and meritorious record in all her activities, and general all-round worthiness.
- SEARS ROEBUCK SCHOLARSHIPS:** Four \$200 freshman scholarships for study in home economics, provided by the Sears Roebuck Foundation, awarded on merit to Oregon farm-reared girls who would otherwise not be able to attend college.

#### PHARMACY

- OREGON STATE PHARMACEUTICAL ASSOCIATION SCHOLARSHIP:** \$100 for tuition and fees of a senior in pharmacy who has demonstrated outstanding scholastic ability in all academic work, who is a resident of Oregon, and who, in the opinion of the pharmacy faculty, will benefit most from the financial support thus given.

### Scholarships for Foreign Students

The following scholarships and fellowships, both undergraduate and graduate, are available to assist foreign students attending Oregon State College.

- BUSINESS AND PROFESSIONAL WOMEN'S CLUB SCHOLARSHIP:** \$1,200 annually to a student from the Orient with senior or higher standing in home economics, provided by the Oregon Federation of Business and Professional Women's Clubs.
- INTERDORMITORY SCHOLARSHIP:** Room for one academic year provided for one undergraduate foreign student (man) selected on the basis of scholarship and need; provided by men's dormitories.
- INTERFRATERNITY SCHOLARSHIPS:** Room and board for one academic year provided for two undergraduate foreign students (men) selected on the basis of scholarship and need; provided by the fraternities.
- INTERNATIONAL FRIENDSHIP SCHOLARSHIP:** Provided by the Home Economics Club for an upper division or graduate student from a foreign country to study home economics at Oregon State College.
- MILAM FELLOWSHIP:** A fellowship for an undergraduate or graduate woman foreign student in home economics, established in tribute to Ava B. Milam, dean of the School of Home Economics 1917-1950.
- PANHELLENIC SCHOLARSHIP:** Room and board for one academic year provided for one undergraduate foreign student (woman) selected on the basis of scholarship and need; provided by sororities.
- STATE SCHOLARSHIPS FOR FOREIGN STUDENTS:** Tuition and course fees for a limited number of students from foreign countries attending institutions of the Oregon State System of Higher Education. Student pays building fee and incidental fee (\$25).

### Scholarships Administered by Other Agencies

- CONSOLIDATED FREIGHTWAYS, INC. SCHOLARSHIP:** \$500 to an outstanding graduate of an Oregon high school to be used at institution in State selected by recipient.
- CROWN ZELLERBACH FOUNDATION SCHOLARSHIP:** \$500 per year for four years to students in education.

**EASTERN STAR SCHOLARSHIPS:** Scholarships provided by the Grand Chapter of Oregon of the Order of Eastern Star for members or daughters of members completing the junior year in Oregon colleges and in need of financial assistance for the senior year. Application through Committee on Scholarships.

**4-H, FUTURE FARMERS OF AMERICA, AND FUTURE HOMEMAKERS OF AMERICA:** Members should make inquiries to teachers and club leaders regarding local scholarship opportunities.

**MCCCLINTOCK MEMORIAL SCHOLARSHIP:** \$150 to an outstanding junior in animal husbandry or range management; provided through funds established by the Oregon Farm Bureau Federation as a memorial to Mr. L. A. McClintock, well known Oregon stockman. Recipients selected by the Board of Directors of the Oregon Farm Bureau Federation.

**NORTHWEST CANNERS AND FREEZERS ASSOCIATION SCHOLARSHIP:** \$100 annually to an outstanding junior in food technology.

**OREGON HOME ECONOMICS ASSOCIATION SCHOLARSHIP:** \$500 over 4-year period awarded a senior in an Oregon high school for enrollment in an Oregon college granting a degree in home economics. Application through high school teacher of home economics.

**P.E.O. SCHOLARSHIP:** Scholarships provided by the Oregon State Chapter of P.E.O. for Oregon junior or senior women, outstanding and worthy of financial assistance. Application through Committee on Scholarships.

**PORTLAND HOME ECONOMICS IN EDUCATION SCHOLARSHIP:** \$150 to a freshman majoring in home economics in a college in Oregon.

**PORTLAND ROSE FESTIVAL SCHOLARSHIP:** Tuition and fees for members of the royal court who enroll at Oregon State College.

**ROTANA CLUB OF PORTLAND SCHOLARSHIP:** \$25 to an outstanding woman student in home economics.

**OREGON NISEI VETERANS AWARDS:** Two \$150 awards made annually through office of State Superintendent of Public Instruction, in memory of World War II deaths.

**ST. REGIS PAPER COMPANY SCHOLARSHIP:** \$800 a year for two years, provided by St. Regis Paper Company, for a junior at either Oregon State College or the University of Washington, including opportunity for work at the company plant over the summer.

**UNION PACIFIC-CARL RAYMOND GRAY SCHOLARSHIPS:** \$100 each for study of agriculture or home economics to an outstanding 4-H Club member in each county in Oregon served by Union Pacific Railroad.

**WAR ORPHANS EDUCATIONAL ASSISTANCE ACT OF 1956:** A student whose parent died from causes incurred in World War I, World War II, or the Korean Conflict, who is between the ages of 18 and 23, and who has completed high school, may apply for 36 months of education and training at Oregon State College. The act provides \$110 per month for full-time training. Eligible students should apply to the Veterans Administration.

## Graduate Scholarships and Fellowships

See "Graduate Appointments and Fellowships" under the GRADUATE SCHOOL.

## Honors and Awards

Outstanding scholarship is recognized at Oregon State College in several ways:

- Junior Honors, presented at the end of a student's sophomore year.
- Senior Honors, presented at the time of graduation.
- Election to membership in various honor societies.
- Personal awards, which may take the form of certificates, plaques, money prizes, or items of intrinsic value.

General honors and awards may be won by students in any school or curriculum. Other awards are open only to students in particular schools or departments. Oregon State College students compete for awards provided by national and regional sponsors in many fields as well as for essay and oratorical prizes, awards for proficiency in special fields, and awards for all-round distinction in college life.

**JUNIOR HONORS:** Conferred by the Oregon State Chapter of Phi Kappa Phi on students who have completed at least 45 term hours of sophomore work at Oregon State College with a grade-point average of at least 3.50. For purposes of these awards, sophomore work is defined as the last three terms of the student's first six terms in university or college.

**SENIOR HONORS:** Conferred each year by the Faculty Council upon those members of the graduating class, candidates for a bachelor's degree, who through their entire college course have maintained a grade-point average of at least 3.25. Recipient must have attended Oregon State College for two regular academic years. Limited to 10% in each school.

- CUMMINGS AWARDS:** Presented each spring in the proportions of \$50, \$30, \$20, and \$10 respectively to the man of highest standing in the senior, junior, sophomore, and freshman years; based on (a) scholarship, (b) success in student activities, (c) qualities of manhood, and qualities of leadership; a memorial to Edward A. Cummings.
- WALDO AWARDS:** Presented each spring in the proportions of \$40, \$30, \$20, and \$10 respectively to the woman student of highest standing in the senior, junior, sophomore, and freshman years; based on (a) scholarship, (b) success in student activities, (c) qualities of womanhood, and (d) qualities of leadership; a memorial to Clara H. Waldo.
- LIPMAN WOLFE AWARDS:** Presented in the proportions of \$50, \$30, and \$20 respectively to the man or woman of highest standing in the senior, junior, and sophomore classes based on: (a) scholarship, (b) qualities of manhood or womanhood with special emphasis on unselfishness and kindness, (c) qualities of leadership, and (d) contribution to campus welfare.
- ALPHA LAMBDA DELTA AWARD:** Presented to the senior woman in Alpha Lambda Delta with highest scholastic standing. The society gives certificates to senior members who have a grade-point average of 3.50 or above for eleven terms.
- ASSOCIATED WOMEN STUDENTS:** Awards not exceeding \$100 to the senior woman or women who, through campus-wide and house service and maintenance of high scholarship have proved themselves worthy of recognition.
- CHI OMEGA AWARD:** An annual award of \$25 to the senior woman who is adjudged by a college committee on honors and awards to approach most nearly an ideal of intellect and spirituality and to have exerted the most wholesome influence upon her associates.
- DELTA DELTA DELTA AWARDS:** Yearly awards of \$75 each made to two women students judged to have exerted, through personal resourcefulness and unselfish effort, the most constructive influence on their associates during the academic year.
- DUBACH AWARDS:** Presented annually by Oregon State chapter of Blue Key to five graduating senior men outstanding in perpetuation of high ideals and unselfish service to Oregon State College; in honor of Dr. U. G. Dubach, Dean of Men 1913-1947; names are inscribed on plaque in foyer of Library.
- FRIENDS OF THE LIBRARY BOOK AWARDS:** Two prizes of books donated annually by the Oregon State College Cooperative Association to students judged to possess the most outstanding personal libraries.
- HAMILTON AWARDS:** \$50 each to a freshman and a sophomore (man or woman) who are one-half self-supporting and are making most purposeful progress toward useful and active citizenship; a memorial to Beatrice Hamilton, mother of W. D. Hamilton, '15.
- MACKENZIE—BLUE KEY MEMORIAL AWARD:** In memory of Donald Wilson MacKenzie, class of 1953, to any man student who exhibits outstanding qualities and ability as a student leader and in service and loyalty to the institution. Cash and plaque.
- PANHHELLENIC CUPS:** One awarded to the sorority making greatest scholastic improvement, and the other awarded to the sorority freshman class making greatest scholastic improvement.
- PHRATERES SCHOLARSHIP CUP:** Awarded to the member of Phrateres who has attained the highest standing in scholarship for the year.
- SMITH AWARD:** Income from \$500 to the senior woman having highest scholastic standing during the eight terms preceding her selection for this award; not given to any student who receives another award during same year; a memorial to Drucilla Shepard Smith, formerly of Polk County, Oregon, established by her son, Mr. John E. Smith, '02.

#### LOWER DIVISION

- ALPHA CHI OMEGA CUP:** Awarded to the woman student of music who has rendered the greatest service to the campus.
- BAROMETER AD TROPHY:** Awarded to *Daily Barometer* advertising solicitor who has contributed most to financial health of student newspaper.
- BAROMETER AWARD:** Trophy to the freshman student who has contributed most to general welfare and improvement of the *Daily Barometer*, student newspaper.
- INGALLS AWARD:** Trophy given annually to the senior who has contributed most to welfare of student publications; award is recorded on a plaque, a memorial to Claude E. Ingalls, formerly editor of the *Corvallis Gazette-Times*.
- "PROF MAC" MEMORIAL PLAQUE:** Awarded annually to the day and night editors of the *Daily Barometer* who have excelled in typographical proficiency and have contributed most to general news excellence. Provided by Dr. Charles D. Byrne in memory of the late C. J. McIntosh, founder of journalism at O.S.C. and staff member 28 years.
- SIGMA DELTA CHI CITATION:** Certificate awarded by national organization to outstanding male senior interested in journalism.
- SIGMA DELTA CHI SCHOLARSHIP AWARD:** Certificate awarded by national organization in recognition of high scholastic standing in all college work.
- SIGMA DELTA PI SPANISH AWARD:** A Spanish masterpiece and the medal of the American Association of Teachers of Spanish given annually to the advanced student of Spanish who has made the greatest progress during the academic year.

#### SCHOOL OF SCIENCE

- AMERICAN INSTITUTE OF CHEMISTS AWARD:** Engraved medal awarded to an outstanding senior in chemistry, in recognition of leadership, character, and excellence in scholarship.
- MERCK AND COMPANY AWARDS:** Chemical books valued at \$15 awarded to two seniors for high academic standards and leadership qualities in chemistry.
- PHI LAMBDA Upsilon AWARD:** Certificate of merit to an outstanding junior in chemistry and chemical engineering; recipient's name engraved on plaque in Chemistry Hall.



**PHI SIGMA AWARDS:** Two certificates to the outstanding undergraduate and graduate students who have shown creative interest in biology.

**SIGMA PI SIGMA AWARD:** Junior membership in American Association of Physics Teachers to the outstanding sophomore in physics.

### SCHOOL OF AGRICULTURE

**ALPHA GAMMA RHO FRESHMAN AWARD:** Rotating trophy to a student in agriculture who has completed 45 term hours with a grade-point average of at least 2.75 and who is enrolled for his fourth term in college; purpose is to promote scholarship, leadership, development, and character.

**ALPHA ZETA SCHOLARSHIP CUP:** Awarded during the first term of the sophomore year to the student in agriculture receiving the highest grade average in the freshman class.

**DANFORTH AWARD IN AGRICULTURE:** Expenses for two weeks in St. Louis, Missouri, and two weeks in a Michigan summer camp, provided by the Danforth Foundation and Ralston-Purina Mills of St. Louis, for outstanding agriculture students.

**HANSON AWARD:** An annual award of \$100 to a student in agriculture demonstrating outstanding achievement or interest in poultry husbandry.

**NORTHWEST CANNERS ASSOCIATION AWARD:** \$100 to an outstanding junior in food technology.

**OREGON FEED AND SEED DEALERS ASSOCIATION AWARDS:** Three awards of \$150 each made to outstanding junior students in agriculture.

**RODENWOLD AWARDS:** Medals awarded each year to the members of the five-man team that represents Oregon State College in the intercollegiate livestock judging contest at the Pacific International Livestock Show in Portland; a memorial to Ben W. Rodenwold.

**SWIFT & COMPANY ESSAY AWARD:** An award of \$130 to the student in agriculture who submits the best essay on any phase of the methods employed by the meat-packing business in marketing meats, poultry, eggs, butter, and cheese. The award is used for traveling and other expenses to Chicago to attend the International Livestock Exposition and to participate while there in a market study program under the direction of Swift & Company.

**ERNEST H. WIRGAND AWARD:** Name of outstanding senior in food technology inscribed on plaque in foyer of Food Technology Building. Selection by Oregon section and student chapter of Institute of Food Technologists.

### SCHOOL OF BUSINESS AND TECHNOLOGY

**BUSINESS AND TECHNOLOGY CLUB AWARD:** Inscription on Business and Technology Honor Plaque of names of outstanding man and woman graduates determined by representatives of Business and Technology Club and faculty of Departments of Business Administration and Secretarial Science.

**PHI CHI THETA AWARDS:** For women in business and technology: (a) a prize of \$5 to the freshman having the highest scholastic standing, (b) a senior key.

**WALL STREET JOURNAL AWARD:** Medallion and subscription to best all-around man or woman graduate in business and technology as determined by the business administration faculty based on scholarship and leadership abilities.

### SCHOOL OF EDUCATION

**KAPPA DELTA PI AWARDS:** \$75 annually to a junior or senior in education who is outstanding scholastically, has great promise as a teacher, and has need for financial assistance.

### SCHOOL OF ENGINEERING AND INDUSTRIAL ARTS

**AMERICAN INSTITUTE OF CHEMICAL ENGINEERS CERTIFICATE OF MERIT:** Certificate of Merit and pin awarded to the junior student member of the chapter judged the outstanding student during preceding academic year.

**AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS AWARD:** An associate membership in the Institute, awarded by the Portland Section for the best paper prepared and delivered by an undergraduate member of the Oregon State College student branch.

**AMERICAN SOCIETY OF MECHANICAL ENGINEERS AWARDS:** Awards of \$20, \$15, \$10, and \$5 are given annually for the best papers prepared and delivered in the student branch of the society.

**AMERICAN SOCIETY OF METALS:** Cash awards of \$50, \$25, and \$15 for the best papers prepared by student members of the society.

**ETA KAPPA NU AWARD:** Certificate of merit to the outstanding student in the sophomore electrical engineering class; name engraved on a bronze plaque in Dearborn Hall.

**INSTITUTE OF AERONAUTICAL SCIENCES AWARDS:** Certificate of merit and two-year membership (\$20) in the Institute to senior member having the highest scholastic rank during the junior and senior years and to student member preparing and presenting the best lecture at a regular meeting of the student branch.

**PI TAU SIGMA AWARD:** One mechanical engineering handbook presented to the outstanding student in the sophomore mechanical engineering class.

**DELROY F. RYNNING AWARD:** Initiation fee and half year's junior membership dues to A.I.Ch.E. to a graduating member of the student chapter judged by his classmates to become most valuable member to the society. A memorial to the late Delroy F. Rynning established by his friends and associates.

**SIGMA TAU AWARD:** A medal awarded each year to the sophomore student in engineering who as a freshman was the most outstanding student.

**TAU BETA PI LOCAL AWARDS:** Award of \$5 for the best essay submitted in the student chapter of the society. Certificates of merit are also awarded to freshmen in engineering having the highest scholastic standing during the first two terms of the year.

**SCHOOL OF FORESTRY**

- ANNUAL CRUISE CUP:** Revolving cup to staff member of the *Annual Cruise*, School of Forestry yearbook, who is judged to have contributed most to success of the publication.
- KELLY AXE AWARD:** Presented by Kelly Axe Company to the senior in forestry who has contributed most to the success of the School of Forestry.
- PACK FORESTRY AWARD:** Income from a gift of \$2,000 made by Mr. Charles Lathrop Pack of New Jersey awarded annually to the student in forestry who produces the most interesting, logical, and technically significant paper for publication.
- SNELLSTROM FORESTRY AWARD:** Approximately \$25 awarded annually to a junior in forestry on the basis of character, ability, sincere interest in forestry as a career, and need for financial assistance in completing his college course; a memorial to John R. Snellstrom.
- XI SIGMA PI PLAQUE:** Awarded each year to the student in forestry who has maintained the highest grade average during the sophomore year.

**SCHOOL OF HOME ECONOMICS**

- HOME ECONOMICS FRESHMAN AWARD:** An award of \$10 to promote scholarship and leadership in home economics, the recipient being selected by a committee representing Omicron Nu and the faculty in home economics.
- OMICRON NU PLAQUE:** Awarded each year to the senior woman who has best lived the teachings of home economics throughout her college career.
- LATHROP AWARD:** An annual award of \$50 by the Oregon Home Economics Extension Council to a junior or senior in home economics in memory of K. and Ethel Lathrop.
- ROTANA CLUB AWARD:** An annual award of \$25 provided by the Rotana Club of Portland for a sophomore in home economics.

**SCHOOL OF PHARMACY**

- BRISTOL LABORATORIES AWARD:** A personalized copy of the Modern Drug Encyclopedia, awarded annually to a senior who has achieved notably during his academic residence.
- KAPPA PSI AWARD:** An advanced reference in pharmacy or pharmacology given each year to the senior student who, in opinion of his classmates, has most outstandingly displayed qualities of character, leadership, and service.
- LAMBDA KAPPA SIGMA SCHOLARSHIP KEY:** Awarded annually to the senior member of Lambda Kappa Sigma, women's honorary in pharmacy, who has maintained the highest scholastic average.
- LEHN AND FINK MEDAL:** An appropriately engraved gold medal awarded each year to the senior in pharmacy who has attained the highest scholarship rank or who in the judgment of the faculty has made the most distinctive contribution to science in pharmacy.
- McKESSON AND ROBBINS AWARD:** \$50 awarded annually by the Portland Branch of the company to the senior student scoring highest in a comprehensive examination in pharmacy.
- MERCK AWARDS:** Two sets of reference books awarded annually to senior students having highest scholastic averages in pharmacy and in pharmaceutical chemistry.
- REO CHI AWARD:** An advanced reference in pharmacy or related field awarded each year to junior student having achieved highest scholastic rating in professional studies.
- WOMEN'S AUXILIARY, OREGON STATE PHARMACEUTICAL ASSOCIATION AWARD:** \$100 annually to a deserving woman student in pharmacy.

## Honor Societies

Most of the honor societies at Oregon State College are national organizations with chapters at leading universities. Societies with chapters on this campus include the following:

- ALPHA DELTA SIGMA**—national professional advertising honorary fraternity for men.
- ALPHA LAMBDA DELTA**—national honorary scholastic fraternity for freshman women.
- ALPHA ZETA**—national honor society in agriculture.
- AQUABATS**—local honor society for women with outstanding aquatic ability.
- BLUE KEY**—national recognition society for senior men.
- DELTA SIGMA RHO**—national forensic honor society open to both men and women.
- EPSILON PI TAU**—national professional honor society for men in industrial arts.
- ETA KAPPA NU**—national men's professional honor society in electrical engineering.
- EUTERPE**—local women's honorary music association.
- KAPPA DELTA PI**—national honor society in education.
- KAPPA KAPPA PSI**—honorary music society.
- KAPPA PI**—national honorary fraternity for outstanding students of art.
- KAPPA PSI**—national honor and professional fraternity for pharmacists.
- LAMBDA KAPPA SIGMA**—national professional fraternity for women in pharmacy.
- MASQUE AND DAGGER**—local honorary society in dramatics.
- MORTAR BOARD**—national honorary organization for senior women.
- MU BETA BETA**—4-H club honorary fraternity.
- NATIONAL COLLEGIATE PLAYERS**—national dramatic honorary fraternity.
- OMICRON NU**—national honorary fraternity for professional home economists.
- ORANGE O**—local honor society for Women's Recreation Association.
- ORCHESTRIS**—national honor society for modern dance.
- PARTHENIA**—honorary for women in physical education.
- PERSHING RIFLES**—national military honorary society.
- PHI ALPHA THETA**—national honor society in history.
- PHI CHI THETA**—national honor society for women in commerce.

PHI ETA SIGMA—national honorary scholastic fraternity for freshman men.  
 PHI KAPPA PHI—national honor society composed of faculty, graduates and under-graduate members of all departments of American universities and colleges.  
 PHI LAMBDA Upsilon—national honorary chemical society.  
 PHI SIGMA—honorary biology fraternity.  
 PI MU EPSILON—national honorary fraternity in mathematics.  
 PI TAU SIGMA—national honorary fraternity for mechanical engineers.  
 RHO CHI—national pharmaceutical honor society.  
 SCABBARD AND BLADE—national military honorary of ROTC, NROTC, and AFROTC.  
 SIGMA DELTA CHI—national professional journalistic fraternity.  
 SIGMA DELTA PSI—national honorary fraternity in athletics.  
 SIGMA PI SIGMA—honorary society in physics.  
 SIGMA TAU—national honorary fraternity for student and professional engineers.  
 SIGMA XI—honorary graduate research organization.  
 TAU BETA PI—national honor society for professional engineers.  
 THETA SIGMA PHI—national professional fraternity for women in journalism.  
 XI SIGMA PI—national professional honorary in forestry.

## Cocurricular Activities

Oregon State College recognizes the values of student activities outside of regular course work. They encourage the formation of habits of civic responsibility and leadership through self-government and student clubs and societies. They enhance cultural development through participation in the intellectual and esthetic life of the campus. Many of these activities, because of their close relationship to the educational program, are cocurricular rather than extra-curricular.

### Memorial Union

The Memorial Union provides the campus center for democratic fellowship among all students, faculty, alumni, and friends of Oregon State College. Every day hundreds of students make use of its social rooms, bookstore, and post office. They read and converse in the comfortable lounges; they hold committee meetings and social hours in the club and game rooms; they pause between classes at the coffee shop. The building contains offices for student organizations and activities. It provides a tearoom open to the public, a telegraph office, a barbershop, and a ballroom. The president of the Memorial Union is a student; students share actively in its management and in organizing its social program.

Dedicated on June 1, 1929, to "the service and inspiration of the living and to the memory of our immortal dead" the Memorial Union now honors the memory of the men and women who gave their lives in the service of their country in the Spanish-American War, World War I, and World War II. The building was financed from funds provided by students, alumni, faculty members, and other friends of Oregon State College.

### Student Self-Government

The Associated Students sponsors campus-wide student programs such as Homecoming, Dads Weekend, Mothers Weekend, Beaver Preview, Campus Chest Drive, and special emphasis weeks throughout the year.

The Associated Women Students coordinates, sponsors, and supervises activities of all women students' organizations. Other women's groups which play important roles in student self-government include the House President's Council, Panhellenic Council, Interhall Council, and Co-Resident Council.

The Associated Independent Students unifies students not affiliated with fraternities or sororities for participation in campus life and government.

Class organizations, formed by each entering class, retain their identity throughout the four undergraduate years and hold class reunions at various times after graduation.

**Men's groups** which provide experience in student leadership include the Interfraternity Council, Interdormitory Council, and Co-op Council.

### **Other Activities**

**Art and Music.** Exhibits, lectures, concerts, and recitals sponsored by the Art and Music departments, the Associated Students, and student musical and art organizations play a central part in the cultural life of the community. Under the patronage of the Memorial Union Student Committee and the Art Department, exhibitions in the Memorial Union stimulate interest in architecture, painting, sculpture, and related arts. They give the student acquaintance with the best of his historical inheritance and knowledge of contemporary art movements throughout the world. Student and faculty exhibits of art work are shown in the Kidder Hall galleries throughout the school year.

Membership in the student musical organizations is open to all students after consultation with the directors concerned. Honor societies also promote art and music interests on the campus.

The Symphony Orchestra and Concert Band each play one major concert on the campus annually and make a number of such appearances in other communities; they perform frequently for other major campus events.

The Men's Glee Club and the Women's Madrigal Club present seasonal concerts both as separate choruses and as one large choir, the College Chorus. The Choralaires, selected from the membership of the College Chorus, is the traveling group, making several off-campus appearances annually.

In cooperation with the Corvallis Civic Music Association, the Educational Activities Board brings artists of international fame to the campus for concerts and recitals. Advanced music students and faculty also give public recitals during the year. Several dance recitals are given each year under the auspices of the Division of Physical Education, Orchesis, and other organizations.

**Forensics, Dramatics, and Radio and Television.** Speech activities have intellectual and cultural value for both the participants and the campus community. Oregon State College is a member of the Pacific Forensic League and the Intercollegiate Forensic Association of Oregon. Special student organizations, such as Masque and Dagger, the Telemike Club, the Puppetry Club, and chapters of Delta Sigma Rho and National Collegiate Players, also provide outlets for forensic and dramatic talent.

Training and experience in acting, play production, and stagecraft are provided by the Speech Department. Each season, seven major plays and groups of one-act plays are presented in the College Playhouse. The well-equipped radio and television studios in Shepard Hall afford practical training in the mass media of communication. Radio programs are written and broadcast over KOAC, KWIL, and KRUL; television programs are prepared and telecast over a closed-circuit system. The Forensic Division of the Associated Students sponsors a full schedule of forensic activities for both men and women students, including debate, oratory, extempore speaking, after-dinner speaking, and discussion—all under direction of the Speech Department. Each year, thirty to forty students compete in eight state intercollegiate speaking contests and at least a half dozen regional and national forensic tournaments. Many students are also given an opportunity to speak or read before service clubs, lodges, granges, and other groups. For participation in these activities, a student may earn regular academic credit.

**Lectures.** Frequent public lectures by faculty members and visiting scholars and persons prominent in national affairs supplement the regular cur-

riculum. Campus sponsors of lectures include the Committee on Concerts and Lectures, Faculty Men's Club, American Association of University Women, Faculty Women's Club, College Folk Club, Lower Division Faculty, Committee on Religious Education, Round Table, Associated Students, Associated Women Students, Phi Kappa Phi, Sigma Xi, and others.

**Sports and Athletics.** Oregon State College is a member of the Pacific Coast Intercollegiate Athletic Conference composed of the leading universities and colleges of the coast region. A comprehensive program of intramural sports is closely correlated with instruction in physical education. Stimulation and recognition of achievement in athletics and sports are provided through the Division of Physical Education, honor societies in physical education, and a variety of sports interest groups.

**Student Publications.** Student publications include the following:

*The Oregon State Daily Barometer* (four days a week)

*The Beaver* (yearbook issued in May)

*Oregon State College Student Handbook* (Rook Bible)

*The Oregon State Technical Record* (engineering and industrial quarterly)

*The Annual Cruise* (illustrated annual published by Forestry Club)

*The Student and Faculty Directory*, "Fusser's Guide," (published by student journalism and advertising societies).

### Clubs and Societies

Serving the varied interests of students—social, intellectual, recreational, and professional—many clubs and societies are maintained on the Oregon State College campus. For example:

#### • Service organizations:

ALPHA PHI OMEGA  
BLUE KEY  
CAMPUS RELIGIOUS COUNCIL  
ROOK AND ROOKESS COUNSELORS

MORTAR BOARD  
ROUND TABLE (affiliated with YW-YMCA)  
STUDENT RED CROSS UNIT  
TALONS AND THANES

#### • Organizations with a wide range of interests:

ARNOLD AIR SOCIETY  
BERNARD DALY CLUB  
CO-OP BOOK STORE BOARD OF DIRECTORS  
CO-OP MANAGER'S ASSOCIATION  
COSMOPOLITAN CLUB  
FUTURE TEACHERS OF AMERICA  
HUI O HAWAII  
LOWER DIVISION COUNCIL  
MOUNTAIN CLUB  
PHILOSOPHY CLUB

PROMENADERS  
SPANISH CLUB  
STATER'S FLYING CLUB  
STUDENT ATHLETIC MANAGER'S ASSOCIATION  
STUDENT PEACE COUNCIL  
TAFFRAIL  
YOUNG DEMOCRATS  
YOUNG REPUBLICAN CLUB

#### • Professional organizations:

##### *Science:*

AMERICAN CHEMICAL SOCIETY  
EQUANIMITAS (premedical)  
PRENURSING CLUB

##### *Business and Technology:*

ACCOUNTING CLUB  
BUSINESS AND TECHNOLOGY CLUB

##### *Agriculture:*

AGRICULTURAL EXECUTIVE COUNCIL  
CAMPUS 4-H CLUB  
DAIRY CLUB  
FARM CROPS CLUB  
FARM ECONOMICS CLUB  
FIN AND ANTLER  
FOOD TECHNOLOGY CLUB  
FUTURE FARMERS OF AMERICA  
HORTICULTURE CLUB  
POULTRY SCIENCE CLUB  
SOILS CLUB  
WITHYCOMBE CLUB

##### *Engineering:*

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS  
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS  
AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS  
AMERICAN FOUNDRYMEN'S SOCIETY  
AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS  
AMERICAN SOCIETY OF CIVIL ENGINEERS  
AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS  
AMERICAN SOCIETY OF MECHANICAL ENGINEERS

*Engineering (Continued):*

ENGINEERING STUDENT COUNCIL  
 GENERAL ENGINEERING SOCIETY  
 INSTITUTE OF AERONAUTICAL SCIENCES  
 INSTITUTE OF RADIO ENGINEERS  
 SOCIETY FOR ADVANCEMENT OF  
 MANAGEMENT  
 SOCIETY OF AMERICAN MILITARY  
 ENGINEERS  
 SOCIETY OF AUTOMOTIVE ENGINEERS

*Forestry:*

FORESTRY CLUB  
 PRESS RADIO GUILD

*Home Economics:*

CAMPUS 4-H CLUB  
 HOME ECONOMICS CLUB

*Pharmacy:*

AMERICAN PHARMACEUTICAL ASSOCIATION

## Eligibility for Participation

Before a student can qualify for an elective or appointive office in any student, extracurricular, or organization activity he must obtain a certificate of eligibility from the Dean of Men or the Dean of Women. He must be registered for at least 12 term hours and have an accumulative grade-point average of at least 2.00 and a 2.00 for the preceding term during which term he must have completed at least 12 term hours. A student becomes disqualified to continue in office in any term in which he drops below a 12-term-hour load.

Students representing Oregon State College in intercollegiate athletics must comply with the rules established by the Pacific Coast Conference.

Complete rules regarding eligibility for participation in student activities are included in *Student Regulations*, a copy of which goes to each student at fall term registration.

## Parent and Alumni Cooperation

### Dads and Mothers Clubs

The Dads Club of Oregon State College, composed of fathers or male guardians of students attending Oregon State College, has as its purposes to preserve the traditions and the future usefulness of the institution; to cooperate with the administration of higher education in Oregon; and to cooperate with similar organizations throughout the State. Scholarships are donated annually to worthy students in need of financial aid.

The Mothers Club of Oregon State College is open to all mothers and other women interested in furthering the interests and welfare of students of Oregon State College. "Once an Oregon State Mother, always an Oregon State Mother." Individual units of the Mothers Club are organized in many communities of the State. Also, there are clubs of mothers of individual fraternity, dormitory, and organized independent groups. Annual meeting of the state organization is held on campus Mothers Weekend. Large and appreciated assistance is given students through the annual donation of tuition scholarships to deserving and needy students.

### Alumni Association

Informed, organized alumni backing of college projects is provided by the Oregon State College Alumni Association. Another important function is the publishing of *THE OREGON STATER*, the monthly alumni magazine. Attendance at Oregon State makes one eligible for membership in the association. Annual dues are \$4 and include a year's subscription to *THE OREGON STATER*. A life membership costs \$80 (lump-sum payment) or may be paid in 11 cumulative installments of \$8 each over a period of 11 years.

Officers and directors of the association are elected at the annual business

meeting which is held in June. Directors serve for a three-year period and officers are elected annually. Officers and directors are:

H. F. THOMAS, '19, Valsetz.....	President
FRANK RAMSEY, '39, Corvallis.....	Vice President
A. H. "PETE" SMITH, '41, Corvallis.....	Treasurer
ROBERT P. KNOLL, '48, Corvallis.....	Director of Alumni Relations
TED H. CARLSON, '50, Corvallis.....	Assistant Director of Alumni Relations

**Directors:**

MRS. FREIDA BLAKELY, '37, Portland	GLENN GREGG, '23, Bend
AMBY FREDERICK, '32, Portland	FLOYD ROOT, '32, The Dalles
VIRGIL CAVAGNARO, '49, Portland	ROBERT THOMPSON, '25, Klamath Falls
ROBERT CONKLIN, '23, Portland	JOHN MULLIGAN, '51, Pendleton
JOHN GALLAGHER, Sr., '00, Corvallis	DICK TENSEN, '50, Nyssa
PETE COSOVICH, '22, Astoria	JOE OLIVER, '40, John Day
LYLE SPECHT, '41, Tillamook	STUART WARREN, '41, Pasadena, California
JOHN HACKENBRUCK, '46, Coos Bay	JOHN LAVINDER, '27, San Francisco, California
BOB WHITE, '39, Salem	E. J. KEEMA, '33, Sacramento, California
CARLE ABRAMS, '00, Salem	HARRY BAKER, '27, Fresno, California
MRS. H. V. PASLEY, '35, Hillsboro	RAY CRANE, '48, Corning, California
WILLARD CLOYES, '30, Springfield	AL HUNTER, '41, Seattle, Washington
JAMES JENKS, '27, Albany	MARY MEIER, '57, student member
FRANK DIXON, '48, Roseburg	CHARLES ADDICOTT, '57, student member
M. M. HUGGINS, '38, Medford	

Oregon State College Federation. The Oregon State College Federation, organized in 1951, includes representatives of the Associated Students, the Mothers Club, the Dads Club, and the Alumni Association. Its purpose is to coordinate, implement, and encourage the activities of the various member groups in behalf of Oregon State College and its students. Officers are BERT W. FARNES, Portland, Chairman; and Mrs. JOHN WIEMAN, Portland, Secretary.

**Oregon State College Foundation**

The object of the Oregon State College Foundation, as stated in its articles of incorporation, is to aid and promote educational and charitable activities and purposes, and specifically, to solicit, acquire, receive, hold, manage, construct, use, maintain, lease, exchange, and dispose of all kinds of property, whether acquired absolutely or in trust, for the benefit of Oregon State College. Substantial gifts have been received and, since its incorporation in 1947, the Foundation has become an important adjunct to the advancement of the work of Oregon State College.

**Board of Trustees:**

- ALBERT BAUER, Portland, Oregon.
- DONALD W. HOLGATE, Trust Officer and Director, Pacific National Bank of San Francisco, San Francisco, California.
- GLENN L. JACKSON, Vice President, California Oregon Power Company, Medford, Oregon.
- ROBERT M. KERR, Attorney, Tooze, Kerr, Hill and Tooze, Portland, Oregon.
- MRS. RAMOND KINSER, Past President, Oregon State College Mothers Club, Portland, Oregon.
- CHARLES H. REYNOLDS, Reynolds Insurance Company, La Grande, Oregon.
- CLAUDE F. PALMER, President, Photo-Art Commercial Studios, Portland, Oregon.
- E. C. SAMMONS, President, U.S. National Bank, Portland, Oregon.
- G. E. SPAIN, Vice President, Caterpillar Tractor Company, Peoria, Illinois.
- A. L. STRAND, President, Oregon State College, Corvallis, Oregon.
- ROBERT A. THOMPSON, Pioneer Tobacco Company, Klamath Falls, Oregon.
- MARION T. WEATHERFORD, Rancher, Arlington, Oregon.
- LINDSEY H. SPIGHT, Vice President, Blair Television Company, San Francisco, California.
- GEORGE F. CHAMBERS, Cascade Packing Company, Salem.
- CHARLES W. FOX, Cascades Plywood Corporation, Portland.

**Officers:**

CLAUDE F. PALMER, President; MARION T. WEATHERFORD, Vice President; ROBERT M. KERR, Treasurer; and A. L. STRAND, Secretary.

**Councilors:**

- H. F. THOMAS, President, Oregon State College Alumni Association, Valsetz.
- A. W. TRIMBLE, President, Oregon State College Dads Club, Portland.
- MRS. H. K. LOUNSBURY, President, Oregon State College Mothers Club, Eugene.
- J. CLINTON DAVIS, Representative of Alumni Association, Portland.
- ROBERT KNOLL, Manager of Alumni Relations, Corvallis.

# Lower Division

## Faculty

RALPH COLBY, Ph.D., Dean of Lower Division.

FRANK LOVERN PARKS, Ph.D., Head Counselor.

Architecture: Professor SINNARD (department head); Assistant Professors ELLIS<sup>1</sup>, WASSON; Instructors J. G. BROWN, GLASS.

Art: Professor GILKEY (department head); Associate Professors FIELD (emeritus), FOX; Assistant Professors GUNN, HUCK, JAMESON, S. LEVINE, SANDGREN, TAYSON, TROJAN, WASSON.

Economics: Professors M. N. NELSON (department head), DRESEN (emeritus); Associate Professors BOWEN, FRIDAY, VATTER<sup>1</sup>; Assistant Professors DAVENPORT, DOWNS.

Geography: Professors JENSEN (chairman), HIGHSMITH; Associate Professors HEINTZELMAN, MYATT; Instructors DOLAN, LOMAX.

English: Professors H. B. NELSON (department head), CHILDS, COLBY, MUNFORD, PETERSON (emeritus), M. E. SMITH (emeritus); Associate Professors FOREMAN, GIBSON, JENKINS; Assistant Professors R. D. BROWN, CLAYES, GROSHONG, HEWITT, JURGENSON<sup>2</sup>, LAWRENCE, LIGON, LUDWIG, McELFRESH (emeritus), MALAMUD<sup>2</sup>, MITCHELL, NORRIS, SCHROEDER, E. D. SMITH, D. SPENCER, WILSON; Instructors D. D. BROWN<sup>3</sup>, BUTTS, CARTER, DUBBÉ, EISNER, ENGESSER<sup>4</sup>, C. A. GARRISON, L. E. GARRISON<sup>5</sup>, HOUSTON, HUFF, KING, G. LEVINE<sup>6</sup>, McCORKLE, ONSTAD, PERRINO, J. SPENCER<sup>7</sup>, WATERS.

History: Professors ELLISON (department head), C. K. SMITH, VAUGHN (emeritus); Associate Professor R. W. SMITH; Assistant Professors BERKELEY, CARLIN, SEAW; Instructor ADOLF.

Journalism: Professor SHIDELER<sup>1</sup> (department head); Associate Professors BAILEY, LAKE; Assistant Professor ZWAHLN.

Landscape Architecture: Professors MARTEL (department head), PECK (emeritus); Associate Professor SOLBERG; Instructor FREDEN.

Modern Languages: Associate Professor KRAFT (department chairman); Professors BOURBOUSSON, DAWES; Associate Professors KUNY (emeritus), LEWIS (emeritus); Assistant Professors JURGENSON<sup>2</sup>, RICHTER; Acting Instructors GARRON, ROA, YANG.

Music: Professor WALLS (director), P. PETRI (emeritus); Associate Professors BRYE, GRAY, MESANG, SITES; Assistant Professors DAVIS, MOLTSMANN, O'CONNOR, ROBERTS.

Philosophy: Associate Professor HOVLAND (department chairman); Professor WARRINGTON (emeritus); Instructor ANTON.

Political Science: Professors J. M. SWARTHOUT (department chairman), DUBACH (emeritus), POLING, SWYGARD<sup>1</sup>; Associate Professors MADDOX, WALTER; Assistant Professors FUQUAY, McCLENAGHAN<sup>1</sup>; Instructor CARNEY.

Psychology: Associate Professor CROOKS (department chairman); Professor BRUMBAUGH (emeritus); Assistant Professors BARNES, EDGINGTON<sup>4</sup>, MANNING, MILLS, ROHDE; Instructors COPPOCK, DAMM, JOHNSTONE<sup>5</sup>, TAUBMAN, VAN LOAN.

Religion: Associate Professor HOVLAND (department chairman); Professor WARRINGTON (emeritus); Instructor STRIPPEL.

Sociology: Professors PLAMBECK (department chairman), BAKKUM, DANN (emeritus); Associate Professor PARKS; Assistant Professor CANTRELL.

Speech: Professors WELLS (department chairman), KNOLL<sup>5</sup>, YOUNG; Associate Professors CORTRIGHT, LIVINGSTON, WINGER; Assistant Professors DOLER, HARRIS, HILDEBRANDT; Instructors HENRY, McGRATH, M. SWARTHOUT, WALLACE.

## General Statement

### Lower Division Liberal Arts and Sciences

**F**RESHMAN AND SOPHOMORE work in the liberal arts and sciences is unspecialized. Students completing two years of work and fulfilling all requirements for junior standing may select a major in a specialized field by the end of the sophomore year.

<sup>1</sup> On leave, 1956-57.

<sup>2</sup> On leave, spring term 1956-57.

<sup>3</sup> Fall term, 1956-57.

<sup>4</sup> Winter and spring terms, 1956-57.

<sup>5</sup> On leave, winter term 1956-57.

<sup>6</sup> Fall and winter terms, 1956-57.

<sup>7</sup> On leave fall term, 1956-57.

<sup>8</sup> Died January 4, 1957.



The Lower Division includes departments in the fields of arts and letters and the social sciences, as follows: Architecture, Art, Economics (including Geography), English, History, Journalism, Landscape Architecture, Modern Languages, Music, Philosophy, Political Science, Psychology, Sociology, Speech. The Department of Religion, offering lower division and upper division work, is administered through the Lower Division.

- For students who plan to complete work for a bachelor's degree the two lower division years provide broad general education and a foundation for specialization during the junior and senior years in some major field in the liberal arts and sciences or in a professional or technical curriculum.

- For students uncertain as to their educational or professional goals the Lower Division offers the opportunity to explore several fields of study to help determine special interests and aptitudes.

- For students who plan to complete no more than two years of college, the Lower Division offers a program suited to the needs of the individual, balancing cultural and vocational courses as preparation for intelligent and useful citizenship.

For the purpose of adjusting the work to the twofold objective of general education and exploratory studies, lower division work in liberal arts and sciences has been arranged in three groups, each representing a comprehensive field of knowledge, as follows: LITERATURE, SCIENCE, SOCIAL SCIENCE. Students intending to major in liberal arts and sciences must complete at least 9 approved term hours in each of the three groups and at least 9 additional approved term hours in any one of the groups. See GROUP COURSES.

Besides fulfilling group requirements, lower division students must take required work in English Composition, Hygiene, Physical Education, and Air, Military, or Naval Science (men). Entering students are required to take certain aptitude and placement examinations and to make any adjustments indicated by achievements in these tests. Students complete their study programs with courses required by major departments or schools or with electives. Students who are uncertain of their dominant interest or their vocational intentions, or who do not plan specialization later, take a program of studies designed to aid them in self-exploration and individual development.

Each entering student has a faculty adviser, who assists him in building an integrated study program, in line with his needs and interests and with institutional requirements.

A student who has completed a total of at least 93 term hours of required and elective freshman and sophomore work and has met requirements (see DEGREES AND CERTIFICATES) may be granted a Junior Certificate, a Junior Certificate with Honors Privileges, or a Lower Division Certificate, depending on his objectives and attainments.

### **Lower Division and Service Departments**

Under the plan adopted for the Oregon State System of Higher Education on March 7, 1932, major work in the fields of arts and letters, architecture, and allied arts (including art and architecture and landscape architecture), journalism, music, and social science was confined to the University of Oregon. Lower division work in these fields may be taken at Oregon State College. Similarly, in certain fields in which major work is confined to Oregon State College, work is offered at the University as follows: in home economics, lower division and service courses; in secretarial science, lower division service courses. At

each institution, in addition to the lower division work, upper division service courses are offered in the nonmajor departments for students in other fields.

While it is recommended that students intending to major in any of these fields enter at the beginning of the freshman year the institution at which major work is offered, they may, if they wish, complete the first two years of work in any of these fields at the nonmajor institution, and transfer to the major institution at the beginning of the junior year with fundamental requirements for upper division work fully met.

## Group Courses

Sequences in liberal arts and sciences, applicable in meeting group requirements, are offered by the Lower Division and the School of Science. These courses may also be taken as electives. The lists are revised on recommendation of the Joint Committee on Liberal Arts Requirements appointed by the President on nomination of the Dean of the Lower Division and the Dean of the School of Science.

### Literature

#### English

- <sup>1</sup>Eng 101, 102, 103. Survey of English Literature. 3 hours each term.
- <sup>1</sup>Eng 104, 105, 106. Appreciation of Literature. 3 hours each term.
- Eng 107, 108, 109. World Literature. 3 hours each term.
- Eng 201, 202, 203. Shakespeare. 3 hours each term.
- Eng 253, 254, 255. American Literature. 3 hours each term.
- Eng 264, 265, 266. Continental European Literature. 3 hours each term.
- Eng 271, 272, 273. Contemporary Literature. 3 hours each term.

#### Germanic Languages

- GL 101, 102, 103. Second-Year German. 2, 3, or 5 hours each term. (Applicable as a *second* Literature sequence when taken for 3 or 5 term hours each term.)
- GL 201, 202, 203. Survey of German Literature. 3 hours each term.

#### Romance Languages

- FRENCH**
- RL 101, 102, 103. Second-Year French. 2, 3, or 5 hours each term. (Applicable as a *second* Literature sequence when taken for 3 or 5 term hours each term.)
- RL 201, 202, 203. Survey of French Literature. 3 hours each term.

#### SPANISH

- RL 107, 108, 109. Second-Year Spanish. 2, 3, or 5 hours each term. (Applicable as a *second* Literature sequence when taken for 3 or 5 term hours each term.)
- RL 207, 208, 209. Spanish Literature. 3 hours each term.

#### SLAVIC LANGUAGES

- SL 101, 102, 103. Second-Year Russian. 2, 3, or 5 hours each term. (Applicable as a *second* Literature sequence when taken for 3 or 5 term hours each term.)

### Science

#### Science Surveys

- GS 101, 102, 103. Biological Science Survey. 4 hours each term.
- GS 104, 105, 106. Physical Science Survey. 4 hours each term.

#### Bacteriology

- Bac 200. Bacteriology Laboratory. 2 hours. (See Interdepartmental Combinations, next page.)
- Bac 204, 205, 206. General Bacteriology. 3 hours each term.

#### Botany

- Bot 201, 202. General Botany. 3 hours each term. Bot 203. Field Botany. 3 hours. (See Interdepartmental Combinations, next page.)

#### Chemistry

- Ch 101, 102, 103. General Chemistry. 3 hours each term.
- Ch 104, 105, 106. General Chemistry. 4 hours each term.
- Ch 201, 202, 203. General Chemistry. 3 hours each term.
- Ch 204, 205. General Chemistry. 4 or 5 hours each term.
- Ch 206. Qualitative Analysis. 4 or 5 hours.

<sup>1</sup> Students may choose either Eng 101, 102, 103 or Eng 104, 105, 106 but may not take both sequences for credit.

- Entomology**  
Ent 200. General Entomology. 5 hours. (See Interdepartmental Combinations, next page.)
- Geology**  
G 201, 202, 203. Geology. 3 hours each term. (May be accompanied by G 204, 205, 206. Geology Laboratory. 1 hour each term.)
- Mathematics**  
Mth 100. Intermediate Algebra. 4 hours; Mth 101, 102, 103. College Algebra, Trigonometry, Analytic Geometry. 4 hours each term; St 311. Introduction to Statistics. 4 hours. (Any three terms in this group.)  
Mth 104, 105, 106. Mathematics for Business and Industry. 3 hours each term.  
Mth 201, 202, 203. Differential and Integral Calculus. 4 hours each term.
- Physics**  
Ph 207, 208, 209. Engineering Physics. 4 hours each term.  
Ph 201, 202, 203. General Physics. 4 hours each term.  
Ph 204, 205, 206. Astronomy. 3 hours each term.
- Psychology**  
Psy 201, 202. General Psychology. 2 hours each term; Psy 205. Applied Psychology. 3 hours; when accompanied by Psy 208, 209, 210. Psychology Laboratory. 1 hour each term.
- Zoology**  
Z 114, 115, 116. Human Biology. 3 hours each term, when accompanied by Z 117, 118, 119. Human Biology Laboratory. 1 hour each term.  
Z 200. General Zoology. 5 hours. (See Interdepartmental Combinations, below.)  
Z 201, 202, 203. General Zoology. 3 hours each term.
- Interdepartmental Combinations** (open to Lower Division freshmen and sophomores if they have their Dean's approval): Any two of the four following:  
Bac 200. Bacteriology Laboratory; Bac 230. Principles of Bacteriology; total of 5 hours.  
Bot 201, 202. General Botany. 6 hours.  
Ent 200. General Entomology. 5 hours.  
Z 200. General Zoology. 5 hours.

## Social Science

- General Social Science**  
SSc 101, 102, 103. Background of Social Science. 3 hours each term.
- Economics**  
Ec 201, 202, 203. Principles of Economics. 3 hours each term.  
Ec 213, 214. Principles of Economics. 4 hours each term. Ec 215. Economic Development of the United States. 3 hours.
- Geography**  
Geog 105, 106, 107. Introductory Geography. 3 hours each term.
- History**  
Hst 101, 102, 103. History of Western Civilization. 3 hours each term.  
Hst 204, 205, 206. The Far East. 3 hours each term.  
Hst 224, 225, 226. History of American Civilization. 3 hours each term.
- Political Science**  
PS 201, 202, 203. American Governments. 3 hours each term.  
PS 204. European Political Systems. 3 hours, (With PS 201 and PS 202 or 203 may be counted as a sequence.)
- Philosophy**  
Phl 201, 202, 203. Introduction to Philosophy. 3 hours each term.
- Psychology**  
Psy 201, 202. General Psychology. 3 hours each term. Psy 205. Applied Psychology. 3 hours. (May be accompanied by Psy 208, 209, 210. Psychology Laboratory. 1 hour each term.)
- Sociology**  
Soc 201, 202, 203. General Sociology. 3 hours each term.

## Curricula

### Lower Division Liberal Arts and Sciences

*Junior Certificate  
Junior Certificate with Honors Privileges  
Lower Division Certificate*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Year sequence in any one of the three groups.....	3-4	3-4	3-4
Year sequence in another of the three groups (may be deferred until sophomore year).....	3-4	3-4	3-4
English Composition (Wr 111, 112, 113) .....	3	3	3
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education or General Hygiene.....	1	1	1
<sup>1</sup> Departmental or school requirements or exploratory electives.....	5-3	5-3	5-3
	16	16	16
<b>Sophomore Year</b>			
Sophomore year sequence in one of the groups begun in the freshman year.....	3-4	3-4	3-4
Year sequence in a third group.....	3-4	3-4	3-4
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
<sup>1</sup> Departmental or school requirements or exploratory electives.....	9-6	9-6	9-6
	16	16	16

### Lower Division Professional Curricula

Oregon State College offers lower division curricula leading to the Junior Certificate in the following professional fields: Architecture and Allied Arts, Journalism, and Music. Students will be aided in the selection of lower division studies preparing them for majoring in these fields at the upper division level at the University of Oregon. Preparatory Dental, Medical, and Nursing Education curricula are offered through the School of Science.

## Interdepartmental Courses

Certain courses offered in the Lower Division are broader in scope and objectives than those offered by any of the traditional liberal arts departments. These courses fall into two categories: General Humanities and General Social Science.

### General Humanities

#### Upper Division Service Courses

Hum 311, 312, 313. Creative Epochs in Western Thought. 3 hours each term. 3 ①

Seminal ideas in history, philosophy, science, art, and literature defining Western civilization. Sources in creative periods of Western culture: fifth century Greece; Imperial Rome and early Christianity; high middle ages; Renaissance; Reformation; English, American, and French Revolutions; nineteenth and twentieth centuries. Prerequisite: year sequence in literature or social science and consent of committee. Associate Professor Gibson, Assistant Professors R. D. Brown, Carlin.

Hum 327, 328, 329. Survey of Russian Culture. 3 hours each term. 3 ①

Achievements of old and new Russia in art, science, music, literature, and education that have contributed significantly to western civilization. Assistant Professor Jurgenson.

<sup>1</sup> Chosen with the approval of the Dean of the Lower Division or the Dean of the School of Science. If one of the year sequences in group requirements is deferred to the sophomore year, the opportunity for school requirements or electives in the freshman year is correspondingly increased.

**General Social Science****Lower Division Courses**

- SSc 101, 102, 103. **Background of Social Science.** 3 hours each term. 3 ①  
Orientation in social sciences emphasizing the integration of all the social sciences into a discipline of learning; general influences on human behavior; scientific method in social sciences. Associate Professor Parks, Assistant Professor Cantrell.

**Upper Division Service Courses**

- SSc 441, 442, 443. **International Politics and National Power.** (g) 3 hours each term. 3 ①  
First term: foreign relations and basic policy affecting power position of United States. Second term: international politics and national power; power position of states with reference to military, economic, social, geographic, and psychological factors and the stability and effectiveness of political institutions. Third term: national power and international organization; League of Nations, United Nations, and their effect on national power. Required of Naval R.O.T.C. students; designed to provide a general background in international relations. Prerequisite: PS 201 and 417 or consent of instructor. Professors Swarthout, Swygard; Associate Professor Walter.

**Architecture**

Courses in architecture and allied arts serve the cultural and informational needs of students interested in architecture and building construction and may form part of a minor for students majoring in certain other fields. Professional courses permit a student to prepare a major in architectural design, structural design, or interior design in the upper division at the University of Oregon.

**Design:** A basic professional sequence dealing with materials and design. Short design problems planned to integrate the basic principles of design in analytical solutions of typical problems in architecture, landscape architecture, and interior design are presented in AA 297. The recommendation from the Department of Architecture will satisfy the Architectural Design requirements for students transferring to the School of Architecture and Allied Arts at the University of Oregon. Student must have grade of A or B in the 6 term hours.

**Lower Division Courses**

- AA 111, 112. **Graphics I.** 3 hours each term. 3 ②  
Light, color, and space in typical architectural forms, media and methods; manipulation of instruments; perspective, shades, shadows; projection and sectioning. Mr. Glass.
- AA 121. **Construction Materials.** 2 or 3 hours. 2 ① or 2 ① 1 ③
- AA 178. **House Planning and Architectural Drawing.** 3 hours any term. 1 ① 2 ③  
Appreciation and criticism of domestic architecture. Small-house planning and drawing with reference to the needs of students in agriculture, business and technology, education, engineering, forestry, and home economics. Staff.
- AA 179, 180. **House Planning and Architectural Drawing.** 3 hours each term. (AA 179 winter, AA 180 fall or spring.) 1 ① 2 ③, 2 ① 1 ③  
Small-house construction; detail drawing; development of working drawings begun in AA 178; presentation plans, advanced planning, and design. Prerequisite for either course: AA 178. Professor Sinnard.
- AA 187. **Design Studio I.** 1 to 3 hours any term. 1 ① 1 ③  
Human environment and design processes, integration of natural materials with man-made materials in studio exercises, color phenomena and use in architectural design, three-dimensional design applied to structural space, model construction. 6 hours required for majors in architecture, interior architecture, and landscape architecture.

- AA 211, 212. **Graphics II.** 3 hours each term. 3 ②  
Principles of orthographic projection and descriptive geometry; application to construction of plans and elevations; projections of points, lines, and planes; location of shades and shadows; mechanical and freehand perspective techniques; media and techniques of architectural presentation. Assistant Professor Ellis, Mr. Glass.
- AA 218, 219, 220. **Construction.** 2 hours each term. 2 ①  
Materials and methods of architectural construction; individual research and observation; sketching existing examples; class discussion. Professor Sinnard, Assistant Professor Ellis, Mr. Brown.
- AA 221. **Construction Theory.** 2 or 3 hours each term. 2 ① or 2 ① 1 ③  
Structural materials and systems, historical and modern; simple ideas of force and counter force; trends in structural design in new materials and methods. Professor Sinnard, Assistant Professor Ellis, Mr. Brown.
- AA 223. **Elements of Interiors.** 2 hours. 1 ① 1 ③  
Introduction to scope, aim, and technique of interior design intended to give understanding of professional field. All work done in drafting room. Open to nonmajor students with consent of instructor. Assistant Professor Wasson, Mr. Brown.
- AA 297. **Lower Division Architectural Design.** 1 to 3 hours each term. 1 ③ to 3 ③  
Principles of architectural design; methods, concepts, and ideals in architectural design and planning. Series of related problems studied and executed in plan, elevation, isometric, perspective, and model in two-year sequence.

## Art

Individual creative work in the basic principles of drawing, painting, sculpturing, and designing, in the different media, techniques, and crafts, is offered in the Department of Art, together with instruction in art history and art education. Students majoring in other fields may take art as a minor or may study specific art subjects as service courses. Students may elect the courses in preparation for majoring in architecture and allied arts at the University of Oregon or elsewhere.

### Lower Division Courses

- AA 160, 161. **Color and Composition.** 3 hours each term. 2 ②  
Studio classes in the everyday use of the principles of composing or creating with lines, colors, and textures. Required in the School of Home Economics.
- AA 195. **Basic Design.** 2 hours each term, three terms. 2 ③  
Individual projects leading to creative mastery of basic design in major visual arts and understanding of design factors involved in professional art. Three terms required of students who expect to major in the School of Architecture and Allied Arts at the University of Oregon. The work is correlated with that of AA 201, 202, 203.
- AA 201, 202, 203. **Survey of Visual Arts.** 3 hours each term. 3 ①  
Creative fundamentals and functions of architecture, painting, sculpture, and other arts; historical and contemporary works of best of man's creations studied to develop an individual taste and increased appreciation. Three terms required of students who expect to major in the School of Architecture and Allied Arts at the University of Oregon. Recommended for home economics students.
- AA 240. **Recreational Use of Art Crafts.** 3 hours. 2 ②  
Projects in various craft mediums, with particular attention to age levels, hobby interests, cost of equipment and materials. Required for recreational leadership minors, camp education minors, nonteaching majors in physical education; suggested for physical education majors, elementary education, and education majors.
- AA 254. **Leathercraft.** 2 or 3 hours each term, two terms. 2 ②  
Design and production of leathercraft objects.

- AA 255. **Ceramics.** 2 or 3 hours any term, three terms. 2 ①  
Introduction to pottery-making materials and techniques. Laboratory hours to be arranged.
- AA 257. **Jewelry.** 2 or 3 hours each term, two terms. 2 ②  
Design, tools, and techniques of jewelry introduced through individual student problems in semiprecious materials.
- AA 258. **Art Metalcraft.** 2 or 3 hours each term, two terms. 2 ②  
Design and hand execution of useful and decorative objects in copper, brass, and bronze.
- AA 259. **Art Craft.** 2 or 3 hours each term, two terms. 2 ②  
Application of original designs to textile and other materials by block and silk-screen printing.
- AA 275, 276, 277. **Graphic Arts.** 2 or 3 hours each term. 2 ②  
Workshop instruction in making and printing engravings, etchings, lithographs, linoleum cuts, and wood cuts.
- AA 281, 282, 283. **Industrial Arts Drawing and Design.** 3 hours each term. 2 ②  
Freehand drawing with studio experience in the design of industrial arts objects, workshop techniques in art crafts. AA 281, 282 required for all industrial arts majors. AA 283 required for industrial arts education majors.
- AA 290. **Painting.** 2 or 3 hours any term, six terms. 2 ③  
Oil and mixed painting techniques; creative expression; special interests in painting. Twelve hours required of students who expect to major in drawing and painting at the University of Oregon.
- AA 291. **Drawing.** 2 or 3 hours each term, three terms. 2 ② or 2 ③  
Primary means of art expression and communication; principles of composition and techniques of fine draughtsmanship; specialized classes in fashion illustrating, sketching, and figure sketching. Three terms required of students who expect to major in the School of Architecture and Allied Arts at the University of Oregon.
- AA 293. **Elementary Sculpture.** 2 or 3 hours each term, three terms. 2 ③  
Creative clay and plaster modeling and stone and wood carving; technical methods developed in conjunction with expressive design.
- AA 294. **Scientific Illustration.** 2 or 3 hours each term, two terms. 2 ②  
Freehand technical drawing adapted to needs of students in science and forestry.
- AA 295. **Display Design.** 2 or 3 hours each term, two terms. 2 ②  
Practical design experience in commercial art lettering, layouts, packaging, and display advertising. Offered for pharmacy, agriculture, and business and technology students.
- AA 296. **Composition.** 2 or 3 hours each term, three terms. 2 ②  
Basic creative composing with colors, lines, and textures in casein and water colors. Abstract composition leading into representational problems develops individual creativeness.

#### Upper Division Service Courses

- AA 311, 312, 313. **Creative Arts and Crafts for Classroom Teacher.** 3 hours each term. 2 ②  
Studio projects, discussions, and observations to give practical approach to arts and crafts instruction at preschool and elementary school levels.
- AA 395. **Creative Art Projects.** 2 hours each term, six terms. 2 ②  
Advanced studio work on approved projects in drawing, painting, sculpture, and graphic arts. Prerequisite: upper division standing, one year lower division work in the selected medium, and approval of instructor.
- AA 414, 415, 416. **Art Education in High School.** 3 hours each term. 2 ②  
Art practices in secondary school; laboratory work; individual research; current theoretical directions in relation to classroom situation. Prerequisite: 9 hours in art.

## Economics

Instruction in the Department of Economics includes lower division and service courses intended to serve the cultural and informational needs of all students interested in economic problems in relation to citizenship; to supply a lower division foundation for law, business, or public service, or for majoring in economics at the upper division level; and to meet the prescriptions found in professional curricula.

Under the Department of Economics, courses in geography are designed to meet needs within the major curricula on the campus. Courses provide for study of world environmental patterns; interrelationships of physical and cultural complexes; patterns of economics and human occupancy fundamental to the education of every citizen in the twentieth century. Courses in physical and resource geography are offered in the Department of Natural Resources in the School of Science.

### Courses in Economics

#### Lower Division Courses

- Ec 111. **Financial Institutions.** 3 hours winter. 3 ①  
Everyday problems of finance with which men and women come in contact; financial institutions serving their needs; money and credit, investments, insurance, commercial banks, savings and loan associations, urban and rural real-estate financing, consumer installment credit, and government finance.
- Ec 201, 202, 203. **Principles of Economics.** 3 hours each term. 3 ①  
The principles that underlie production, exchange, and distribution; practical problems, such as monetary and banking reform, trade regulations, taxation, labor movements, unemployment, business cycles, regulation of railways and public utilities. A three-term sequence.
- Ec 212. **Outlines of Economics.** 3 hours any term. 3 ①  
A rapid survey of the principles of economics and economic institutions. Restricted to science and upper division professional school students.
- Ec 213, 214. **Principles of Economics.** 4 hours each term, winter and spring. 4 ①  
Similar to Ec 201, 202, 203. A two-term sequence.
- Ec 215. **Economic Development of the United States.** 3 hours winter. 3 ①  
Origin and development of economic institutions including industry, agriculture, commerce, transportation, labor, and finance. Analyzes the economic progress of the United States.

#### Upper Division Service Courses

*Prescribed in major curricula in degree-granting schools at Oregon State College and also available as electives to students majoring in such schools.*

- Ec 310. **Economics of National Security.** 3 hours fall. 3 ①  
Economic basis of national security; industrial mobilization; stabilization of civilian economy; national budget and fiscal and monetary policy under a security program; foreign aid policies.
- Ec 420. **Business Combinations.** (g) 3 hours fall. 3 ①  
Historical development and present status of American business combinations; cooperatives, trade associations, trusts, holding companies, and consolidations; monopolies; fair and unfair practices, monopoly price problems; control. Prerequisite: elementary economics.
- Ec 421. **Business Fluctuations.** (g) 3 hours spring. 3 ①  
Variations in economic activity viewed in historical perspective; fluctuations and cycles; prosperity and depression; measurement and control. Prerequisite: elementary economics.



- Ec 422. **Economics of Consumption.** 3 hours spring. 3 ①  
Economic principles applied to consumer problems; wealth consumption; living standards; living costs; budgeting; consumer markets; choice in buying; conservation policies; consumption theories. Prerequisite: elementary economics.
- Ec 423. **Economics of Public Utilities.** 3 hours winter. 3 ①  
Development of public utilities in the United States; their economic and legal characteristics; problems of regulation, rates, services, and finance. Prerequisite: elementary economics.
- \*Ec 424. **Money and Banking.** (g) 4 hours fall or spring. 4 ①  
Nature and functions of money; factors affecting price; forms of money; functions of banks; history of banking; Federal Reserve Bank Act; American and foreign banking systems. Prerequisite: elementary economics.
- Ec 425. **Labor Problems.** (g) 4 hours winter or spring. 4 ①  
Industrial revolution; trade unions; strikes and lockouts; trade agreements; conciliation and arbitration; immigration; unemployment; women and children in industry; prison labor. Prerequisite: elementary economics.
- Ec 426. **Collective Bargaining and Labor Legislation.** 4 hours spring. 4 ①  
Wages and hours; unemployment; labor relations and social insurance; collective bargaining; legal, social, and economic implications of the labor movement. Prerequisite: elementary economics.
- Ec 427. **Public Finance.** (g) 3 hours spring. 3 ①  
Public expenditures, local, state, and national; taxes, customs, and fees; land taxation; proposed reforms; war finance; bonds versus taxes; management of national and local debts. Prerequisite: elementary economics.
- \*Ec 435. **Transportation.** (g) 3 hours fall. 3 ①  
Development of systems of transportation; organization and financing; effect of competition; freight classification; rates and fares; government control; state and Federal regulation. Prerequisite: elementary economics.
- \*Ec 443. **International Trade.** (g) 4 hours winter. 4 ①  
Theory of international trade; nature and effects of government bounties, subsidies, import and export duties; commercial policies of nations; consular service; ocean routes and carriers. Prerequisite: elementary economics.
- Ec 450. **Comparative Economic Systems.** 3 hours winter. 3 ①  
Analysis and critical appraisal of contemporary economic systems: capitalism, socialism, communism. Prerequisite: elementary economics.
- \*Ec 475, 476, 477. **Current Economic Theory and Problems.** (g) 3 hours each term. 3 ①  
Economic theories and relation to current problems; value, price, distribution, money and credit, public credit and finance, national income, etc. Prerequisite: elementary economics.

#### Graduate Service Courses

Courses numbered 400-499 and designated (g) may be taken for credit toward a graduate minor.

### Courses in Geography

#### Lower Division Courses

- Geog 105, 106, 107. **Introductory Geography.** 3 hours each term. 3 ①  
Elements and implications of geography. 105, World Regions: analysis of the patterns of world environments; man and his activities. 106, Economic Geography: world commodity production. 107, Political Geography: implications of geography on world political entities. To be taken in sequence.
- Geog 323. **Geography of Pacific Northwest.** 3 hours. 3 ①  
Analysis of human and economic geography of Pacific Northwest with special attention to Oregon. Prerequisite: Ec 107. Associate Professor Myatt.

\* Applicable toward a graduate major in agricultural economics, School of Agriculture.

- Geog 326. **Geography of Europe.** 3 hours. 3 ①  
Physical and cultural environment and economic activities of each political unit (excluding U.S.S.R.). Prerequisite: Geog 107. Associate Professor Heintzelman.
- Geog 329. **Geography of North America.** 3 hours any term. 3 ①  
Regional analysis of North America, including Canada and Alaska but not Mexico. Prerequisite: Geog 107. Associate Professor Myatt.
- Geog 330. **Geography of Latin America.** 3 hours. 3 ①  
Geographic foundations of the Latin American nations; industrial and commercial development and potentialities. Prerequisite: Geog 107. Professor Jensen.
- Geog 331. **Geography of Asia.** 3 hours. 3 ①  
Geographic appraisals of Asiatic countries including the island fringe; human, cultural, and economic conditions; national economies and world relationships; implications for present and future. Prerequisite: Geog 107. Professor Highsmith.
- Geog 332. **Geography of Africa.** 3 hours. 3 ①  
African nations and colonies; human, cultural, and economic conditions; national economies and world relationships; implications for present and future. Prerequisite: Geog 107. Associate Professor Myatt.

## English

The Department of English offers instruction in literature and in writing. The courses are intended to supply the training in reading and writing necessary to every educated man, to afford a cultural background or a minor for students in professional schools, and to prepare liberal arts students to major in English at the upper division level.

**Literature.** The study of English literature may begin with a historical presentation of the tradition of English literature or with an examination of the motives and ideas of literature. Other courses present a more detailed study of periods or centuries of literary movements; a careful analysis of the chief literary forms such as the novel, drama, poetry, and short story; or a more intensive study of the major authors. Sequences in literature, although preferably taken three terms in order as numbered, may be taken any one term separately or in any order.

**Writing.** The study and practice of writing aim to teach students to express their ideas clearly, simply, and accurately.

**Corrective English.** All entering freshmen and all transfer students who have not completed three or more term hours of college English composition are required to take an examination in English. Those who fall below acceptable standards are enrolled in Wr 10, a remedial English course.

## Courses in Literature

### Lower Division Courses

- Eng 101, 102, 103. **Survey of English Literature.** 3 hours each term. 3 ①  
History of English literature in chronological sequence. Recommended for a major or minor in English. Professor Nelson.
- <sup>1</sup>Eng 104, 105, 106. **Appreciation of Literature.** 3 hours each term. 3 ①  
Appreciation and criticism of literature with emphasis throughout on ideas and motives. Professor Childs, staff.
- <sup>1</sup>Eng 107, 108, 109. **World Literature.** 3 hours each term. 3 ①  
Aim is to enrich student's understanding of world literature and culture. Literary masterpieces of ancient world, both Oriental and Western, medieval world, and Renaissance in western Europe. Associate Professor Jenkins.

<sup>1</sup> Students may register for only one of the sequences, Eng 101-3, Eng 104-6, Eng 107-9.

- Eng 131. Directed Recreational Reading. 2 hours. 2 ①  
Reading and discussion to stimulate enjoyment of good literature. For students who do not take other literature courses. Associate Professor Jenkins, Assistant Professor Malamud.
- Eng 201, 202, 203. Shakespeare. 3 hours each term. 3 ①  
The important historical plays, comedies, and tragedies. Recommended for a major or minor. Associate Professor Foreman
- Eng 253, 254, 255. American Literature. 3 hours each term. 3 ①  
American literature from its beginnings to present day. Recommended for a major or minor. Professors Childs and Nelson.
- Eng 261, 262. Individual Authors. 3 hours fall and winter. 3 ①  
Major English authors of the nineteenth century. Associate Professor Gibson.
- Eng 263. Great Books. 3 hours spring. 3 ①  
Great books of the world and their influence on western culture. Assistant Professor Brown.
- Eng 264, 265, 266. Continental European Literature. 3 hours each term. 3 ①  
Survey of those writers, chiefly modern, whose works in translation have become part of our literary heritage and which aid in understanding the world today. Eng 264: Romance; Eng 265: Germanic; Eng 266: Slavic. Professor Colby.
- Eng 271, 272, 273. Contemporary Literature. 3 hours each term. 3 ①  
Twentieth century American and British fiction, drama, and poetry. Professor Childs.
- Eng 274. The Short Story. 3 hours. 3 ①  
Development of American short story; analysis of recognized masterpieces as well as of best present-day stories, with idea of developing critical taste in reading. Associate Professor Jenkins.
- Eng 275. The Bible as Literature. 3 hours spring. 3 ①  
Structure, literary types, and ideas of the Bible and its influence upon our literary heritage. Associate Professor Gibson.

#### Upper Division Service Courses

- Eng 331, 332, 333. The Democratic Tradition in Literature. 3 hours each term. 3 ①  
Study and search of the most significant utterances on democracy in literature of western civilization. Not open to freshmen and sophomores except by permission of instructor. Professor Childs.
- Eng 376. The Novel. 3 hours winter. 3 ①  
Aim is to enrich the student's background of knowledge of the novel and prepare him for critical appreciation of fiction. Assistant Professor Spencer.
- Eng 388. Children's Literature and Library. 3 hours fall and winter. 3 ①  
Examination of reading material suitable for elementary school and analysis of criteria to be used in selecting books for children. Miss Carter.
- Eng 488. Literature for Teachers. 3 hours winter. 3 ①  
For students who plan to teach English. Critical reading and analysis of literature selected primarily from state-adopted texts. Assistant Professor Norris.
- Eng 490. Development of English Language. 3 hours fall. 3 ①  
Development of the language, growth of vocabulary, and those features of grammar and usage important today.

#### Auxiliary Courses

##### Lower Division Courses

- Eng 91, 92, 93. English for Foreign Students. 3 hours each term. 3 ①  
Practice in vocabulary building, reading, writing, speaking, and comprehension of spoken discourse, adapted to needs of individual. Mrs. Butts.

- Eng 115. **Effective Reading.** 3 hours any term. 3 ①  
Designed to develop better comprehension and greater speed in reading. Assistant Professor Ludwig, staff.
- Eng 211. **Vocabulary Building.** 3 hours any term. 3 ①  
Through analysis of words and meanings in context seeks to increase vocabulary, reading comprehension, and effective use of language. Staff.

### Courses in Writing

#### Lower Division Courses

- Wr 10. **Corrective English.** 3 hours fall or winter. 3 ①  
Refresher course in English fundamentals. Student must pass English placement examination or Wr 10 before he is permitted to register for Wr 111. Credit does not count toward graduation. Associate Professor Foreman, staff.
- Wr 111, 112, 113. **English Composition.** 3 hours each term. 3 ①  
Frequent written compositions with emphasis on clarity and accuracy. Courses must be taken in sequence. Prerequisite: English placement examination. Students who pass the placement test with distinction should enroll in honors section in Wr 111, 112, 113. Associate Professor Foreman, staff.
- Wr 214. **Business English.** 3 hours any term. 3 ①  
Analysis and writing of all types of modern business correspondence. Prerequisite: Wr 113. Assistant Professor Ligon, staff.
- Wr 218. **Creative Writing.** 3 hours winter or spring. 3 ①  
For students in professional schools who desire training and practice in such writing as may be called for in their vocational or cultural pursuits. Prerequisite: Wr 113. Assistant Professor Norris.
- Wr 221, 222, 223. **Short Story Writing.** 2 hours each term. 2 ①  
Analysis of short story and fiction techniques. Designed to develop proficiency in art of writing short story. Courses in sequence but may be taken separately. Prerequisite: Wr 113. Assistant Professor Malamud.
- Wr 227. **Technical Report Writing.** 3 hours any term. 3 ①  
Application of principles to specific needs and interests of students having papers in progress. Prerequisite: Wr 113. Assistant Professor Ligon, staff.
- Wr 230. **Effective Writing.** 3 hours winter. 3 ①  
Practice to develop exactness and facility of expression; course varied to suit individuals. Prerequisite: Wr 113. Assistant Professor Groshong.

#### Upper Division Service Courses

- Wr 411. **English Composition for Teachers.** 3 hours spring. 3 ①  
For students expecting to teach English in high schools. Fundamentals of grammar; techniques of composition. Associate Professor Foreman.

### Courses in Library

#### Upper Division Service Courses

- Lib 379. **Elementary School Library.** 3 hours winter or spring. 3 ①  
Organization, administration, and function of elementary school library; methods of ordering and processing materials; care and repair of books; library resources in the community and state. Miss Carter.
- Lib 380. **Secondary School Library.** 3 hours. 3 ①  
Aims to aid in planning, organizing, and administering a public school library. Relation of library to curriculum; acquisition, processing, care, and use of library materials; routines; records. Miss Cusac.
- Lib 385. **Literature for Higher School Libraries.** 3 hours. 3 ①  
Books and periodicals for public school students, including reading for information and recreation; various approved lists; individual books considered critically.

## History

History courses are intended to supply the necessary background for intelligent citizenship. The aim is to afford an opportunity for a survey of world history and the development of western civilization together with a more detailed study of the English people, the British Empire, and the history of America from the earliest period to the present. The courses also prepare students to major in history at the upper division level.

### Lower Division Courses

- Hst 101, 102, 103. **History of Western Civilization.** 3 hours each term. 3 ④  
 Survey of history of man, his governmental, economic, social, religious, intellectual, and esthetic activities, from earliest times to present, in Europe, Asia, and Americas. Special effort is made to relate past to contemporary events and institutions. Professor Ellison and staff.
- Hst 204, 205, 206. **The Far East.** 3 hours each term. 3 ④  
 Introduction to history, civilization, and political, economic, cultural, and social problems of modern China, Japan, India, Korea, South Asia, and the Pacific Islands. Professor Ellison.
- Hst 207, 208. **England and the British Empire.** 3 hours each term, fall and winter. 3 ④  
 Political, social, and economic developments of modern Britain in relation to growth of the Empire, development of the Dominions, and present role of the Commonwealth in world affairs. Prerequisite: Hst 101, 102, 103, or consent of instructor. Professor C. K. Smith.
- Hst 224, 225, 226. **History of American Civilization.** 3 hours each term. 3 ④  
 Rise and development of American civilization from beginning to present; special attention to economic, social, and cultural life, political changes and international relations. Professor Ellison, Associate Professor R. W. Smith, Assistant Professors Berkeley, Carlin, Shaw.
- Hst 230, 231, 232. **Great Americans in Thought and Action.** 2 hours each term. 2 ④  
 Personality and leadership of men and women who have been outstanding in various fields of endeavor, great movements, and critical periods. Assistant Professor Berkeley.

### Upper Division Service Courses

- Hst 331, 332, 334. **American Thought and Culture.** 3 hours each term. 3 ④  
 Growth of American thought, ideals, and institutions; analysis of contributions to American culture by schools, newspapers, magazines, motion pictures, radio, art, literature, television, and philosophy. Prerequisite: Hst 224, 225, 226. Assistant Professor Carlin.
- Hst 341, 342, 343. **Europe since 1789.** 3 hours each term. 3 ④  
 Political, social, economic, and cultural trends since fall of Napoleon; growth of political institutions; development of national states, imperial rivalries, problems of race, origin of World War I, peace settlement; totalitarianism, Munich, World War II, contemporary scene. Fall: 1815-1890; winter: 1890-1933; spring: 1933-present. Prerequisite: Hst 101, 102, 103 or consent of instructor. Professor C. K. Smith.
- Hst 360, 361. **Latin-American Civilization.** 3 hours each term. 3 ④  
 Native civilizations of Mexico, Central America, and South America; impact and blending of these cultures with those of Spain and Portugal in colonial age; struggle for independence; development of Latin-American republics to present. Hst 360, 361 with PS 418 constitute a year sequence in Latin-American studies. Associate Professor R. W. Smith.
- Hst 447. **Tsarist Russia.** (g) 3 hours fall. 3 ④  
 Growth of Russian empire and its institutions; rise of revolutionary thought and movement. Prerequisite: Hst 101, 102, 103. Professor C. K. Smith.

- Hst 448. Soviet Union. (g) 3 hours. 3 ①  
Political, diplomatic, economic, and social development of Russia from 1917 to present. Prerequisite: Hst 101, 102, 103. Professor C. K. Smith.
- Hst 478. History of Pacific Northwest. (g) 3 hours. 3 ①  
Survey of growth and development of Oregon, Washington, and Idaho from Indian times to present, with emphasis on political, economic, social, cultural changes. Prerequisite: Hst 224, 225, or equivalent. Professor Ellison.

## Journalism

Elementary courses in journalism, besides furnishing a certain cultural background in newspaper methods, introduce students to the fundamentals of news writing. These courses also enable students to get additional benefit from work on the *Barometer*, student newspaper, and serve to some extent as training in this work in an endeavor to keep student publications on a high plane. The Department of Journalism also gives instruction that is designed to train students in professional schools to write competently for newspapers and magazines on the subjects or in the fields in which they are specializing. These courses meet the needs of a large number of persons who, either in public service or in private life, have occasion to prepare material for the press on industrial or technical subjects. Training is also offered in the popularization of scientific material for the press.

Students intending to major in journalism at another college or university may take two years of college work at Oregon State College. At the University of Oregon, only upper division and graduate students are admitted to the School of Journalism. Prejournalism students are advised, while in the Lower Division, to complete as many courses as possible in liberal arts. They should consult the catalog of the institution to which they intend to transfer to determine the required and recommended courses. They should learn to type well and should engage in extracurricular activities in journalism.

Students desiring to combine journalism with agriculture to prepare for positions in the field of agricultural journalism may major in general agriculture with a minor in journalism. A minor in journalism is likewise available in the School of Home Economics. A teaching minor in journalism is offered in the School of Education.

### Lower Division Courses

- J 111, 112. Elementary Journalism. 3 hours each term. 3 ①  
Journalistic style of writing; workings of the press, both general and technical. J 111 is required for eligibility to editorial staffs of student publications. J 111 offered each term; J 112, Spring Term. Associate Professor Lake; Assistant Professor Zwahlen.
- J 214. Copy Editing. 3 hours any term. 2 ① 1 ②  
Copy reading, head writing, proof reading, and makeup; actual experience in editing copy. Required for advanced positions on the *Barometer*. Prerequisite: J 111. Associate Professor Lake.
- J 223. Editorial Writing. 3 hours fall. 3 ①  
Materials, style, and arrangement of periodical editorials; training in writing editorials; policy and ethics; makeup of editorial page of farm and trade journals. Prerequisite: J 111. Associate Professor Bailey.

### Upper Division Service Courses

- J 317. Special Feature Articles. 3 hours winter. 3 ①  
Writing of special articles along line of student's own major; study of media of such articles; practice in popularization of scientific material. Prerequisite: J 111. Assistant Professor Zwahlen.

- J 318. **Public Information Methods.** 3 hours winter. 3 ①  
 Planning and executing informational campaigns; methods of informing public of public affairs and other enterprises in which it has an interest. Prerequisite: J 111. Associate Professor Bailey.
- J 319. **Technical Writing.** 3 hours spring. 3 ①  
 Writing and editing popular and scientific bulletins; preparing reports and writing articles for scientific publications; preparing radio manuscripts. Prerequisite: J 111. Associate Professor Bailey.
- J 351, 352, 353. **Journalism Projects.** 2 hours each term. 1 ① 1 ②  
 Application of newswriting, copy-editing, feature-writing, and technical-writing principles; experience on student publications; preparation of articles for trade and technical publications or specialized material for general publications. Prerequisite: J 111, 211, and consent of instructor. Professor Shideler.

## Landscape Architecture

All instruction in landscape design is correlated with the instruction in closely related arts. In addition to the landscape courses, the student is instructed in plant propagation, soils, surveying, and other practical phases of the profession. Supervised field trips are conducted to acquaint students with the solutions to landscape design and construction problems. All student drawings and models remain the property of the department.

A student may complete a lower division curriculum in landscape architecture at Oregon State College and transfer to the University of Oregon for the last three years of professional work.

A four-year curriculum in landscape construction and maintenance is offered in the Department of Horticulture leading to the degree of Bachelor of Science. Students register in the School of Agriculture beginning with the freshman year.

### Lower Division Courses

- LA 279. **Home-Ground Planning.** 3 hours any term. 1 ① 2 ②  
 Organization and improvement of rural and urban home grounds. Associate Professor Solberg.
- LA 290. **Lower Division Landscape Design.** 2 hours each term, three terms. 3 ②  
 Design of city and suburban residence properties and other design problems of three acres or less. Prerequisite: LA 279 or consent of instructor. Professor Martel.

### Upper Division Courses

- LA 326, 327, 328. **Plant Materials.** 3 hours each term. 1 ① 2 ②  
 Trees, shrubs, vines, and perennials and their uses in plant composition. Professor Martel.
- LA 356, 357, 358. **History and Literature of Landscape Architecture.** 2 hours each term. 2 ①  
 Story of gardens as an outgrowth of living conditions of the times from early Egyptian to the modern American. Professor Martel.
- LA 359, 360, 361. **Maintenance and Construction.** 3 hours each term. 1 ① 2 ②  
 Maintenance of private and public landscapes; landscape construction problems. Prerequisite: LA 279. Associate Professor Solberg.
- LA 379. **Landscape Architecture.** 3 hours spring. 2 ① 1 ②  
 Elements and design of recreation areas. Prerequisite: LA 279. Associate Professor Solberg.

- LA 382, 383, 384. **Layout of Small Properties.** 2 or 3 hours each term. 1 ① 1 or 2 ②  
 City lot, small suburban properties, and other areas; sketch plans, finished renderings, and contour problems. Prerequisite: LA 279, 290. Associate Professor Solberg.
- LA 390. **Intermediate Landscape Design.** 3 hours each term, three terms. 1 ① 2 ③  
 Continuation and enlargement of LA 290. Prerequisite: LA 290. Professor Martel.
- LA 392, 393, 394. **Planting Plans.** 2 hours each term. 1 ① 1 ②  
 Planting plans; estimates of costs; construction and seasonal care of planting areas. Prerequisite: LA 290, 326, 327, 328. Associate Professor Solberg.

## Modern Languages

The Department of Modern Languages offers instruction in Chinese, French, German, Portuguese, Russian, and Spanish. The courses are planned to meet the demand for practical use of the language as well as the cultural needs of all students, to provide the foreign-language requirements found in scientific and technical curricula and needed in connection with various professions, and to prepare students to major in one of these languages at the upper division level.

Students who enter with one unit of high school French, German, or Spanish and wish to continue the study of the language should register for First-Year French, First-Year German, or First-Year Spanish. Those entering with two units of entrance credit in a language should register for the second-year college course; those with three or more entrance units should register for a course in the literature of the language or in scientific or directed reading. Students having other preparation and students entering from colleges offering more or fewer hours per week in a course should confer with the instructor.

### Courses in German

#### Lower Division Courses

- GL 1, 2, 3. **First-Year German.** 4 hours each term. 5 ①  
 Elements of pronunciation, grammar, reading, and conversation. Special section for engineering students offered for 3 hours each term. Associate Professor Kraft, Assistant Professor Jurgenson, staff.
- GL 101, 102, 103. **Second-Year German.** 2, 3, or 5 hours each term.  
 (a) For 3 hours credit: grammar, composition; reading of modern German authors.  
 (b) For 2 hours credit: 2 two-hour practice periods in conversation, including student discussion of current topics and systematic vocabulary building. (c) For 5 hours credit: (a) and (b) combined. Prerequisite: GL 1, 2, 3, or equivalent. Associate Professor Kraft, staff.
- GL 201, 202, 203. **Survey of German Literature.** 3 hours each term. 3 ①  
 Reading of masterpieces of various periods; general survey of German literature. Prerequisite: GL 101, 102, 103, or equivalent. Associate Professor Kraft.
- GL 211, 212, 213. **Directed Reading in German.** 1 or 2 hours each term. 1 or 2 ①  
 Reading in German in field of student's major interest as aid to maintaining proficiency in the language. Students who register for 1 hour may register for an additional hour in a subsequent year. Prerequisite: two years of college German or equivalent. Associate Professor Kraft, staff.



**Upper Division Service Courses***(Courses 300-399 are open to lower division students.)*

- GL 343, 344, 345. Survey of German Literature. 3 hours each term. 3 ①  
Reading of masterpieces of various periods; general survey of German literature. Prerequisite: GL 101, 102, 103, or equivalent. Not open to students who have taken GL 201-203. Associate Professor Kraft.
- GL 320, 321, 322. Scientific German. 1, 2, or 3 hours each term. 1, 2, or 3 ①  
Recommended to students interested in science or medicine. Articles in science, surgery, history of medicine, and current clinical literature are read. A maximum of 3 term hours may be taken under each course number. Prerequisite: consent of instructor. Associate Professor Kraft.

**Courses in Oriental Languages: Chinese****Lower Division Course**

- OL 1, 2, 3. First-Year Chinese. 4 hours each term. 5 ①  
Essentials of colloquial Mandarin with emphasis on conversation and easy reading. Prerequisite: consent of instructor. Mr. Yang.

**Courses in Romance Languages: French****Lower Division Courses**

- RL 1, 2, 3. First-Year French. 4 hours each term. 5 ①  
Elements of pronunciation, grammar, reading, and conversation. Special section for engineering students is offered for 3 hours each term. Professor Bourbousson, Assistant Professor Richter.
- RL 101, 102, 103. Second-Year French. 2, 3, or 5 hours each term.  
(a) For 3 hours credit; grammar, composition; reading of modern French authors.  
(b) For 2 hours credit; 2 two-hour practice periods in conversation, including student discussion of current topics and systematic vocabulary building. (c) For 5 hours credit; (a) and (b) combined. Professor Bourbousson, Assistant Professor Richter.
- RL 201, 202, 203. Survey of French Literature. 3 hours each term. 3 ①  
(Third-year French.) Reading of masterpieces of various periods; general survey of French literature. Prerequisite: two years of college French or the equivalent. Professor Bourbousson.
- RL 211, 212, 213. Directed Reading in French. 1 or 2 hours each term. 1 or 2 ①  
Reading in French in field of the student's major. Students who register for 1 hour any term may register for an additional hour in a subsequent year. Prerequisite: consent of instructor. Professor Bourbousson, staff.

**Upper Division Service Courses**

- RL 311, 312, 313. Survey of French Literature. 3 hours each term. 3 ①  
(Third-year French.) Masterpieces of various periods; general survey. Prerequisite: two years of college French or equivalent. Not open to students who have taken RL 201-203. Professor Bourbousson.
- RL 320, 321, 322. Scientific French. 1, 2, or 3 hours each term.  
For students in science, medicine, and technology. Current technical and professional literature. Maximum credit. 3 term hours under each course number. Prerequisite: second-year French or consent of instructor. Professor Bourbousson.

**Courses in Romance Languages: Portuguese****Lower Division Courses**

- RL 21, 22, 23. First-Year Portuguese (Brazilian). 4 hours each term. 5 ①  
Elements of pronunciation, grammar, reading, and conversation. Special section for engineering students offered for 3 hours each term. Professor Dawes.

- RL 217, 218, 219. **Directed Reading in Portuguese.** 1 to 2 hours each term. 1 or 2 ①  
 Reading in Portuguese to aid students to maintain facility in the language. Prerequisite: consent of instructor. Professor Dawes.

### Courses in Romance Languages: Spanish

#### Lower Division Courses

- RL 11, 12, 13. **First-Year Spanish.** 4 hours each term. 5 ①  
 Elements of pronunciation, grammar; reading and conversation. Special section for engineering students offered for 3 hours each term. Professor Dawes, Assistant Professor Richter, Miss Garrón.
- RL 107, 108, 109. **Second-Year Spanish.** 2, 3, or 5 hours each term.  
 (a) For 3 hours credit: grammar, composition; reading of modern Spanish authors. (b) For 2 hours credit: 2 two-hour practice periods in conversation, including student discussion of current topics and systematic vocabulary building. (c) For 5 hours credit: (a) and (b) combined. Professor Dawes, Miss Garrón.
- RL 207, 208, 209. **Spanish Literature.** 3 hours each term. 3 ①  
 (Third-year Spanish.) Reading of masterpieces of various periods; general survey of Spanish literature. Prerequisite: two years of college Spanish or the equivalent. Professor Dawes.
- RL 214, 215, 216. **Directed Reading in Spanish.** 1 or 2 hours each term. 1 or 2 ①  
 Reading in Spanish in student's major. Students who register for 1 hour any term may register for an additional hour in a subsequent year. Prerequisite: consent of instructor. Professor Dawes, Assistant Professor Richter.

#### Upper Division Service Courses

- RL 323, 324, 325. **Scientific Spanish.** 1, 2, or 3 hours each term. 1, 2, or 3 ①  
 For students in science and technology. Current technical and professional literature. Maximum credit, 3 term hours under each course number. Prerequisite: second-year Spanish or consent of instructor. Professor Dawes, Assistant Professor Richter, staff.
- RL 341, 342, 343. **Spanish Literature.** 3 hours each term. 3 ①  
 (Third-year Spanish.) Masterpieces of various periods; general survey. Prerequisite: two years of college Spanish or equivalent. Not open to students who have taken RL 207-209. Professor Dawes.

### Courses in Slavic Languages: Russian

#### Lower Division Courses

- SL 1, 2, 3. **First-Year Russian.** 4 hours each term. 5 ①  
 Elements of pronunciation, grammar, reading, and conversation. Assistant Professor Jurgenson.
- SL 101, 102, 103. **Second-Year Russian.** 2, 3, or 5 hours each term.  
 (a) For 3 hours credit: review of grammar, composition; reading of newspapers, periodicals, and modern Russian authors. (b) For 2 hours credit: 2 two-hour practice periods in conversation, including student discussion of current books and systematic vocabulary building. (c) For 5 hours credit: (a) and (b) combined. Prerequisite: SL 1, 2, 3, or equivalent. Assistant Professor Jurgenson.

#### Upper Division Service Courses

- SL 320, 321, 322. **Scientific Russian.** 1, 2, or 3 hours each term. 1, 2, or 3 ①  
 Provides opportunity to study beyond second year and to read in various fields of science. Assistant Professor Jurgenson.

## Music

Musical activities at Oregon State College are an essential part of campus life. The variety in the offerings of the Department of Music enables students interested in furthering their music education to find some activity to suit their individual needs and abilities. They may participate in music solely for its cultural and avocational benefits, or by following a planned course of study they may prepare for majoring in music at the University of Oregon.

**Musical Organizations.** The Bands, Orchestra, Glee Club, Madrigal Club, and Choralaires are open to all students after consultation with the directors. Each group appears frequently in public concerts.

**Applied Music.** Private lessons in voice, piano, organ, and instruments of the band and orchestra, carrying one hour of credit for one lesson per week and two credits for two lessons per week. Class lessons in voice are also offered. (See following schedule of fees.)

**Music Minors.** A minor in music is available to students majoring in Secondary Education and to those in Home Economics. Requirements for the minors are listed under SCHOOL OF EDUCATION and SCHOOL OF HOME ECONOMICS.

**Scholarships.** Certain scholarships in applied music are available to all interested students. See section on SCHOLARSHIPS AND FELLOWSHIPS.

**Regulations and Fees.** Students are expected to consult the departmental office regarding regulations governing registration, attendance, public performance of music students, etc. All fees for private music lessons must be paid in advance at the Business Office. No deduction is made for lessons missed by the student nor will such lessons be made up except in the case of serious illness. All students are expected to do their practicing in the practice rooms provided unless other arrangements are made specifically with the departmental office. The schedule of music fees is as follows:

<b>APPLIED MUSIC (private lessons):</b>	<i>Per term</i>
Piano, Voice, Stringed Instruments, Organ	
One lesson a week, one-half hour (1 term hour credit).....	\$30.00
Two lessons a week, one-half hour each (2 term hours credit)....	\$50.00
Wind Instruments	
One lesson a week, one-half hour (1 term hour credit).....	\$20.00
Two lessons a week, one-half hour each (2 term hours credit)....	\$40.00
<b>CLASS LESSONS (one lesson a week—50 minutes):</b>	
Voice .....	\$15.00
<b>PRACTICE ROOM RENTAL—with piano:</b>	
One-half hour a day, a term.....	\$ 2.50
One hour a day, a term.....	\$ 4.00
Two hours a day, a term.....	\$ 7.00
Three hours a day, a term.....	\$10.00
<b>PRACTICE ROOM RENTAL—without piano:</b>	
One hour a day, a term.....	\$ 2.50
<b>ORGAN RENTAL:</b>	
One hour a day, a term (Wurlitzer or spinet).....	\$ 7.50
One hour a day, a term (Comnsonata).....	\$10.00

### Lower Division Courses

Mus 111, 112, 113. **Music Theory.** 4 hours each term.

5 ①

Music fundamentals, scales, key relationships, intervals, triads; harmonizations of various triad and seventh chords in all positions, nonchord tones, free harmonization and simple modulation; keyboard work, chord recognition, sight-singing, and analysis correlated with written work.

- Mus 190. Applied Music.** 1 or 2 hours any term.  
Individual instruction in piano, organ, voice, and instruments of band and orchestra. Term hours on basis of number of lessons a week (1 or 2 half-hour periods).
- Mus 191. Class Lessons in Voice.** 1 hour each term, three terms. 1 ①
- Mus 195. College Band.** 1 hour each term. 3 ①  
Division I band: concert organization of men and women who have obtained membership by tryout. Division II band: those who need more experience and training to meet standards of concert band. The marching band which plays at football games, parades, etc., is composed of all men in the Division I and II bands. Membership of all three groups is interchangeable at discretion of conductor.
- Mus 196. The College Orchestra.** 1 hour each term. 1 ② 1 ①  
Symphonic group including all instruments common to such an organization. Membership is open to all string players and those wind and percussion players who, in opinion of conductor, can meet the special requirements of the orchestra.
- Mus 197. The College Chorus.** 1 hour each term.  
Membership is open to all students subject to tryout. Two weekly rehearsals of Glee Club (men) and Madrigal Club (women), and one rehearsal of the two groups combined. Concert of standard choral works each term.
- Mus 211, 212, 213. Music Theory.** 3 hours each term. 3 ②  
Continuation of Mus 113 involving use of secondary and altered chords in harmonization and analysis of master works; modulation and keyboard harmony further developed.
- Mus 221, 222, 223. History and Literature of Music.** 3 hours each term. 3 ①  
Mus 221: Survey of music literature of different styles and periods in the history of the western world. Mus 222, 223: Development of music in relation to social, economic, and political influences from primitive times to present. Must be taken in sequence.
- Mus 241. Recreational Use of Music.** 3 hours. 3 ①  
Use of musical activities in organized community recreational program. Primarily for students majoring in recreation.
- Upper Division Service Courses**
- Mus 321, 322. Instrumental Conducting.** 2 hours each term. 2 ①  
Basic conducting techniques and score reading for conductors of instrumental groups. Practical experience conducting campus organizations.
- Mus 324, 325. Choral Conducting.** 2 hours each term. 2 ①  
Basic conducting techniques and score reading for conductors of choral groups. Practical experience conducting campus organizations.
- Mus 335, 336. Band and Orchestra Techniques.** 2 hours each term. 2 ①  
Instruction on band and orchestral instruments; instrumental group organization; rehearsal procedures; survey of literature; program building.
- Mus 350. Music for the High School Teacher.** 3 hours. 3 ①  
Materials and methods for developing high school choral organizations; adolescent voice, its care and development; survey of choral literature; public performance; program building; general music class; assembly singing. Prerequisite: six terms of music.
- Mus 354, 355. Band Arranging.** 2 hours each term. 2 ①  
Scoring and arranging for full concert and military band as well as for smaller combinations of instruments.
- Mus 381, 382. Music for Elementary Teachers.** 3 hours each term. 5 ①  
Music activities for elementary teacher in training. Introductory course designed to build basic musicianship through experiences that apply to teaching of music in elementary classroom.
- Mus 383. Music for Elementary Teachers.** 3 hours. 3 ①  
Experiences in teaching the various music activities found in the elementary school.
- Mus 390. Applied Music.** 1 or 2 hours any term.  
Advanced study of piano, organ, voice, and instruments of band and orchestra. Term hours on basis of number of lessons a week. (1 or 2 half-hour periods.)

- Mus 395. College Band.** 1 hour each term.  
Prerequisite: 6 terms of Mus 195.
- Mus 396. College Orchestra.** 1 hour each term.  
Prerequisite: 6 terms of Mus 196.
- Mus 397. College Chorus.** 1 hour each term.  
Prerequisite: 6 terms of Mus 197.

## Philosophy

Instruction in philosophy is intended both for students who anticipate more advanced study of philosophy and for those who desire a brief introductory study only.

### Lower Division Courses

- Phl 201, 202, 203. Introduction to Philosophy.** 3 hours each term. 3 ①  
Unified year sequence but work of three terms may be taken in any order. Phl 201, nature of philosophy and its basic problems; Phl 202, philosophy of ethics; Phl 203, social philosophy with special attention to philosophy of history.
- Phl 211, 212, 213. Practical Life Philosophies.** 2 hours each term. 2 ①  
Designed to help student develop his own philosophy of life. Phl 211, democratic values; Phl 212, comparison of Nietzsche, Marx, and Christ; Phl 213, Plato's Republic.
- Phl 214, 215, 216. Modern Logic and Scientific Method.** 3 hours each term. 3 ①  
The nature of inference, fallacies, and syllogistic reasoning are considered in Phl 214. Induction, probability, scientific method in physical and social sciences are studied systematically in Phl 215 and through scientists and their philosophies in Phl 216. Any term may be taken independently.

## Political Science

The courses in political science are designed primarily to prepare for intelligent citizenship and effective participation in public affairs; to give the student an active interest in the structure of political life and the operation of governments, and an understanding of current political questions; and to lay a foundation for majoring in political science at the upper division level. The public administration program is designed to help prepare students majoring in technical fields who contemplate careers in public service.

### Lower Division Courses

- PS 201, 202, 203. American Governments.** 3 hours each term. 3 ①  
First term: principles of American political system; organization of national government. Second term: powers and functions of national government. PS 201 may be taken separately but is prerequisite for PS 202. Third term: Practical operation and contemporary reforms in government at state and local levels. Associate Professor Maddox, Assistant Professors McClenaghan, Fuquay, Mr. Carney.
- PS 204. European Political Systems.** 3 hours winter or spring. 3 ①  
Comparative study of ideological foundations, forms, and practices of political systems of major European countries; comparison to and contrast with American political system. Associate Professor Walter.
- PS 231, 232, 233. Current Affairs.** 2 hours each term. 2 ①  
Designed to acquaint student with current political, economic, and sociological problems and developments that arise on both domestic and international levels, and to encourage objective analysis and discussion of these events in order to mold responsible citizens. Open to freshmen and sophomores only. Associate Professor Walter, Assistant Professor Fuquay, Mr. Carney.

**Upper Division Service Courses**

*Prescribed in major curricula in degree-granting schools at Oregon State College and also available as electives to students majoring in such schools.*

- PS 334, 335, 336. **Current Problems in American Democracy.** 2 hours each term. 2 ①  
For juniors and seniors only. Domestic and foreign policy, organization and operation of American political system; individual and the state in democratic society. Associate Professor Walter, Assistant Professor McClenaghan, Mr. Carney.
- PS 411, 412, 413. **Public Administration.** (g) 3 hours each term. 3 ①  
PS 411: principles of public administration; administrative organization and procedures; public relations. PS 412: administrative functions; public personnel and fiscal problems and practices. PS 413: basic administrative law; control of administrative agencies; powers, limitations, and remedies. PS 411 or 412 may be taken as a single course. Prerequisite: PS 201, 203, or equivalent, and senior standing. Professor Swarthout, Associate Professor Maddox, Assistant Professor Fuquay.
- PS 417. **International Relations.** (g) 3 hours fall or spring. 3 ①  
Survey of international relations from emergence of modern state system to present. Designed to provide student with essential backgrounds and to show significance and interrelationships of international law, war, power politics, peaceful settlement of disputes, and international organization. Professors Swarthout, Swygard.
- PS 418. **Latin-American Relations.** (g) 3 hours spring. 3 ①  
Critical study of internal social, economic, and political factors in Latin America as they relate to developing patterns of government; foreign relations, particularly extension of inter-American security system and role of Western Hemisphere in power struggle. With Hst 360 and 361 forms an upper division sequence in Latin-American studies. Associate Professor Walter.
- PS 419. **Pacific Area Relations.** (g) 3 hours winter. 3 ①  
Survey of problems in government and foreign relations of Pacific powers; revolutionary ferment and postwar adjustments, with particular attention to American security and commercial interests. Professors Swarthout, Swygard.
- PS 423. **Municipal Government.** (g) 3 hours spring. 3 ①  
Organization, functions, and present-day problems of city and town governments. Prerequisite: PS 201, 203, or consent of instructor. Associate Professor Maddox.
- SSc 441, 442, 443. **International Politics and National Power.** (g) 3 hours each term. 3 ①  
See INTERDEPARTMENTAL COURSES.

**Graduate Service Courses**

Courses numbered 400-499 and designated (g) may be taken for credit toward a graduate minor.

**Psychology**

Psychology courses are intended to meet the needs of students desiring a knowledge of psychology as a part of their general education or as a foundation for work in education, child development, and other professions; to prepare students to major in psychology at the upper division level; and to meet the service needs of various schools and departments that require psychology as a part of their program of training. The School of Education offers courses in the psychology of childhood, adolescence, education, guidance, and vocations.

**Lower Division Courses**

- Psy 111. **Personality and Development.** 3 hours any term. 3 ①  
Self-understanding and self-development; special attention to student's habits, attitudes, emotional problems, and efficient learning in college life. Not open to juniors and seniors.

- Psy 201, 202. **General Psychology.** 3 hours each term. 3 ①  
Human behavior and conscious processes; facts and principles of learning, motivation, perceiving, communication, thinking, and other human abilities. Two-term sequence; with Psy 205 forms year sequence.
- Psy 205. **Applied Psychology.** 3 hours any term. 3 ①  
Potential contributions of psychology to broad fields of American civilization and social progress; applications in education, industry, business, and other professions. Prerequisite: Psy 202.
- Psy 208, 209, 210. **Psychology Laboratory.** 1 hour each term. 1 ③  
Introduction to laboratory experimental methods. Operated in coordination with Psy 201, 202, 203. Must be taken in sequence. Combination counts as science sequence in meeting group requirements.
- Psy 212. **Practical Psychology.** 3 hours. 3 ①  
Management of people through human understanding; socio-psychological aspects of personnel methods; development, use, and evaluation of such methods. For engineering, forestry, and agriculture students. Not open to students who have taken Psy 202.
- Upper Division Service Courses**
- Psy 311. **Human Development.** 3 hours. 3 ①  
Psychological problems in child's development from five to fourteen; development of muscular activities; perception; language; motivational and emotional patterns; intelligence; social behavior; measurement of child behavior. Prerequisite: Psy 202.
- Psy 314. **Human Adjustment.** 2 hours. 3 ①  
Principles of motivation, perception, communication, learning, and adjustment with emphasis on their discovery and application in life patterns of student; self-understanding and self-acceptance fundamental to increasing human efficiency and effectiveness requisite for happy living. Prerequisite: Psy 202.
- Psy 361. **Group Dynamics.** 3 hours. 2 ① 1 ②  
Principles of group work; motivation of interaction of individuals within groups; techniques for working with groups. For students preparing for education, extension work, camp work, scout work, YMCA, YWCA, and community recreation. Prerequisite: Psy 202.
- Psy 371. **Quantitative Methods.** 3 hours. 3 ①  
Fundamentals of experimentation; design and conduct of experiments; analysis and interpretation of data; reporting of research in human behavior. Prepares for critical reading of literature of research in psychology, social sciences, business, education, and home economics. Not primarily computational. Prerequisite: Psy 202.
- Psy 411. **Mental Hygiene.** (g) 3 hours. 3 ①  
Principles and application of mental hygiene to problems of individual in home, school, and occupational situations. Prerequisite: Psy 314 or equivalent.
- Psy 431. **Industrial Psychology.** (g) 3 hours. 3 ①  
Psychological characteristics of employees and psychological requirements of occupations; employee appraisal through development and use of evaluating instruments and recording of evaluations; psychological factors involved in maintaining employee fitness and morale. Prerequisite: Psy 205 or equivalent.
- Psy 462. **Behavior Deviations.** (g) 3 hours. 3 ①  
Approaches to recognizing and understanding deviant individuals; normal and abnormal behavior contrasted; varieties of deviant behavior; their causation, treatment, and prevention in contemporary society. Prerequisite: Psy 311 or 314 or equivalent.
- Psy 471, 472, 473. **Individual Differences.** (g) 3 hours each term. 3 ①  
Theories of individual differences; experimental evidence; importance in personal, educational, and social adjustments; guiding and directing normal development. Prerequisite: Psy 371 or equivalent. Must be taken in sequence.
- Psy 474, 475, 476. **Psychological Tests and Testing.** (g) 3 hours each term. 3 ①  
Theory and practice of test administration, scoring, and interpretation; administration, scoring, and interpretation of individual tests in mental abilities, special aptitudes, interests, personality, and nonacademic achievement; group tests in the same areas. Psy 474 must be taken before either Psy 475 or Psy 476. Prerequisite: Psy 371 or equivalent.

Psy 480. Practice in Psychological Services. (g) 3 hours each term, two terms. 3 ①

Designed to give properly qualified students experience in use of psychological and related methods in dealing with individuals at adolescent and adult levels. Prerequisites: Psy 473, 475, and consent of instructor.

#### Graduate Service Courses

Courses numbered 400-499 and designated (g) may be taken for credit toward a graduate minor.

## Religion

Establishment of a chair of Religion at Oregon State College was authorized in 1928, and the first courses were offered in the fall of 1928-29. The Department of Religion is nonsectarian in spirit and organization. Its purpose is threefold:

- Courses in religion seek to develop an appreciation of the nature and processes of religion in light of conditions affecting life today, thus enabling students to make such adjustments as will vitalize religion for them.

- Courses are determined for the most part by the needs of students who are preparing for service in the fields of science, engineering, agriculture, home economics, teaching, etc.

- Special attention is given to the religious education of those who anticipate lay-leadership in churches of their local communities and those who plan to enter social service or religious vocations, such as missionary work, the ministry, director of religious education, pastor's assistant, professional leadership of religious organizations, etc.

#### Lower Division Courses

R 211. The New Testament and Its Historical Background. 3 hours. 3 ①  
Special attention is given to times and conditions out of which New Testament writings came and problems that gave rise to Christian movement.

R 212. The Old Testament and Its Historical Background. 3 hours. 3 ①  
Old Testament in light of times and conditions which produced it; religion of Israel as it emerges out of critical survey of sources.

R 220. The Sermon on the Mount. 2 hours any term. 2 ①  
Philosophy of Jesus' teaching as embodied in selected passage.

R 225. The Prophets and Their Message. 2 hours. 2 ①  
Selected writings of Hebrew prophets; their significance and value for present day.

R 230. History of Christian Thought. 3 hours. 3 ①  
Rise and spread of Christian religion; thought of its various leaders; movements within Christianity; present tendencies in religious thought.

R 231. The American Religious Heritage. 2 hours 2 ①  
Development of main religious groups in America; Catholicism, Judaism, Protestantism; role of the churches; current trend toward ecumenicity.

Eng 275. The Bible as Literature. 3 hours spring. 3 ①  
Structure, literary types, ideas of the Bible; its influence on our literary heritage. Associate Professor Gibson.

#### Upper Division Courses

R 370. Principles of Religious Leadership. 2 hours 2 ①  
Practical study of religious leadership. Open only to students actually engaged in some form of leadership in a religious organization that serves as laboratory work for the study.



- R 461. **Philosophy of Religion.** 3 hours. 3 ①  
Basic convictions underlying religious thinking; values, God, problem of good and evil, immortality, human nature, religious experience.
- R 462. **History of Great Religions.** 3 hours. 3 ①  
Comparative study of religions that command a large following today, such as Hinduism, Buddhism, Confucianism, Judaism, Christianity, and Islam.
- R 463. **Psychology of Religion.** 3 hours. 3 ①  
Bearing of psychology on religious thought and action, both past and present.

## Sociology

All instruction in sociology, like that in the related social sciences, is intended to contribute to training for good citizenship through a better understanding of principles that govern human associations and relationships. Particular attention is given to gaining an insight into the structures and functioning of society and into contemporary social problems. Basic courses are provided for students planning to major in sociology elsewhere. All courses are designed to meet the special needs of students in other fields.

### Lower Division Courses

- Soc 201, 202, 203. **General Sociology.** 3 hours each term. 3 ①  
Structure and functioning of human societies; influencing factors; effects on human relationships. Soc 203 emphasizes application of sociological principles to social problems.
- Soc 212. **General Sociology.** 3 hours any term. 3 ①  
Selected aspects of sociology of importance to students with technical majors. Not open to students who have had Soc 201.
- Soc 215. **Elements of Cultural Anthropology.** 3 hours. 3 ①  
Man's achievement through the ages as related to his environment; effects of culture on man; factors influencing cultural change and differences within cultures.

### Upper Division Service Courses

- Soc 312. **Sociology of the Family.** 3 hours. 3 ①  
Historical development of the family as an institution; trends and problems in courtship, marriage, and family life related to society.
- Soc 364. **Sociology of Rural Life.** 3 hours. 3 ①  
Basic social factors in rural life; rural communities in a changing society. Professor Plambeck.
- Soc 411, 412, 413. **Social Problems.** (g) 3 hours each term. 3 ①  
May be taken separately. Soc 411: disorganization—personal and social; Soc 412: criminology and penology; Soc 413: race relations and minority groups. Prerequisite: 6 hours of sociology or sociology and psychology. Professors Bakkum and Plambeck.
- Soc 468. **Sociology of Urban Life.** (g) 3 hours. 3 ①  
Sociological analysis of the modern city; its history, structures, functions, and problems. Prerequisite: 6 hours of sociology or sociology and psychology.
- Soc 469. **Rural Social Organization.** (g) 3 hours. 3 ①  
More detailed analysis of special aspects of rural life than in Soc 364. Prerequisite: 9 hours of sociology or of sociology and economics or psychology. Professor Plambeck.
- Soc 474. **Social Psychology.** (g) 3 hours. 3 ①  
Biological and social functions of human behavior; individual and social adjustments; behavior in presence of others; social psychology of institutions; social conflict. Prerequisite: 6 hours of sociology and psychology. Professor Bakkum.

- Soc 475. **Community Organization.** (g) 3 hours. 3 ①  
 Nature and problems of community organization; adjustments in community organization to meet changing needs. Prerequisite: 6 hours of sociology or sociology and psychology. Professor Plambeck.

#### Graduate Service Courses

Courses numbered 400-499 and designated (g) may be taken for credit toward a graduate minor.

## Speech

Instruction in speech aims to build strength of personality by aiding students to develop clear, original thinking, and by giving training in the correlation, organization, and effective presentation of knowledge gained through study and experience. Much drill and criticism are given on organization of material, on platform work, and on principles that underlie effective reading and speaking. The training helps to overcome self-consciousness and other emotional inhibitions, and to build up a strong personal address.

Courses in interpretation and community drama are conducted not only as a means of rounding out the speech training, but also as an aid to prospective teachers and other community leaders in the directing of plays and in the making of stage settings, costumes, and other equipment.

Well-equipped radio and television studios, in addition to those at station KOAC, are maintained by the department for those wishing to acquire a knowledge of and practice in the use of radio and television techniques.

Courses in speech are required in a number of professional curricula. Such training is regarded as of great value to all students preparing for leadership in any field, including prospective teachers of vocational subjects, agricultural agents, home demonstration agents, club leaders, homemakers, and others.

Many plays, intramural and intercollegiate debates, extempore speaking and oratorical contests take place each year; and much individual attention is given to students who wish to prepare for such work.

A clinic is maintained by the department for those who are handicapped with the various speech impediments, such as stammering, lispings, nasality, and the like. Advice and treatment are given for overcoming both organic and functional difficulties. An attempt is made to understand the factors in the life of the individual that have caused any emotional difficulties; and, when they are located, an attempt is made to eradicate them. Foreign students are aided in acquiring acceptable standards of English speech. Any student may have a hearing test with the audiometer in the clinic.

#### Lower Division Courses

- Sp 111, 112, 113. **Extempore Speaking.** 3 hours each term. 3 ①  
 Organization and presentation of original speeches; analysis and synthesis of material, adaptation to audience, outline construction; development of confidence and release on platform; voice, enunciation, gesture, and bearing in delivery; speeches for special occasions; the extended address. Must be taken in sequence. Professor Wells, staff.
- Sp 120. **Voice and Diction.** 3 hours any term. 3 ①  
 Production of vocal tone and correct speech sounds, pronunciation standards, vocabulary building, and word usage in relation to social integration of student; principles underlying good business and technical speaking on platform and radio. Associate Professor Winger, Assistant Professor Harris.
- Sp 121, 122, 123. **Interpretation.** 3 hours each term. 3 ①  
 Training in analysis and presentation of printed materials; study of emotional reactions that give color and interest; expressive vocal and bodily responses; pantomime; correction of faulty speech habits; intensive work in characterization; choral reading; interpretation of dramatic literature. Must be taken in sequence. Professor Young, Associate Professors Cortright, Winger, Mr. Henry.

- Sp 190. **Corrective Speech.** 1 hour each term, maximum 3 hours. 2 ①  
Designed specifically for students having organic or functional speech disorders; group meetings of class, supplemented by clinical periods devoted to individual diagnosis and treatment. Assistant Professors Harris, Hildebrandt.
- Sp 191. **Speech for Foreign Students.** 2 hours winter. 2 ①  
Designed to help foreign students acquire accepted standards of general American speech; training in aural discrimination of component parts of speech and American speech rhythm; pronunciation and enunciation. Assistant Professor Hildebrandt.
- Sp 231. **Parliamentary Procedure.** 3 hours winter or spring. 3 ①  
Rules of parliamentary procedure; practice in application; forming temporary and permanent organizations; preparation of constitutions and by-laws. Students serve as chairman and secretary and learn how to conduct meetings efficiently. Associate Professor Winger, Assistant Professors Doler, Harris.
- Sp 232. **Group Discussion.** 3 hours winter or spring. 3 ①  
Techniques and practice in preparing for, leading, and participating in types of discussions used in various groups led by extension workers, technical and professional people, and teachers in conferences, panels, lecture-forums, and symposiums; strong emphasis on problem-solving and interpersonal relations. Prerequisite: Sp 111. Associate Professor Winger, Assistant Professors Doler, Harris.
- Sp 237. **Argumentation.** 3 hours fall or winter. 3 ①  
Theory; brief-drawing; collection and handling of evidence; construction of speeches. Each student works out several briefs and delivers several speeches. Prerequisite: Sp 111.
- Sp 238. **Persuasion.** 3 hours fall or winter. 3 ①  
Study of models; composition exercises; writing a term speech; mastery of audience psychology and effective style. Prerequisite: Sp 111. Professor Wells.
- Sp 242. **Recreational Use of Drama.** 3 hours winter. 3 ①  
Training for leadership and participation in recreational-creative dramatics; storytelling; creating original story; pantomime; dramatization of narrative material; improvisation in acting, staging, and costuming. Mr. Henry.
- Sp 243. **Puppetry.** 3 hours winter. 3 ①  
History of puppetry; practice in adapting plays, stories, and historical events for puppet dramatization; practice in manipulating puppets and marionettes; application to television. Assistant Professor Harris.
- Sp 244. **Stagecraft and Lighting.** 3 hours any term. 2 ① 2 ⑧  
Methods of constructing scenery and stage properties; lighting equipment and basic principles of lighting; practical experience in lighting, backstage procedures, and designing and construction of settings both realistic and suggestive. Professor Young.
- Sp 247, 248, 249. **Community Drama.** 3 hours each term. 3 ①  
Training for participation and leadership in community dramatics; community-drama idea; play selection; stage technique and acting; costume and makeup; short cuts in craftsmanship; directing and play production. Prerequisite for Sp 247: Sp 122; for Sp 248: none; for Sp 249: Sp 247. Professor Young, Associate Professor Cortright, Mr. Henry.
- Sp 253. **Workshop Theater.** 3 hours any term.  
For participation in campus plays, credit totaling not more than 6 hours is given on recommendation of instructor. Prerequisite: consent of instructor. Professor Young, Associate Professor Cortright, Mr. Henry.
- Sp 264. **Radio-Television Projects.** 2 hours any term.  
Educational projects in radio-television under supervision, chosen for variety of experience in microphone interpretation, production planning, script preparation, studio acoustic practices; practical laboratory experimentation under broadcast conditions. Associate Professor Livingston, Mr. McGrath.
- Sp 271. **Oratory Squad.** 3 hours.  
Original manuscript speeches; preparation for intercollegiate competition. Prerequisite: Sp 111 and either Sp 238 or consent of instructor. Professor Wells.
- Sp 274. **Extempore Speaking Squad.** 3 hours.  
Practical workshop for preparing oral reports, demonstrations, discussions, radio talks, or after-dinner speeches for presentation in seminars or before community organizations; preparation for intercollegiate competition. Prerequisite: Sp 111 and either Sp 112 or consent of instructor. Assistant Professors Doler, Harris.

- Sp 277. **Debate Squad.** 3 hours.  
Practical application of principles of argumentation; preparation for intercollegiate competition. Prerequisite: Sp 111 and either Sp 237 or consent of instructor.
- Sp 291. **Speech Science.** 3 hours fall or winter. 3 ①  
Scientific bases of speech; nature and purpose of speech; origin and development in race and individual; anatomy and physiology of speech mechanisms, both peripheral and nervous; physics of speech sounds; phonetic elements; psychological aspects. Professor Wells.
- Upper Division Service Courses**
- Sp 355. **Workshop Theater.** 1 to 3 hours any term.  
For participation in campus plays, credit totaling not more than 6 hours is given to juniors and seniors on recommendation of instructor. Prerequisite: 3 term hours of Sp 251. Professor Young, Associate Professor Cortright, Mr. Henry.
- Sp 361, 362, 363. **Radio Speaking.** 3 hours each term. 2 ① 1 ②  
Radio delivery techniques; radio script preparation and production; specialized program building in major fields of interest; practical broadcast experience, using modern studios and recording equipment. Must be taken in sequence. Prerequisite: Sp 111 or Sp 112 or Sp 120. Associate Professor Livingston, Mr. McGrath.
- Sp 365. **Radio-Television Projects.** 2 hours any term.  
Educational projects in radio-television similar to work in Sp 264. Prerequisite: Sp 264 or Sp 361. Associate Professor Livingston, Mr. McGrath.
- Sp 367. **Basic Television.** 3 hours fall or winter. 2 ① 1 ②  
Television performance techniques, including functions of camera, microphones, studio special equipment, with basic principles of sound program planning; designed to supplement training for extension workers, in addition to giving students of the School of Education basic understanding of educational TV possibilities. Prerequisite: Sp 361. Associate Professor Livingston, Mr. McGrath.
- Sp 368. **Television Programing.** 3 hours spring. 2 ① 1 ②  
Advanced principles of television writing and production in terms of public service programing in such fields as home economics, agriculture, engineering; special projects in the student's field of major interest. Prerequisite: Sp 367. Associate Professor Livingston.
- Sp 372. **Oratory Squad.** 3 hours.  
Continuation of Sp 271, which is prerequisite. Professor Wells.
- Sp 375. **Extempore Speaking Squad.** 3 hours.  
Continuation of Sp 274, which is prerequisite. Assistant Professors Doler, Harris.
- Sp 378. **Debate Squad.** 3 hours.  
Continuation of Sp 277, which is prerequisite.
- Sp 473. **Oratory Squad.** 3 hours.  
Continuation of Sp 372, which is prerequisite, Professor Wells.
- Sp 476. **Extempore Speaking Squad.** 3 hours.  
Continuation of Sp 375, which is prerequisite. Assistant Professors Doler, Harris.
- Sp 479. **Debate Squad.** 3 hours.  
Continuation of Sp 378, which is prerequisite.
- Sp 493. **Principles and Techniques of Speech Correction.** (G) 3 hours winter. 3 ①  
Nature, causes, diagnosis, and treatment of speech defects both organic and functional; for students requiring knowledge of speech problems of children and adolescents especially. (See also Sp 190.) Professor Wells, Assistant Professors Harris, Hildebrandt.
- Sp 494. **Clinic Procedures.** 3 hours spring. 3 ①  
Extensive practical experience in handling clinical cases, including taking of case history, making diagnosis, and giving remedial treatment. Prerequisite: Sp 493. Professor Wells, Assistant Professor Hildebrandt.

# School of Science

## Faculty

FRANCOIS ARCHIBALD GILFILLAN, Ph.D., Dean of the School of Science.

GRAYDON TALMADGE CREWS<sup>1</sup>, M.S., Science Student Personnel Adviser.

**General Science:** Professors HANSEN (department chairman), GILFILLAN, WILLIAMSON; Associate Professors BEER, BURT; Assistant Professor FOX; Instructor CREWS<sup>2</sup>; Fellow WIRTZ; Graduate Assistants JENKINS, WARD.

**Bacteriology and Hygiene:** Professors ELLIKER (department chairman), C.L. ANDERSON, BOLLEN, LANGTON, PILCHER; Associate Professor GILMOUR; Assistant Professor A. W. ANDERSON; Graduate Assistants FORTNEY, PALMER, PARKER, PEDERSON; Research Assistants BOWEN, BUCKLEY, DUGGAN, LAURSEN.

**Botany:** Professors DIETZ (department chairman), ATWOOD (emeritus), GILFILLAN (executive committee, Institute of Marine Biology), GILKEY (emeritus), MILBRATH, OWENS (emeritus), F. H. SMITH, VAUGHAN, YOUNG; Associate Professors BELKENGREN, CHILCOTE, PHINNEY, ROTH, STEWARD; Assistant Professors CAMERON, JENSEN, L. E. JONES; Instructors LUND (technician), BRANDT, DEEF, HILL; Graduate Assistants DEAN, PALM, F. WIRTZ; Research Assistant MCLACHLAN.

**Chemistry:** Professors CHRISTENSEN (department chairman), BRAUNS, BUTTS, CALDWELL<sup>3</sup>, CHELDELIN<sup>4</sup>, DECUS, GILBERT, HAAG, KURTH, MEHLIG (emeritus), PEASE, RICHARDSON, SCOTT; Associate Professors BUBL, FREED, FREUND, KING, LOGAN, NORRIS, REMBERT, SLABAUGH, TERRIERE, WANG, WESWIG, WILLIAMS; Assistant Professors FANG, HEDBERG, LOOMIS, MARVELL<sup>5</sup>, PARSONS, REESE<sup>6</sup>; Instructors BRAY, KRZYZANIAK, PEASE, SUTHERLAND.

Research Associate DATTA; National Science Foundation Fellow BATAILLE; du Pont Teaching Fellow W. JOHNSON; Research Fellows BECKER, BROKKE, GRUZENSKY, HILLS, THOMPSON, T. WANG, WILSON; Research Assistants BARBOUR, BURGE, ESSE, HOLBOKE; Teaching Fellows CHITTICK, CRAWFORD, DARTAU, DOYLE, FISHER, GRITTON, HARTKE, IMEL, KUBECK, LOWER, MAKI, McDONALD, OLAFSSON, RICHARDSON, ROUBAL; Graduate Assistants BECHTOLT, BINGHAM, COKER, COOK, DUPZYK, FLETCHER, A. JOHNSON, KELLOGG, KLEMM, LEWIS, RUSSELL, SCHAAD, SCHNEIDER, SESHADRI, STEPHENSON, STEVENS, S. WANG, WOODMANSEE.

**Entomology:** Professors RITCHER (department chairman), CHAMBERLIN (emeritus), MOTE (emeritus); Associate Professors CROWELL, MARTIN, RUDINSKY, SWENSON; Assistant Professors GOULDING, STEPHEN; Instructors HASBROUCK, LATTIN; Fellow KRAFT.

**Geology:** Professors ALLISON (department chairman), PACKARD (emeritus), WILKINSON; Assistant Professors BOYD, KOCH, TAUBENECK; Instructor BOSTWICK; Graduate Assistants HAMPTON, HARMS, R. JONES, MOORE, OGREN, R. SMITH, SNOOK, TUCHEK.

**Mathematics:** Professors GILFILLAN (acting department chairman), BEATY (emeritus), CLARK, HOSFETTER, LI<sup>1</sup>, LONSETH, MILNE (emeritus), WILLIAMS; Associate Professors ARNOLD, BREWER, GOEHN, KIRKHAM, POOLE, SAUNDERS, STONE<sup>2</sup>; Assistant Professors GODARD, LINK, McLEOD<sup>3</sup>, STALLEY; Instructors BAKKUM, R. BROWN, DEFENBACH, FLOOD, HILZMAN, KIMME, McFARLAND, OVERHOLSER, R. REYNOLDS, TOWN, G. TUCKER; Research Associate KRATZKE; Research Assistant CLARK; Teaching Fellows AMOS, BACHELOR, DYCHE, R. TUCKER; Graduate Assistants ARNTZEN, BRENNER, JAMES BROWN, HERRIGAN, KOHFELD, WITCRAFT.

**Natural Resources:** Professors JENSEN (department chairman), HIGHSMITH; Associate Professor HEINTZELMAN; Research Assistants HALL, TSHIRLEY; Graduate Assistant PARADIS.

**Nursing Education:** (director of department); Instructor CORCORAN.

**Physics:** Professors YUNKER (department chairman), W. B. ANDERSON (emeritus), BRADY, DEMPFSTER, VARNER, WENIGER (emeritus); Associate Professors BOLINGER<sup>4</sup>, GARMAN, MORGAN (emeritus), NICODEMUS<sup>5</sup>, VINYARD<sup>6</sup>; Assistant Professors CHURCH, DECKER, SCHECTER, TRIGG; Instructors SOMMERFELDT, TYNES; Teaching Fellows M. ANDERSON, BROWN, CHEZEM, GLASGOW, LALL; Graduate Assistants, CARSON, COLEMAN, MARR, STEPHAN.

**Zoology:** Professors DORNFELD (department chairman), ALLMAN, C. L. ANDERSON, DE LAUBENFELS, GILFILLAN (executive committee, Oregon Institute of Marine Biology), GORDON, HILLEMANN, KRUEGER, PRATT, WULZEN (emeritus); Associate Professor STORM; Assistant Professors MOHLER, PRITCHARD; Research Associates McCAULEY, OWCZARZAK; Research Assistants CHING, NEWSTEAD, STANLEY; Teaching Fellows ALDRICH, TIBBITTS, TIKASINGH, VAN ARSDEL, WEAVER; Graduate Assistants CLOTHIER, GILES, O. JOHNSON, PUYEAR.

<sup>1</sup> On sabbatical leave February 1 to June 1, 1957.

<sup>2</sup> The Department of General Science is in general charge of a committee composed of the chairman of the departments, with a chairman in immediate charge.

<sup>3</sup> On sabbatical leave 1956-57.

<sup>4</sup> On sabbatical leave spring term 1956-57.

<sup>5</sup> On detached duty, Kasetsart University, Thailand, see page 85.

<sup>6</sup> On leave of absence.

## General Statement

**J**UST as science in industry has unlocked new doors of exploration and achievement, so in education it has been the key to new depths of interest and fresh realms of research. It has helped to vitalize, layer by layer, all the strata of the field of education, as it has gradually penetrated downward from the research laboratory to the elementary school.

The School of Science at Oregon State College performs a three-fold function:

- Liberal arts education with majors in science leading to the degree of Bachelor of Arts or Bachelor of Science.
- Professional education for students planning to enter some occupation within the realm of science. Such students may take an undergraduate science major and from one to three years or more of graduate study in science.
- Elective and service courses in science for students majoring in other schools, or for students who take science as a basis for professional or technical work in other schools.

**General Science.** A student in general science has an opportunity to build his own individual curriculum. He takes at least 51 term hours of science. Opportunity for electives enables him to choose a variety of work in arts, letters, and social sciences, or even in professional fields. Positions open to a graduate in general science depend largely on his interests and competence.

For students interested in the developing fields that involve two or more of the traditional sciences—as for example, biophysics, geophysics, life sciences, paleobiology, seismology—special curricula will be outlined. Interdepartmental majors are administered through the Department of General Science and student programs are supervised jointly by the departments concerned.

**Special Curricula.** In addition to the special curricula described below, programs of study and guidance are provided students preparing to enter optometry schools and physical therapy and occupational therapy schools.

**Premedical Curriculum.** A premedical curriculum for entrance to standard medical schools is offered at Oregon State College. Students pursuing this curriculum work under the supervision of a special advisory committee to insure a selection of studies that will satisfy medical-school entrance requirements and the cultural needs of students planning to enter the profession of medicine. This committee consists of Dr. C. S. Pease, professor of chemistry, chairman; Dr. Robert M. Storm, associate professor of zoology; Dr. C. M. Gilmour, associate professor of bacteriology; and Charles E. Reed, M.D.

For entrance to a standard medical school the student must not only complete certain prescribed work but also show an aptitude for medical studies. The medical college admission test of the Association of American Medical Colleges is given each spring to all students who expect to apply during the next academic year for admission to a medical school. Further knowledge of the student's ability is obtained through frequent conferences between the student and his instructors and authorized advisers.

The entrance requirements of the University of Oregon Medical School are as follows:

(1) High School Preparation. The following high school course, which meets all the formal requirements, is strongly recommended:

	<i>Units</i>		<i>Units</i>
English .....	4	Latin .....	2
Algebra .....	1½	History .....	1
Geometry .....	1	German or French .....	2
Physics .....	1	Electives .....	1½
Chemistry .....	1		
Total .....			15

(2) Collegiate Preparation. The Medical School requires for admission at least three academic years of preparatory work (138 term hours exclusive of credit in military or naval science). The following work is prescribed:

	<i>Term hours</i>
Chemistry .....	23
General inorganic, which may include qualitative analysis .....	12
Quantitative analysis, emphasis on volumetric analysis .....	3
Organic .....	8
Biology .....	15
General biology or zoology .....	9
Selections from general embryology, vertebrate anatomy, or general physiology .....	6
Physics .....	12
Mathematics .....	6
English .....	9
Total prescribed credit .....	65

Foreign language is not specifically required for admission to the Medical School, but some knowledge of a major modern foreign language (German, French, Russian, Spanish) is highly recommended as a part of the cultural training of a physician. Students anticipating research in the medical sciences should obtain a basic knowledge of German and French. The premedical student should keep in mind that some medical schools require credit in foreign language for admission.

The work in organic chemistry must include the chemistry of both aliphatic and aromatic compounds. Biochemistry will not be accepted toward meeting the requirements. Students electing additional work are advised to take a course in elementary physical chemistry. At least 25 per cent of all chemistry credit must be received for laboratory work.

Human anatomy is not accepted toward meeting the minimum requirements in biology. Students electing additional work are advised to take courses in embryology, vertebrate anatomy, histological technique, or general physiology.

The work in physics must include the divisions of mechanics, heat and sound, light and electricity. Students electing additional work are advised to take further courses in electricity or atomic physics.

The work in mathematics should be of standard college grade, and include subjects such as algebra, elementary analysis, or trigonometry. Students electing additional work in mathematics are advised to take calculus.

The premedical student is advised very strongly against taking any medical courses in his preparation for the study of medicine. Rather, he should devote his efforts to obtaining the best possible general cultural education and, in addition, a thorough training in the basic sciences of chemistry, physics, and biology.

*Recommended Elective Subjects.* The student preparing to study medicine is advised to plan a balance in elective courses between courses in liberal arts and courses beyond the minimum requirements in subjects prescribed for admission to the Medical School. Subjects suggested are: history, economics, sociology, psychology, English, public speaking, and foreign language.

The Medical School also requires that the student who enters without a Bachelor of Arts or Bachelor of Science degree must complete the work at the institution at which he received his premedical preparation, before entering upon the work of the third year at the Medical School. Under Oregon State College regulations, a maximum of 48 term hours of work in medicine may be counted as credit earned toward the bachelor's degree.

Before entering the Medical School, the student should satisfy all requirements for junior standing and all requirements for a degree (including Oregon State College requirements and requirements for a major within the School of Science) that cannot be satisfied at the Medical School. The courses taken during the first year of medical training, together with science courses prescribed in the premedical curriculum, will satisfy all major requirements in

general science. Students selecting other liberal arts majors in the School of Science must satisfy all major requirements before entering the Medical School, except that Biochemistry (BCh 411, 412), offered at the Medical School, may be counted toward the satisfaction of the major requirements in chemistry, and Physiology (Phy 412) toward the major requirements in zoology. The Pre-medical Curriculum is printed on a later page.

Students at the Medical School who are candidates for a bachelor's degree from Oregon State College are eligible for loans from the Student Loan Fund of Oregon State College.

**Predental and Dental Hygiene.** Oregon State College offers a two-year and a three-year predental curriculum to prepare students for admission to the University of Oregon Dental School or other standard dental schools. Both curricula satisfy the requirements established by the Council on Dental Education of the American Dental Association for admission to dental schools. Students completing the three-year curriculum may qualify for a bachelor's degree after one year of dental-school work.

The two-year curriculum satisfies the minimum predental requirements of the Council on Dental Education:

The minimum educational requirement for admission to a dental school is the successful completion of two years of study in a liberal arts college. . . . The college course must include a year's work in English, in biology, in physics, and in inorganic chemistry, and a half year's work in organic chemistry. The work in the sciences must include laboratory practice as well as didactic instruction.

The counselors for predental students are: Dr. D. I. Allman, professor of physical education, chairman; Dr. H. K. Phinney, associate professor of botany, and Frank C. Morris, D.M.D.

The two-year and three-year curricula are printed on later pages. Students who complete the two-year program for dental hygienist at the University of Oregon Dental School may qualify by two additional years for a baccalaureate degree in general science at Oregon State College.

**Preveterinary Curriculum:** Oregon State College offers a preparatory curriculum for students planning to enter a professional school of veterinary medicine. Beginning students who plan to complete this curriculum within the two-year period for which it is designed should have a background of good high school training which includes courses in mathematics, English, and basic sciences. The curriculum organized at Oregon State College is designed to meet the general requirements of Colorado Agricultural and Mechanical College at Fort Collins, the State College of Washington at Pullman, or the University of California at Davis; however, admission requirements do vary with the institution and it is therefore desirable for a student to determine early in his preparatory training which professional school he wishes to attend.

Agreements are in effect whereby a limited number of Oregon residents are selected to attend veterinary schools at the above-listed institutions without being required to pay out-of-state fees. For further information concerning these agreements write to: Commissioner, State of Oregon, Western Interstate Commission for Higher Education, P.O. Box 5175, Eugene, Oregon.

At Oregon State College the adviser for preveterinary students is Dr. Leo E. Jones, Department of Botany.

**Prenursing and Nursing Education Curriculum.** The Department of Nursing Education of the University of Oregon Medical School offers a four-calendar-year curriculum which leads to the Bachelor of Science degree and prepares for state examination for nurse registration. The student takes five terms of prenursing at Oregon State College at Corvallis, at the University of



Oregon at Eugene, or at another accredited college or university. The prenursing curriculum is completed with one term of work on the campus of the Medical School (during which the student satisfies academic requirements for junior standing), and is followed by ten terms of clinical instruction coordinated with practice in the hospitals and clinics of the Medical School. At Oregon State College the adviser of students in the Prenursing Curriculum is Mrs. Mary Corcoran.

Students in nursing education who take their prenursing work at Oregon State College receive their degrees from Oregon State College.

**Curriculum in Medical Technology.** The first two years of the Curriculum in Medical Technology as given in regular courses at Oregon State College satisfy the minimum requirements of the American Society of Clinical Pathologists. The third and fourth years include additional courses needed to qualify for the B.S. degree in Medical Technology. It is recommended that three years or more be devoted to this curriculum. Some hospitals require three years of college work and a few demand a college degree for admission to the technician's course. The counselor for students pursuing this curriculum is Professor K. S. Pilcher of the Department of Bacteriology and Hygiene.

## Curricula in Science

*B.A., B.S., M.A., M.S., Ph.D. Degrees*

### General Notes

All students in science curricula should observe the following notes:

a. The maximum number of term hours required within the School of Science does not exceed 125 in any major curriculum. The maximum number of hours required for a major in any department is 72. The student thus has liberal opportunity to elect courses in other fields as well as in science.

b. In freshman year General Hygiene (PE 150, 1 term hour for men; PE 160, 2 hours for women) is taken one term in place of physical education.

c. At least one year each of biological and physical science is required in each curriculum.

d. All entering science students must show by placement examination or completed college courses accomplishment in mathematics equal to completion of Mth 5 and Mth 10.

e. Students expecting to meet the language requirements for a B.A. or to obtain a reading knowledge of Russian, German, or French in preparation for graduate work may elect a language in freshman and sophomore years. If two years of a language are elected in freshman and sophomore years, completion of group requirements in either Literature or Social Science may be postponed until junior year. Students expecting to major in certain of the science curricula may have to postpone two groups.

f. For State Teacher's Certificate 6 hours of psychology should be elected in the sophomore year as it is prerequisite to upper division courses in education. This requirement may be met by Psy 201, 202.

g. Students wishing to qualify for a State Teacher's Certificate should elect 12 term hours in prescribed education courses in the junior year, at least 11 term hours in the senior year, and 9 term hours in the first term of the graduate year. Students must have a G.P.A. of 2.50 in a recognized teaching major (*see SCIENCE EDUCATION*) and must have a teaching minor. Arrangements to do student teaching during senior year must be made with director of student teaching during registration for winter term of junior year.

### Department of General Science

Undergraduate and graduate general science majors: General Science, Biology, Physical Science.  
 Interdepartmental graduate majors: Biophysics, Geophysics, Life Sciences, Paleobiology, Seismology, and other fields involving joint majors.

	Term hours—		
	F	W	S
<b>Freshman Year</b>			
Approved biological science sequence.....	3-5	3-5	3-5
English Composition (Wr 111, 112, 113).....	3	3	3
Mathematics (Mth 101, 102, 103) or approved physical science sequence.....	4	4	4
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives.....	0-4	0-4	0-4
	16	16	16
<b>Sophomore Year</b>			
Group requirement in literature.....	3	3	3
Sophomore science sequence.....	3-5	3-5	3-5
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
<sup>1</sup> Approved electives.....	8-4	8-4	8-4
	16	16	16
<b>Junior Year</b>			
Group requirement in social science.....	3	3	3
<sup>2</sup> Approved upper division science.....	4	4	4
<sup>1</sup> Approved electives.....	9	9	9
	16	16	16
<b>Senior Year</b>			
<sup>2</sup> Approved upper division science.....	4	4	4
<sup>1</sup> Approved electives.....	12	12	12
	16	16	16

### Department of Bacteriology and Hygiene

Undergraduate majors: Bacteriology, Sanitary Bacteriology.  
 Graduate majors: Bacteriology, Dairy Bacteriology, Food Bacteriology, Hygiene and Sanitation, Industrial Bacteriology, Physiology of Bacteria, Soil Bacteriology.

	Term hours—		
	F	W	S
<b>Common Freshman Year</b>			
General Botany (Bot 201, 202).....	3	3	5
General Zoology (Z 200).....	3	3	3
English Composition (Wr 111, 112, 113).....	3	3	3
General Chemistry (Ch 204, 205).....	5	5	5
Qualitative Analysis (Ch 206).....	1-3	1-3	1-3
Air, Military, or Naval Science (men).....	1	1	1
Physical Education.....	3-1	3-1	2-0
Electives.....	16	16	17
<b>Common Sophomore Year</b>			
Group requirement in literature.....	3	3	3
Organic Chemistry (Ch 226, 227).....	5	5	5
Quantitative Analysis (Ch 234).....	3	3	3
General Bacteriology (Bac 204, 205).....	1-3	1-3	1-3
Air, Military, or Naval Science (men).....	1	1	1
Physical Education.....	3-1	6-4	2-0
Electives.....	16	16	15

<sup>1</sup> The electives may include courses in health education leading to special preparation in that field. See SCIENCE EDUCATION.

<sup>2</sup> These courses should be in fields related to work taken in lower division, and must include one year sequence.

**Bacteriology**

	Term hours		
	F	W	S
<b>Junior Year</b>			
Group requirements in social science.....	3	3	3
General Physics (Ph 201, 202, 203).....	4	4	4
Elementary Physical Chemistry (Ch 340).....	3	6	3
Approved upper division bacteriology courses.....	6	3	0
<sup>1</sup> Approved electives.....	6	3	0
	16	16	16
<b>Senior Year</b>			
Approved upper division bacteriology courses.....	5	5	5
<sup>2</sup> Approved electives.....	10	10	10
Seminar (Bac 407).....	1	1	1
	16	16	16

**Sanitary Bacteriology**

	Term hours		
	F	W	S
<b>Junior Year</b>			
Group requirements in social science.....	3	3	3
Clinical Laboratory Methods (Bac 341).....	5	---	---
Food Sanitation (Bac 411).....	---	3	---
Dairy Bacteriology (Bac 412).....	---	---	3
Community Health Problems (Bac 424, 425, 426).....	3	3	3
Abridged General Physics (Ph 211, 212).....	---	3	3
Parasites of Man (Z 456).....	4	---	---
Market Milk (D 310).....	---	---	3
Approved electives.....	1	4	1
	16	16	16
<b>Senior Year</b>			
Bacteriological Technique (Bac 431).....	5	---	---
Pathogenic Bacteriology (Bac 332).....	---	3	---
Pathogenic Bacteriology Laboratory (Bac 333).....	---	2	---
Epidemiology (Bac 453).....	---	---	3
Food Bacteriology (Bac 460).....	3	---	---
Bacteriology of Water and Sewage (Bac 470).....	---	3	---
Immunology and Serology (Bac 480).....	---	---	3
Immunology and Serology Laboratory (Bac 481).....	---	---	2
Federal and State Food Regulations (FT 421).....	---	---	3
Insects Affecting Man and Animals (Ent 412).....	---	3	---
Seminar (Bac 407).....	1	1	1
Approved electives.....	7	4	4
	16	16	16

Suggested Electives: Bac 321, 401, 421, 441, 442, 451, 452, 490; Ch 253, 234, 450, 451, 452; SEd 431, 432, 433; Mth 101, 102, 103; AH 351; D 412, 416; FT 423, 424; CE 414; Wr 227; Z 331, 332.

**Department of Botany**

Undergraduate majors: General Botany with emphasis, if desired, on one of the fields of the graduate majors.

Graduate majors: Cytology, Ecology, Morphology, Mycology, Plant Pathology, Physiology, Systematic Botany.

	Term hours		
	F	W	S
<b>Freshman Year</b>			
General Botany (Bot 201, 202), Field Botany (Bot 203).....	3	3	3
English Composition (Wr 111, 112, 113).....	3	3	3
<sup>2</sup> General Chemistry (Ch 101, 102, 103).....	3	3	3
<sup>4</sup> German, French, Russian, or Spanish.....	3-4	3-4	3-4
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives.....	1-0	1-0	1-0
	15-17	15-17	15-17

<sup>1</sup> Mathematics, modern language, recommended for those who plan to obtain the Ph.D.

<sup>2</sup> Mathematics, modern language, biochemistry and physical chemistry recommended for those who plan to obtain the Ph.D.

<sup>3</sup> Students interested in physiological and chemical aspects of plant life should take Ch 204, 205, 206, and Ch 226, 227, and 340, or equivalent, as early as convenient.

<sup>4</sup> Students having taken one year of high school French or German should continue the language. Those planning professional training in botany should elect to follow first year language with an appropriate language reading course.

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
<sup>1</sup> Required upper division botany.....	4	4	4
General Zoology (Z 200).....	.....	.....	5
Mathematics.....	4	.....	3
Group requirement in literature or social science.....	3	3	.....
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives.....	2	6	1
	15-17	15-17	15-17
<b>Junior Year</b>			
Required upper division botany.....	4	4	4
Basic Techniques (St 314).....	3	.....	.....
<sup>2</sup> Supporting science.....	3-5	3-5	3-5
<sup>3</sup> Electives.....	4-6	7-9	7-9
	16	16	16
<b>Senior Year</b>			
Seminar (Bot 407).....	1	1	1
Group requirement in social science or literature.....	3	3	3
<sup>2</sup> Supporting science.....	3-5	3-5	3-5
Electives.....	7-9	7-9	7-9
	16	16	16

### Department of Chemistry

Undergraduate and graduate majors: Agricultural Chemistry, Analytical Chemistry, Biochemistry, Electrochemistry, Inorganic and Metallurgical Chemistry, Organic Chemistry, Physical (including Colloidal) Chemistry, Forest Products Chemistry, Radiochemistry.

	Term hours		
	F	W	S
<b>Common Freshman Year</b>			
General Chemistry (Ch 204, 205).....	5	5	.....
Qualitative Analysis (Ch 206).....	.....	.....	5
Mathematics (Mth 101, 102, 103).....	4	4	4
English Composition (Wr 111, 112, 113).....	3	3	3
Chemistry Survey (Ch 111, 112, 113).....	1	1	1
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
	15-17	15-17	15-17
<b>Common Sophomore Year</b>			
<sup>4</sup> Chemical Theory (Ch 241).....	4	.....	.....
<sup>4</sup> Quantitative Analysis (Ch 232, 233).....	.....	5	5
General Physics (Ph 201, 202, 203).....	4	4	4
<sup>4</sup> Differential and Integral Calculus (Mth 201, 202, 203).....	4	4	4
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives.....	1	.....	.....
	15-17	15-17	15-17
<b>Major in Chemistry</b>			
Analytical Chemistry, Electrochemistry, Inorganic and Metallurgical Chemistry, Organic Chemistry, Physical (including Colloidal) Chemistry, Forest Products Chemistry.			
<b>Junior Year<sup>5</sup></b>			
Organic Chemistry (Ch 430, 431, 432).....	5	5	5
Physical Chemistry (Ch 440, 441, 442).....	4	4	4
German.....	4	4	4
<sup>6</sup> Group requirement in literature or social science.....	3	3	3
	16	16	16

<sup>1</sup> The student is required to take the following courses, each of which introduces a field of botanical specialization: Bot 321, 331, 341, 351, 371, 470. See description of courses for terms courses are offered.

<sup>2</sup> Courses may be taken in bacteriology, entomology, genetics, geology, or physics, or additional work may be taken in the fields of chemistry, mathematics, or zoology.

<sup>3</sup> Should be devoted largely to upper division courses in botany.

<sup>4</sup> Students majoring in agricultural chemistry or biochemistry take Ch 234, 351, 352 instead of Ch 232, 233, 241, and take a life science elective instead of Mth 203.

<sup>5</sup> The student is encouraged to take, if possible, a year of modern physics (Ph 311, 312, 313) in his junior year.

<sup>6</sup> Students in Air, Military, or Naval Science will adjust electives and other courses to make this advanced work possible.

	Term hours		
	F	W	S
Senior Year			
<sup>1</sup> Approved upper division chemistry courses.....	3	3	3
Group requirement in social science or literature.....	3	3	3
<sup>2</sup> Biological science sequence.....	3	3	3
Electives .....	7	7	7
	16	16	16

**Major in Agricultural Chemistry**  
(See Common Freshman and Sophomore Years.)

Junior Year			
Organic Chemistry (Ch 430, 431, 432).....	4-5	4-5	4-5
Physical Chemistry (Ch 440, 441, 442).....	4	4	4
<sup>4</sup> Group requirement in literature.....	3	3	3
<sup>3</sup> Electives including Biological Science sequence.....	5-4	5-4	5-4
	16	16	16

Senior Year			
Approved electives in biochemistry or plant biochemistry.....	5	5	5
Group requirement in social science.....	3	3	3
German .....	4	4	4
Basic Techniques (St 314).....	3	.....	.....
<sup>3</sup> Electives .....	1	4	4
	16	16	16

**Major in Biochemistry**  
(See Common Freshman and Sophomore Years.)

Junior Year			
Organic Chemistry (Ch 430, 431, 432).....	5	5	5
Physical Chemistry (Ch 440, 441, 442).....	4	4	4
Biological science sequence (approved life science electives).....	5	5	5
<sup>4</sup> Group requirement in literature.....	3	3	3
	17	17	17

Senior Year			
Approved electives in biochemistry.....	5	5	5
Group requirement in social science.....	3	3	3
German .....	4	4	4
Basic Techniques (St 314).....	3	.....	.....
<sup>3</sup> Electives .....	.....	3	3
	15	15	15

**Department of Entomology**

Undergraduate and graduate major: Entomology.

	Term hours		
	F	W	S
Freshman Year <sup>5</sup>			
General Zoology (Z 201, 202).....	3	3	.....
Mathematics (Mth 100 or 101).....	.....	.....	4
<sup>6</sup> General Chemistry (Ch 204, 205), Qualitative Analysis (Ch 206).....	5	5	5
English Composition (Wr 111, 112, 113).....	3	3	3
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives .....	3-1	3-1	.....
	16	16	16

<sup>1</sup> The 9 hours of advanced chemistry must be courses having prerequisites of 3 years of chemistry and must include 3 hours of actual laboratory work. Students interested in forest products chemistry should include Ch 470, 471, 472, 473, 474, and some bacteriology.

<sup>2</sup> Students having one year of biological science in high school may reduce this requirement to 5 term hours.

<sup>3</sup> Junior or senior electives must include at least 9 hours of life sciences, which may include approved courses in agriculture or home economics.

<sup>4</sup> Students in Air, Military, or Naval Science will adjust electives and other courses to make this advanced work possible.

<sup>5</sup> Students planning to specialize in Forest Entomology should confer with Dr. Julius Rudinsky.

<sup>6</sup> Prospective economic entomologists should elect Ch 226, 227, and 252, or their equivalent as early as convenient.

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
General Entomology (Ent 200).....	5	.....	.....
Introduction to Economic Entomology (Ent 314).....	.....	4	.....
Insect Anatomy (Ent 333).....	.....	.....	3
General Botany (Bot 201, 202), Field Botany (Bot 203).....	3	3	3
Group requirement in literature.....	3	3	3
General Bacteriology (Bac 204).....	.....	3	.....
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives.....	3-1	2-0	4-2
	16	17	15
<b>Junior Year</b>			
Group requirement in social science.....	3	3	3
Approved upper division courses in entomology.....	3	4	5
Historical Entomology (Ent 463).....	.....	3	.....
Principles of Plant Pathology (Bot 351).....	4	.....	.....
<sup>1</sup> Electives.....	6	9	8
	16	19	16
<b>Senior Year</b>			
Basic Techniques (St 314).....	3	.....	.....
Systematic Entomology (Ent 451, 452, 453).....	3	3	3
Approved upper division course in entomology.....	.....	3	3
<sup>1</sup> Electives.....	10	13	10
	16	16	16

## Department of Geology<sup>2</sup>

Undergraduate and graduate majors: Geology, Paleontology.

### Major in Geology

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
Geology (G 201, 202, 203).....	3	3	3
Geology Laboratory (G 204, 205, 206).....	1	1	1
Group requirement in literature.....	3	3	3
Mathematics (Mth 101, 102, 103).....	4	4	4
Physical Education.....	1	1	1
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
	16-18	16-18	16-18
<b>Sophomore Year</b>			
Mineralogy and Rock Study (G 312, 313, 314).....	4	4	4
General Chemistry (Ch 204, 205).....	5	5	.....
Qualitative Analysis (Ch 206).....	.....	.....	5
Group requirement in social science.....	3	3	3
Physical Education.....	1	1	1
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
	14-16	14-16	14-16
<b>Junior Year</b>			
Sedimentology (G 323).....	4	.....	.....
Geomorphology (G 322).....	.....	4	.....
Structural Geology (G 321).....	.....	.....	4
Biological Science.....	3	3	3
Surveying (CE 226).....	3	.....	.....
Engineering Drawing (GE 115).....	.....	3	.....
Field Methods (G 380).....	.....	.....	3
Technical Report Writing (Wr 227).....	3	.....	.....
<sup>3</sup> Electives.....	3	6	6
	16	16	16

<sup>1</sup> Prospective economic entomologists should elect Ch 226, 227, and 252, or their equivalent as early as convenient.

<sup>2</sup> Students wishing a liberal arts major in geology may substitute electives for some of the professional courses listed.

<sup>3</sup> Recommended courses are Ch 234, 241, 321, 322, 323, or 340; Mth 201, 202, 203; NR 421, 422, 423; Ph 311, 312, 313.

	Term hours		
	F	W	S
Senior Year			
Upper division geology sequence.....	4	4	4
Seminar (G 407).....	1	1	1
General Physics (Ph 201, 202, 203).....	4	4	4
<sup>1</sup> Electives .....	7	7	7
	16	16	16

### Major in Paleontology

Students majoring in paleontology follow the geology curriculum but substitute zoology for physics.

## Department of Mathematics

Undergraduate majors: Mathematics with emphasis on any of the fields of the graduate majors.

Graduate majors: Analysis, Algebra, Geometry, Applied Mathematics (including Probability and Statistics).

	Term hours		
	F	W	S
Freshman Year			
Group requirement in literature.....	3	3	3
Mathematics (Mth 101, 102, 103).....	4	4	4
English Composition (Wr 111, 112, 113).....	3	3	3
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives .....	4-2	4-2	4-2
	16	16	16

	Term hours		
	F	W	S
Sophomore Year			
Differential and Integral Calculus (Mth 201, 202, 203).....	4	4	4
Group requirement in social science.....	3	3	3
Physical science.....	3	3	3
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives .....	4-2	4-2	4-2
	16	16	16

	Term hours		
	F	W	S
Junior Year			
Upper division mathematics.....	6	6	6
Biological science.....	3	3	3
Electives .....	7	7	7
	16	16	16

	Term hours		
	F	W	S
Senior Year			
Upper division mathematics.....	3	3	3
Electives (including supporting science courses for graduate work).....	13	13	13
	16	16	16

## Department of Natural Resources

Undergraduate major: Natural Resources.  
Graduate major and minor: Natural Resources.

	Term hours		
	F	W	S
Freshman Year			
English Composition (Wr 111, 112, 113).....	3	3	3
General Chemistry (Ch 101, 102, 103).....	3	3	3
Group requirement in social science.....	3	3	3
Elementary Journalism (J 111).....			3
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives .....	5-3	5-3	2-0
	16	16	16

<sup>1</sup> Students contemplating graduate work are advised to elect German, French, or Russian.

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Group requirement in literature.....	3	3	3
Cartography (NR 261, 262, 263).....	3	3	3
Sequence in biological science.....	3	3	3
Soils (Sls 211, 212).....	3	3	.....
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives .....	2-0	2-0	5-3
	16	16	16
<b>Junior Year</b>			
Physical Geography (NR 327, 328, 329).....	3	3	3
Techniques in Field Research (NR 361).....	.....	.....	5
Geography of Pacific Northwest (Geog 323).....	.....	3	.....
<sup>1</sup> Electives in resource fields.....	9	6	6
Electives .....	4	4	2
	16	16	16
<b>Senior Year</b>			
Natural Resources of the World (NR 421, 422, 423).....	3	3	3
Conservation Principles and Practices (NR 411).....	.....	.....	3
Seminar (NR 407).....	1	1	1
Thesis (NR 403).....	3	3	.....
<sup>2</sup> Electives .....	9	9	9
	16	16	16

<sup>1</sup> Must include approved courses in both forestry and agriculture.

<sup>2</sup> To be selected to strengthen background in supporting studies and major field specialty.

### Department of Physics

Undergraduate major: Classical Physics or Modern Physics with emphasis on  
of the fields of the graduate majors: electronics, meteorology, modern  
physics, photography, theoretical physics, or applied physics.

	Term hours		
	F	W	S
<b>Freshman Year</b>			
General Physics (Ph 201, 202, 203).....	4	4	4
Mathematics (Mth 101, 102, 103).....	4	4	4
English Composition (Wr 111, 112, 113).....	3	3	3
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Electives .....	3-1	3-1	3-1
	16	16	16
<b>Sophomore Year</b>			
Introduction to Modern Physics (Ph 311, 312, 313).....	3	3	3
Differential and Integral Calculus (Mth 201, 202, 203).....	4	4	4
General Chemistry (Ch 204, 205).....	5	5	.....
Qualitative Analysis (Ch 206).....	.....	.....	5
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Physical Education.....	1	1	1
Elective .....	2-0	2-0	2-0
	16	16	16
<b>Junior Year</b>			
Group requirement in literature.....	3	3	3
Mechanics (Ph 314, 315).....	4	4	.....
Heat (Ph 353).....	.....	.....	4
Electricity and Magnetism (Ph 331, 332, 333).....	3	3	3
Approved courses in biological science.....	3	3	3
Electives .....	3	3	3
	16	16	16



	Term hours		
	F	W	S
Senior Year			
Group requirement in social science.....	3	3	3
Differential Equations (Mth 321, 322).....	3	3	.....
Electronics and Radio (Ph 337, 338, 339).....	3	3	3
Photography (Ph 361).....			3
Geometrical and Physical Optics (Ph 365, 366).....	3	3	.....
Partial Differential Equations (Mth 423).....			3
<sup>1</sup> Electives .....	4	4	4
	16	16	16

### Department of Science Education

Undergraduate and graduate majors: Biological Science (General Biology, Health Education), General Science, Mathematics, Physical Science.

For requirements of this department see "Science Education" under SCHOOL OF EDUCATION. Students who complete the health education teaching major meet the requirements for a major in the School of Science.

### Department of Zoology

Undergraduate majors: Zoology with emphasis, if desired, on one of the fields of the graduate majors.

Graduate majors: Anatomy and Embryology, Physiology, Invertebrate Zoology and Parasitology, Cellular Biology, Genetics, Natural History and Ecology.

	Term hours		
	F	W	S
Freshman Year			
English Composition (Wr 111, 112, 113).....	3	3	3
General Zoology (Z 201, 202).....	3	3	.....
General Chemistry (Ch 204, 205).....	5	5	.....
Qualitative Analysis (Ch 206).....			5
Physical Education.....	1	1	1
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Electives .....	3-1	3-1	6-4
	16	16	16

	Term hours		
	F	W	S
Sophomore Year			
Group requirement in literature.....	3	3	3
Comparative Vertebrate Embryology (Z 326) and Comparative Vertebrate Anatomy (Z 324, 325).....	4	4	4
General Botany (Bot 201, 202).....	3	3	.....
Mathematics or Physics sequence.....	4	4	4
Physical Education.....	1	1	1
Air, Military, or Naval Science (men).....	1-3	1-3	1-3
Electives .....	---	---	3-1
	16-18	16-18	16

	Term hours		
	F	W	S
Junior Year			
Approved electives in invertebrate zoology.....		4	4
Genetics (Z 341).....	3	.....	.....
Group requirement in social science.....	3	3	3
Electives .....	9-10	8-9	8-9
	15-16	15-16	15-16

	Term hours		
	F	W	S
Senior Year			
Approved electives in physiology.....	3-5	3-5	3-5
Zoology option (see requirements under ZOOLOGY).....	3-5	3-4	3-4
Electives .....	5-10	7-10	7-10
	15-16	16	16

<sup>1</sup> Suggestions: chemistry, mathematics, meteorology, photography, modern language, physics. German, Russian, or French is recommended for students planning to earn the Ph.D. degree.

### Premedical Curriculum

(School of Science and Medical School)

*A minimum of 138 term hours exclusive of air, military, or naval science is required before entering the University of Oregon Medical School.*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
General Chemistry (Ch 204, 205).....	5	5	.....
Qualitative Analysis (Ch 206).....	.....	.....	5
General Zoology (Z 201, 202, 203).....	3	3	3
Mathematics (Mth 101, 102).....	4	4	.....
Group requirement in literature.....	.....	.....	3
Air or Military Science (men).....	1	1	1
<sup>1</sup> Physical Education.....	1	1	1
<sup>2</sup> Electives .....	.....	.....	1
	17	17	17
<b>Sophomore Year</b>			
Organic Chemistry (Ch 226, 227).....	5	5	.....
Quantitative Analysis (Ch 234).....	.....	.....	5
General Physics (Ph 201, 202, 203).....	4	4	4
Comparative Vertebrate Embryology (Z 326).....	4	.....	.....
Comparative Vertebrate Anatomy (Z 324, 325).....	.....	4	4
Air or Military Science (men).....	1	1	1
Physical Education.....	1	1	1
Electives .....	1	1	1
	16	16	16
<b>Junior Year</b>			
Group requirement in literature.....	.....	3	3
Group requirement in social science.....	3	3	3
German, French, Russian, or Spanish.....	4	4	4
<sup>1</sup> Electives .....	10	7	7
	17	17	17

### Major in Science at Oregon State College

*B.A., B.S. Degrees*

A student preparing to enter medical school should complete by the end of his junior year an approved major in science and requirements for a degree except fourth year of undergraduate residence. First year at the medical school may be counted in lieu of fourth year undergraduate residence. Courses taken during first year of medical training, together with science courses prescribed in premedical curriculum will satisfy all major requirements in general science. Biochemistry taken at medical school may be applied toward a major in chemistry, and physiology toward a major in zoology.

### Three-Year Pre dental Curriculum

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
<sup>2</sup> General Chemistry (Ch 101, 102, 103) or General Chemistry (Ch 204, 205) and Qualitative Analysis (Ch 206).....	3-5	3-5	3-5
General Zoology (Z 201, 202, 203).....	3	3	3
<sup>4</sup> Approved art course.....	2-3	.....	.....
Intermediate Algebra (Mth 100).....	.....	4	.....
Mathematics (Mth 101).....	.....	.....	4
Air or Military Science (men).....	1	1	1
Physical Education or Hygiene.....	1	1	1
Elective .....	4-1	2-0	2-0
	17	17	17

<sup>1</sup> Freshman women must take General Hygiene (PE 160), 2 term hours, in any term.

<sup>2</sup> Students should confer with their premedical adviser in the selection of all electives.

<sup>3</sup> Those taking General Chemistry (Ch 101, 102, 103) must complete Qualitative Analysis (Ch 206) before enrolling for Organic Chemistry (Ch 226).

<sup>4</sup> Recommended courses: Basic Design (AA 195), Jewelry (AA 257), Art Metalcraft (AA 258), Graphic Arts (AA 275), Elementary Sculpture (AA 293), or Scientific Illustration (AA 294).

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Group requirement in social science.....	3	3	3
General Physics (Ph 201, 202, 203).....	4	4	4
Comparative Vertebrate Embryology (Z 326).....	4	.....	.....
Comparative Vertebrate Anatomy (Z 324, 325).....	.....	4	4
Air or Military Science (men).....	1	1	1
Physical Education.....	1	1	1
Elective.....	3	3	3
	16	16	16
<b>Junior Year<sup>1</sup></b>			
Organic Chemistry (Ch 226, 227).....	5	5	.....
Quantitative Analysis (Ch 234).....	.....	.....	5
Group requirement in literature.....	3	3	3
Electives in art, languages, literature, music, and social science.....	8	8	8
	16	16	16

### Two-Year Preidental Curriculum<sup>2</sup>

This curriculum should be attempted only by students with excellent high school records. The student must have completed a year of high school chemistry, or must take Ch 206 in summer session following his freshman year.

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
<sup>3</sup> General Chemistry (Ch 204, 205 or Ch 101, 102, 103) and Qualitative Analysis (Ch 206).....	3-5	3-5	3-5
General Zoology (Z 201, 202, 203).....	3	3	3
<sup>4</sup> Approved art course.....	2-3	.....	.....
Mathematics (Mth 100, 101).....	.....	4	4
Air or Military Science (men).....	1	1	1
Physical Education or Hygiene.....	1	1	1
Elective.....	4-0	2-0	2-0
	16-17	17	17

<b>Sophomore Year</b>			
Organic Chemistry (Ch 226, 227).....	5	5	.....
Quantitative Analysis (Ch 234).....	.....	.....	5
General Physics (Ph 201, 202, 203) or Engineering Physics (Ph 207, 208, 209).....	4	4	4
English literature or social science.....	3	3	3
Comparative Vertebrate Embryology (Z 326).....	4	.....	.....
Comparative Vertebrate Anatomy (Z 324, 325).....	.....	4	4
Air or Military Science (men).....	1	1	1
Physical Education or Hygiene.....	1	1	1
	18	18	18

### Preveterinary Curriculum<sup>5</sup>

See page 148

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
<sup>6</sup> General Chemistry (Ch 204, 205), Qualitative Analysis (Ch 206) or General Chemistry (Ch 101, 102, 103).....	5-3	5-3	5-3
Air or Military Science (men).....	1	1	1
Physical Education.....	1	1	1
<sup>6</sup> Approved electives.....	0-2	0-2	0-2
	17	16	16

<sup>1</sup> On successful completion of the three-year program and 48 term hours (32 semester hours) of dental-school work, the student may be awarded a bachelor's degree in general science. If two years of a language are completed during the three-year program, the student may satisfy requirements for the bachelor of arts degree.

<sup>2</sup> Students who complete the two-year program for dental hygienists at the University of Oregon Dental School may qualify by two additional years for a baccalaureate degree in General Science at Oregon State College.

<sup>3</sup> Those taking Ch 101, 102, 103 must complete Qualitative Analysis (Ch 206) before enrolling for Organic Chemistry (Ch 226).

<sup>4</sup> Recommended courses: Basic Design (AA 195), Jewelry (AA 257), Art Metalcraft (AA 258), Graphic Arts (AA 275), Elementary Sculpture (AA 293), or Scientific Illustration (AA 294).

<sup>5</sup> Curriculum and electives must be adapted to meet the specific requirements for admission into the professional school of veterinary medicine the student plans to attend.

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Organic Chemistry (Ch 226, 227).....	5	5	---
Air or Military Science (men).....	1	1	1
Physical Education.....	1	1	1
Approved electives.....	10	10	15
	17	17	17

### Prenursing and Nursing Education Curriculum<sup>1</sup>

#### B.S. Degree

See pages 148-49

	Term hours		
	F	W	S
<b>Freshman Year</b>			
General Chemistry (Ch 104, 105, 106).....	4	4	4
English Composition (Wr 111, 112, 113).....	3	3	3
English literature (approved).....	3	3	3
Backgrounds of Nursing (Nur 111, 112, 113).....	1	1	1
General Psychology (Psy 201).....	---	---	3
Extempore Speaking (Sp 111).....	---	3	---
Physical Education.....	1	1	1
Liberal arts electives.....	4	1	1
	16	16	16

#### Sophomore Year

<i>At Oregon State College:</i>			
General Zoology (Z 201, 202).....	3	3	---
Elements of Sociology (Soc 201, 202).....	3	3	---
Nutrition (FN 225).....	---	3	---
General Psychology (Psy 202).....	3	---	---
Applied Psychology (Psy 205).....	---	3	---
Physical Education.....	1	1	---
Liberal arts electives.....	7	4	---
<i>At the Medical School:</i>			
Introduction to Nursing (Nur 211, 212).....	---	---	4
Clinical Practice in Nursing (Nur 213).....	---	---	1
Anatomy (An 211).....	---	---	3
Bacteriology (Bac 211).....	---	---	3
Organic and Biochemistry (Ch 211).....	---	---	3
Professional Adjustments I (Nur 214).....	---	---	1
	17	17	15

#### Third and Fourth Years

##### Medical School

Ten terms including two summers and a final fall term are taken at the Medical School. See Bulletin, Department of Nursing Education, University of Oregon Medical School.

### Curriculum in Medical Technology<sup>2</sup>

#### B.S. Degree

See page 149

The following curriculum is suggested as meeting the requirements of the American Society of Clinical Pathologists for admission to approved training schools. Some hospital authorities require three years of college work and some a bachelor's degree. It is recommended that, where possible, students devote at least three years to preparing for their clinical-laboratory training. Students completing three years of work as outlined may receive a B.A. or B.S. degree from Oregon State College after completing a year of prescribed work in Medical Technology at the University of Oregon Medical School.

	Term hours		
	F	W	S
<b>Freshman Year<sup>3</sup></b>			
General Zoology (Z 201, 202, 203).....	3	3	3
English Composition (Wr 111, 112, 113).....	3	3	3
Social science.....	3	3	4
General Chemistry (Ch 104, 105, 106).....	4	4	4
<sup>4</sup> Literature.....	3	3	3
General Hygiene (PE 160).....	---	---	2
Physical Education.....	1	1	---
	17	17	18

<sup>1</sup> B.S. degree from Oregon State College. Students who wish to take a longer period of time to fulfill pre-nursing requirements may do so with consent of the adviser.

<sup>2</sup> Students who wish to take a longer period of time to fulfill medical technology requirements may do so with approval of the adviser.

<sup>3</sup> Men in Medical Technology must adjust programs in freshman and sophomore years to provide for Air, Military, or Naval Science.

<sup>4</sup> Students not candidates for a degree may substitute for literature.

	Term hours		
	F	W	S
<b>Sophomore Year<sup>1</sup></b>			
General Bacteriology (Bac 204), Pathogenic Bacteriology (Bac 332, 333).....	3	3	3
Organic Chemistry (Ch 226, 227) or Organic Chemistry (Ch 221) and Ele- ments of Biochemistry (Ch 250).....	5-4	5-4	5
Quantitative Analysis (Ch 234).....	3	3	3
Physiology (Z 331, 332).....	1	1	1
Physical Education.....	3-4	3-4	7
Approved electives.....			
	15-16	15-16	16
<b>Junior Year</b>			
Abridged General Physics (Ph 211, 212).....		3	3
Upper division Science.....	4	4	4
Electives.....	11	8	8
	15	15	15
<b>Senior Year (Medical School)</b>			
Medical Technology.....	16	15	16

## General Science

The Department of General Science offers the opportunity to study science in its broad aspects. The Department of General Science is peculiarly the ally of all the science departments, with the function of supplementing and correlating the specialized branches of the sciences. The courses aim to give the student a comprehensive view of science as a division of knowledge.

Through a general science major students pursue a broad program of study in science, either for a liberal arts degree or as preparation for professional service involving general science. Through the interdepartmental undergraduate and graduate majors students pursue one of the sciences such as biophysics, geophysics, life sciences, seismology, oceanography, and other fields involving joint majors. The courses also are open to students majoring in a particular science and to students in the professional schools.

The survey courses in biological and physical sciences are nontechnical and are designed for the student interested in science more as a cultural subject than for any other specific purpose. The courses may serve as satisfaction of a science group requirement or as part of a teaching major or minor, but they are not usually considered as prerequisites to further work in science or in the professional schools.

### Lower Division Courses

<sup>2</sup>GS 101, 102, 103. **Biological Science Survey.** 4 hours each term.

3 ① 1 ②

Principles of biology as they apply to both plants and animals. For general students and majors in fields other than biology. Associate Professor Beer.

<sup>2</sup>GS 104, 105, 106. **Physical Science Survey.** 4 hours each term. 3 ① 1 ②

Principles of physics, chemistry, astronomy, and geology; development and application of the scientific method. For majors in fields other than the physical sciences who wish a broad view of the principles of several physical sciences. Mr. Crews.

<sup>1</sup> Men in Medical Technology must adjust program in freshman and sophomore years to provide for Air, Military, or Naval Science.

<sup>2</sup> Students who have earned 6 term hours or more in one of the biological sciences prior to taking GS 101, 102, 103 are not allowed to count credit earned in the latter toward graduation except with the approval of the dean of the School of Science. A similar limitation exists regarding GS 104, 105, 106.

## Upper Division Courses

- GS 331. **Introduction to Oceanography.** 3 hours winter. 3 ①  
Elective nontechnical course designed to give student broad general background. Emphasis on relationship between oceanography and other fields. Prerequisite: junior standing. Associate Professor Burt.
- GS 341. **Bioecology.** 3 hours. 2 ① 1 ③  
Interrelations of plants and animals in their life processes and their reaction upon the environment; human relations and bioeconomics. Prerequisite: one year of biological science and junior standing. Associate Professor Beer.
- GS 342. **Biogeography.** 3 hours. 3 ①  
Plant and animal distribution; development of faunas and floras; biogeographic areas. Prerequisite: one year of biological science, GS 341, and junior standing. Associate Professor Beer.
- GS 401. **Research.** Terms and hours to be arranged.
- GS 403. **Thesis.** Terms and hours to be arranged.
- GS 405. **Reading and Conference.** Terms and hours to be arranged.
- GS 407. **Seminar.** Terms and hours to be arranged.
- GS 411, 412, 413. **History of Science.** (G) 2 hours each term. 2 ①  
Development of science from beginnings, with emphasis on scientific method and spirit. Prerequisite: 18 hours of upper division science, or equivalent. Offered alternate years. Offered 1957-58. Professor Gilfillan.
- GS 421, 422, 423. **Classics of Science.** (G) 2 hours each term. 2 ①  
Works notable in development of Science studied for (1) significance to science and (2) form; biographies of men of science studied as background. Prerequisite: 18 hours of upper division science, or equivalent. Offered alternate years. Not offered 1957-58.
- GS 431. **Physical Limnology.** (G) 3 hours winter. 3 ①  
Physical and chemical processes in lakes and rivers; methods of making physical measurements; some field work. Prerequisite: senior or graduate standing, two years of biological science. Associate Professor Burt.
- GS 432. **Physical Oceanography.** (G) 3 hours winter. 3 ①  
Physical processes in ocean and estuaries; some field work. Prerequisite: senior or graduate standing, one year of mathematics, one year of physics. Associate Professor Burt.

## Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- GS 501. **Research.** Terms and hours to be arranged.
- GS 503. **Thesis.** Terms and hours to be arranged.
- GS 505. **Reading and Conference.** Terms and hours to be arranged.
- GS 507. **Seminar.** Terms and hours to be arranged.

*The courses below marked \* are for high school teachers of science. They do not prepare for science research. Graduate standing is prerequisite to all these courses which are applicable toward the M.S. in General Science for High School Science Teachers. These courses are not applicable toward a graduate major in one of the special sciences. For full descriptions see Summer Session Catalog.*

- \*Bot 521. **Taxonomy and Field Botany.** 3 hours summer.
- \*Bot 570. **Preparation of Botanical Materials.** 3 hours summer.
- \*Bot 571. **Morphology of Lower Plants.** 3 hours summer.

- \*Bot 572. **Morphology and Anatomy of Seed Plants.** 3 hours summer.
- \*Ch 561. **Advanced Inorganic Chemistry.** 3 hours summer.
- \*Ch 562. **Advanced Inorganic Chemistry.** 3 hours summer.
- \*Ch 564. **Organic Chemistry.** 3 hours summer.
- \*Ch 565. **Organic Chemistry.** 3 hours summer.
- \*GS 511. **History of Biological Science.** 3 hours summer.
- \*GS 541. **Bioecology.** 3 hours summer.
- \*G 511. **Geology for Teachers.** 3 hours summer.
- \*G 530. **Geologic History of Life.** 3 hours summer.
- \*G 550. **Rocks and Minerals.** 3 hours summer.
- \*G 552. **Geology of Northwest.** 3 hours summer.
- \*Mth 591. **Mathematics for High School Teachers (Arithmetic).** 3 hours summer.
- \*Mth 592. **Mathematics for High School Teachers (Algebra).** 3 hours summer.
- \*Mth 593. **Mathematics for High School Teachers (Geometry).** 3 hours summer.
- \*Ph 520. **Astronomy.** 3 hours summer.
- \*Ph 581. **Modern Physics.** 3 hours summer.
- \*Ph 582. **Modern Physics.** 3 hours summer.
- \*Ph 591. **Meteorology.** 3 hours summer.
- \*Z 541. **Heredity.** 3 hours summer.
- \*Z 554. **Invertebrate Zoology.** 3 hours summer.
- \*Z 556. **Collection and Preparation of Zoological Materials.** 3 hours summer.
- \*Z 560. **Cells and Tissues.** 3 hours summer.
- \*Z 577. **Ornithology.** 3 hours summer.
- \*Z 578. **Field Natural History.** 3 hours summer.

## Bacteriology and Hygiene

Bacteriology, especially through its application in agriculture, industrial fermentations, sanitation, and medicine, has great importance in modern civilization. Because of its close relation to many fundamental aspects of human life, bacteriology affords an excellent field of concentration for a liberal arts degree; it also affords opportunity to prepare for professional service, especially in fields involving applications of bacteriology and hygiene.

The graduate majors include general bacteriology, industrial bacteriology, dairy bacteriology, food bacteriology, hygiene and sanitation, pathogenic bacteriology, virology, and soil bacteriology. As agriculture and allied fields are vital in Oregon industrial life, a valuable and practical field of research is open to the student taking advanced work in agricultural bacteriology. Similarly,

the recent trend toward industrialization in certain parts of the State, with attendant increases in population densities, demands more bacteriologists with specialized training in sanitation and industrial bacteriology.

#### Lower Division Courses

- Bac 200. Bacteriology Laboratory.** 2 hours spring. 2 ②  
May be taken only with Bac 230, which combination may be used in meeting science group requirement.
- Bac 204, 205, 206. General Bacteriology.** 3 hours each term. 2 ① 2 ②  
Bac 204: Characteristics of bacteria, yeasts, molds, viruses and related organisms; elementary technique in cytology, taxonomy, and physiology. Bac 205: Application of microbiology to dairy, soils, industry, sanitation and the home. Bac 206: Fundamental factors in growth and death of microorganisms; systematic identification of microorganisms and a study of their metabolisms. Prerequisite: one year of chemistry. Bac 204 is offered fall and winter; Bac 205 offered spring term.
- Bac 230. Principles of Bacteriology.** 3 hours spring. 3 ①  
Fundamentals of bacteriology with application to agriculture, industry, sanitation, disease. Prerequisite: one year of chemistry.
- Bac 261. Sanitary Bacteriology.** 3 hours fall. 2 ① 2 ②  
Principles of municipal water and sewage bacteriology as applied to problems in sanitary engineering.

#### Upper Division Courses

- Bac 321. Sanitation.** 3 hours winter. 3 ①  
Sanitation in home, school, city, with particular reference to control of communicable diseases and their relation to foods, rodents, swimming pools, eating establishments, insects, ventilation, industrial hygiene, etc. Prerequisite: one term of general bacteriology or equivalent. Professor C. L. Anderson.
- Bac 332, 333. Pathogenic Bacteriology.** 3 hours winter and spring. 2 ① 2 ②  
Morphological, physiological, and disease-producing properties of pathogenic bacteria. Prerequisite: Bac 204. Associate Professor Pilcher.
- Bac 341. Clinical Laboratory Methods.** 5 hours fall. 3 ① 2 ③  
Methods used in clinical laboratory to aid the physician in diagnosis and treatment of disease; theory and interpretation. Prerequisite: Bac 204, Ch 226, 234, or 221. Professor Pilcher.
- Bac 401. Research.** Terms and hours to be arranged.
- Bac 403. Thesis.** Terms and hours to be arranged.
- Bac 405. Reading and Conference.** Terms and hours to be arranged.
- Bac 407. Seminar.** 1 hour each term. Staff.
- Bac 411. Food Sanitation. (g)** 3 hours winter. 2 ① 2 ②  
Physiological activities of dairy and food spoilage microorganisms; bacteriological problems in production and processing of milk, cream, and other foods with emphasis on sanitation and public health. Prerequisite: Bac 204 and organic chemistry. Professor Elliker.
- Bac 412. Dairy Bacteriology. (G)** 3 hours spring. 2 ① 2 ②  
Continuation of Bac 411. Microbiology of milk products; a more thorough study of specific problems in dairy microbiology and training in advanced techniques. Prerequisite: Bac 411. Professor Elliker.
- Bac 421. Soil Bacteriology. (G)** 4 hours fall. 2 ① 2 ③  
Relation of microorganisms to soil fertility; ammonification; nitrification; nitrogen fixation; organic decomposition and humification. Prerequisite: Bac 204. Professor Bollen.
- Bac 422. Soil Bacteriology. (G)** 3 hours winter. 1 ① 2 ③  
Continuation of Bac 421. Review of literature on special problems. Prerequisite: Bac 421. Offered alternate years. Offered 1957-58. Professor Bollen.

<sup>1</sup> Students may receive credit only for Bac 230 with Bac 200; or for Bac 204.



- Bac 424, 425, 426. **Community Health Problems.** (g) 3 hours each term. 3 ①  
Application of principles of hygiene to sanitary, statistical, governmental, epidemiological, and sociological problems. Prerequisite: junior or senior standing, one year of upper division biological science. Professor C. L. Anderson.
- Bac 431. **Bacteriological Technique.** (G) 5 hours fall. 3 ① 2 ②  
Intensive study of the fundamental principles involved in the study of bacteria. Prerequisite: Bac 206 or equivalent and two years of chemistry. Professor Bollen.
- Bac 441. **Systematic Bacteriology.** (G) 3 hours winter. 3 ①  
Taxonomy and nomenclature; history of bacterial classification; International Rules of Nomenclature and Bacteriological Code; Bergey's Manual. Prerequisite: Bac 206 or equivalent and two years of chemistry. Professor Bollen.
- Bac 442. **Systematic Bacteriology Laboratory.** (G) 2 hours winter. 2 ②  
Laboratory studies to accompany Bac 441. Prerequisite: Bac 431. Professor Bollen.
- Bac 451. **Physiology of Bacteria.** (G) 3 hours spring. 3 ①  
Bacterial growth, reproduction, and death; influence of environmental factors; metabolic pathways; microbial nutrition. Prerequisite: Bac 205 and organic chemistry. Associate Professor Gilmour.
- Bac 452. **Physiology of Bacteria Laboratory.** (G) 2 hours spring. 2 ②  
Laboratory studies to accompany Bac 451. Prerequisite: Bac 442. Associate Professor Gilmour.
- Bac 453. **Epidemiology.** 3 hours spring. 3 ①  
Causes and behavior of communicable diseases in general population; factors influencing occurrence of epidemics; basic principles underlying control. Prerequisite: Bac 205 or equivalent. Professor C. L. Anderson.
- Bac 460. **Food Bacteriology.** (g) 3 hours fall. 2 ① 2 ②  
Control of microorganisms in production and handling of foods with emphasis on microbiological methods of examining foods. Prerequisite: Bac 205 or equivalent. Assistant Professor A. W. Anderson.
- Bac 480. **Immunology and Serology.** (g) 3 hours spring. 3 ①  
Theory and applications of immunity in infectious diseases and of serological reactions in diagnosis of disease and in medicolegal problems. Prerequisite: Bac 332 or 205 and 2 years of chemistry. Professor Pilcher.
- Bac 481. **Immunology and Serology Laboratory.** (g) 2 hours winter. 2 ③  
Laboratory exercises to accompany Bac 480.
- Bac 490. **Industrial Microbiology.** (G) 3 hours winter. 2 ① 2 ②  
Microorganisms in industrial processes; production of organic acids, solvents, antibiotics, and enzymes of microbiological origin. For advanced students in bacteriology, Chemistry, and chemical engineering. Prerequisite: one year of bacteriology, two years of chemistry, consent of instructor. Offered alternate years. Not offered 1957-58. Associate Professor Gilmour.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Bac 501. **Research.** Terms and hours to be arranged.
- Bac 503. **Thesis.** Terms and hours to be arranged.
- Bac 505. **Reading and Conference.** Terms and hours to be arranged.
- Bac 507. **Seminar.** Terms and hours to be arranged. Staff.
- Bac 530. **Marine Bacteriology.** 3 hours summer. 2 ① 2 ②  
Microorganisms of ocean water, their ecology and economic importance. Prerequisite: one year upper division bacteriology.

- Bac 551, 552. **Advanced Bacterial Physiology.** 3 hours each term, fall and winter. 1 ① 2 ②  
 Growth, fermentation, and death of microorganisms; emphasis on the morphology, cytology, and cell microchemistry. Prerequisite: Bac 451 or equivalent; organic and physical chemistry. Professor Bollen and Associate Professor Gilmour.
- Bac 553. **Biochemistry of Bacteria.** 3 hours spring. 1 ① 2 ②  
 Role of carbohydrates, proteins, fats, minerals, accessory growth factors in nutrition of microorganisms; microbiological assay techniques. Prerequisite: Bac 451 and one year of biochemistry. Assistant Professor A. W. Anderson.

## Botany

The courses offered provide comprehensive and advanced training in the various branches of this subject: first, for those who expect to make some field of plant science their major or life work; second, as a foundation for the work of students majoring in such professional schools as Agriculture and Forestry; and third, for those wishing a liberal arts major in botany.

In the professional fields it is proposed to meet the needs of students preparing (1) to be plant pathologists, plant physiologists, ecologists, taxonomists, or for other specialized positions at experiment stations, in the United States Department of Agriculture, or in other research institutions or in industry, or to teach botany or do research in colleges and universities; (2) for technical positions in which a knowledge of botany is essential, such as in agricultural extension work, plant disease control work, plant quarantine inspection, grazing assistant work, seed testing, food and drug analysis; and (3) for advanced study and research in such fields as horticulture, agronomy, forestry, soil science, biochemistry, and paleontology.

The herbarium collections total more than 139,000 specimens, including over 85,000 classified specimen sheets of higher plants, 10,000 unmounted specimens, 40,000 packets of parasitic fungi, 2,300 myxomycetes, 800 packets of bryophytes, and 1,100 packets of algae.

The Oregon Institute of Marine Biology on Coos Bay provides unusual opportunities for field work and research with marine plants during the summer session. Courses are offered at the upper division and graduate levels. Credit obtained may be transferred to Oregon State College or to another institution. It is recommended that all majors spend one summer in residence at the Institute.

Excellent greenhouse facilities are available at Oregon State College for botanical instruction and research.

An extensive and diversified research program relating to plant disease is conducted in the Botany Department by State and Federal investigators. This involves the use of modern equipment and techniques in laboratory, greenhouse, and field. A number of graduate students are granted research assistantships and are thus enabled to gain valuable training in research under the guidance of these State Experiment Station workers. Occasionally a graduate student may obtain part-time employment and experience under some of the Federal plant pathologists.

Botany students also have a special advantage since they may elect minor work in the fields of forestry and agriculture, which provide the greatest opportunities for the useful application of plant science.

### Lower Division Courses

- Bot 201, 202. **General Botany.** 3 hours each term. 3 ②  
 How plants get their food, grow, differentiate, and reproduce. Bot 201, seed plants; Bot 202, lower plants with emphasis on parasitism.

- Bot 203. **Field Botany.** 3 hours spring. 2 ① 2 ②  
Introductory taxonomy and ecology of native flowering plants.
- Bot 211. **Elementary Botany.** 3 hours fall. 2 ① 2 ②  
Morphology and economic importance of the algae, fungi, mosses, and ferns; structure, physiology, and development of seed plants. Not open to students who have taken Bot 201, 202. Professor Smith.

#### Upper Division Courses

- Bot 314. **Agrostology.** 3 hours fall. 2 ① 2 ②  
Taxonomy of grasses. Identification in vegetative condition and in flower; requirements, distribution, and value of range grasses. Prerequisite: Bot 203. Associate Professor Steward.
- Bot 315. **Forest Pathology.** 3 hours winter. 1 ① 2 ②  
Disease in relation to forest development, protection, and harvest. Prerequisite: two terms of general botany. Associate Professor Roth.
- Bot 316, 317. **Aquatic Plants.** 3 hours fall and winter. 1 ① 2 ③  
Field and laboratory course on ecology, taxonomy, and economic significance of aquatic plants; emphasis on plants important in fish and wildlife management. Prerequisite: Bot 203 or equivalent. Associate Professor Phinney.
- Bot 320. **Fungus Deterioration of Wood Products.** 3 hours winter. 2 ① 1 ③  
Relation of decay in standing timber to decay of wood products; fungus deterioration of logs, lumber, and remanufactured products; destruction of plywood, bonding materials, wood pulp; decay in structures. Prerequisite: Bot 201, 202. Offered alternate years. Offered 1957-58. Associate Professor Roth.
- Bot 321. **Systematic Botany.** 4 hours spring. 2 ① 2 ③  
Taxonomy of vascular plants. Principles of plant classification; descriptive morphology; collection and identification. Prerequisite: Bot 201, 203, or equivalent. Associate Professor Steward.
- Bot 331. **Principles of Plant Physiology.** 4 hours fall or spring. 2 ① 3 ②  
Physiology of living plants with experiments of special interest in agriculture and forestry. Prerequisite: Bot 201, 202, or equivalent, and at least one year of chemistry. Associate Professor Belkengren.
- Bot 341. **Principles of Plant Ecology.** 4 hours fall or spring. 2 ① 2 ②  
Structure, methods of analysis, environmental relations, and dynamics of vegetation, with application to various fields of agriculture. Prerequisite: Bot 201, 202, 203. Associate Professor Chilcote.
- Bot 351. **Principles of Plant Pathology.** 4 hours fall or spring. 2 ① 3 ②  
Cause, symptoms, effects, spread, and control of plant diseases; laboratory examination of typical specimens. Prerequisite: Bot 201, 202. Professor Dietz, Mr. Deep.
- Bot 371. **Structure of Economic Plants.** 4 hours winter. 2 ① 2 ③  
Morphology, anatomy, reproduction of economic plants. Prerequisite: Bot 201, 202. Professor Smith.
- Bot 401. **Research.** Terms and hours to be arranged.
- Bot 403. **Thesis.** Terms and hours to be arranged.
- Bot 405. **Reading and Conference.** Terms and hours to be arranged.
- Bot 407. **Seminar.** Terms and hours to be arranged.
- Bot 411, 412, 413. **Morphology.** (G) 4 hours each term. 2 ① 2 ②  
Fall: algae, fungi, lichens. Winter: bryophytes, pteridophytes. Spring: spermatophytes. Prerequisite: Bot 201, 202, 203 and three terms upper division botany or zoology. Associate Professor Phinney.
- Bot 421, 422, 423. **Advanced Systematic Botany.** (G) 3 hours each term. 1 ① 2 ③  
Phylogenetic classification of vascular plants; history and systems of classification; evaluation of taxonomic criteria; principles of nomenclature; preparation of taxonomic keys and revisions. Prerequisite: Bot 321 or equivalent. Associate Professor Steward.

- Bot 431, 432, 433. **Advanced Plant Physiology.** (G) 3 hours each term. 3 ①  
 Plant-water relationships; synthesis and metabolism of organic compounds; mineral nutrition; hormones; bioelectric phenomena. Prerequisite: Bot 331 and one term organic chemistry. Associate Professor Belkengren.
- Bot 441, 442, 443. **Advanced Plant Ecology.** (G) 3 hours each term. 2 ① 1 ③  
 Fall: environmental factors affecting plant growth. Winter: the plant community, its structure, development, classification, and interpretation. Spring: methods in vegetation sampling and analysis. Prerequisite: Bot 341 or equivalent. Associate Professor Chilcote.
- Bot 451. **Research Methods in Plant Pathology.** (G) 3 hours fall. 1 ① 2 ③  
 Problems involved in study and research on fungus, bacterial, and virus diseases of plants. Prerequisite: Bot 331 and 351, or equivalent.
- Bot 452. **Vegetable Diseases.** (g) 3 hours winter. 3 ②  
 Chief diseases of field crops and vegetables; Prerequisite: Bot 351 or equivalent. Offered alternate years. Offered 1957-58. Assistant Professor Cameron.
- Bot 453. **Fruit Diseases.** (g) 3 hours spring. 3 ②  
 Chief diseases of fruits and their control. Prerequisite: Bot 351 or equivalent. Offered alternate years. Not offered 1957-58. Assistant Professor Cameron.
- Bot 461. **Mycology.** (G) 4 hours fall. 2 ① 2 ③  
 Occurrence, significance, structure, function, and relationships of molds and other saprophytic fungi and plant pathogenic forms. Prerequisite: Bot 201, 202, and 3 terms upper division biological science. Associate Professor Roth.
- Bot 462, 463. **Mycology.** (G) 3 hours winter, spring. 1 ① 2 ③  
 Winter: identification of fungi with emphasis on plant pathogenic forms. Spring: special problems. Prerequisite: Bot 461. Associate Professor Roth.
- Bot 470. **Microtechnique.** (G) 4 hours winter. 3 ③  
 Principles and practices in preparation of permanent microscopic slides of plant materials. Prerequisite: Bot 201, 202, and two terms of upper division biology. Professor Smith.
- Bot 471. **Plant Anatomy.** (G) 4 hours fall. 2 ① 2 ③  
 Microscopic structure and development of plant tissues. Prerequisite: Bot 201, 202, 371 and two terms of upper division botany or equivalent. Professor Smith.
- Bot 472. **Plant Cytology.** (G) 5 hours spring. 3 ① 2 ②  
 Cell components; nuclear and cell division, meiosis, heteroploidy, gametophyte development, and fertilization. Prerequisite: Bot 201, 202, and two terms of upper division botany or equivalent. Professor Smith.
- Bot 490. **Paleobotany.** (G) 4 hours spring. 2 ① 2 ③  
 Paleobotanically important plants; plant history revealed in fossil records; tertiary flora of Oregon. Prerequisite: general geology or general botany. Associate Professor Phinney.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Bot 501. **Research.** Terms and hours to be arranged.
- Bot 503. **Thesis.** Terms and hours to be arranged.
- Bot 505. **Reading and Conference.** Terms and hours to be arranged.
- Bot 507. **Seminar.** Terms and hours to be arranged.  
 GENERAL SEMINAR.  
 PLANT PATHOLOGY SEMINAR.

- Bot 511. **Fresh-Water Algae.** 4 hours spring. 2 ① 2 ③  
Taxonomy and ecology of the fresh-water algae. Prerequisite: Bot 411. Associate Professor Phinney.
- Bot 515. **Forest Pathology.** 3 hours winter. 2 ① 1 ③  
Forest disease problems; topics selected and subject matter organized to meet needs of advanced students in forest management or forest pathology. Prerequisite: Bot 315 or 351, or equivalent and consent of the instructor. Offered alternate years. Offered 1957-58. Associate Professor Roth.
- Bot 531, 532, 533. **Research Methods in Plant Physiology.** 2 hours each term. 2 ③  
Laboratory experiments employing modern methods used in research in plant physiology supplemented by assigned reading and conference. Prerequisite or parallel: Bot 431, and consent of instructor. Associate Professor Belkengren.
- Bot 541. **Plant Geography.** 3 hours fall. 2 ① 1 ③  
Origin, development, and distribution of major units of vegetation, with emphasis on western United States. Prerequisite: Bot 321, 341, 441. Offered alternate years. Offered 1957-58. Associate Professor Chilcote.
- Bot 542. **Plant Communities.** 3 hours winter. 2 ① 1 ③  
Major plant communities, their structure, composition, and phytosociological status; ecology of principal species. Emphasis on North America and the Pacific Northwest. Prerequisite: Bot 321, 331, 341, 442. Offered alternate years. Offered 1957-58. Associate Professor Chilcote.
- Bot 543. **Field Ecological Methods.** 3 hours spring. 1 ① 2 ③  
Statistical analysis of the plant community; measurement of the physical environment; use of ecological instruments. Prerequisite: Bot 341, 443, 542. Offered alternate years. Not offered 1957-58. Associate Professor Chilcote.
- Bot 551. **Virus Diseases of Plants.** 3 hours fall. 2 ① 1 ③  
Nature and properties of plant viruses; plant reactions; classification and nomenclature; transmission; control. Prerequisite: Bot 351, six hours upper division biological science, and consent of instructor. Professor Milbrath.
- Bot 552. **Bacterial Diseases of Plants.** 3 hours winter. 2 ① 1 ③  
Symptoms and control of bacterial plant diseases; determination; classification; parasitism of causal agents. Prerequisite: Bot 351, Bac 204, six hours upper division biological science, and consent of instructor. Offered alternate years. Offered 1957-58. Professor Young.
- Bot 553. **Fungus Diseases of Plants** 3 hours spring. 2 ① 1 ③  
Symptoms and control of fungus diseases; phenomena of infection and development of host-parasite relationships. Prerequisite: Bot 351 or equivalent, 6 hours of upper division botany. Professor Vaughan.
- Bot 554. **Nematode Diseases of Plants.** 3 hours winter. 2 ① 1 ③  
Principles of nematology; identification and biology of plant-parasitic and free-living nematodes with special emphasis on symptomatology and control of nematode diseases of crops. Prerequisite: Bot 351 or equivalent, 6 hours of upper division biological science and consent of instructor. Assistant Professor Jensen.
- Bot 560. **Plant Disease Control.** 3 hours winter. 2 ① 1 ③  
Methods and materials applied to control parasitic diseases of plants. Prerequisite: Bot 351, Ch 226, 227, or equivalent. Offered alternate years. Not offered 1957-58. Professor Young.
- Bot 570. **Cytological Microtechnique.** 4 hours spring. 3 ③  
Preparation of slides for study of chromosomes during mitosis, meiosis, and pollen tube formation; emphasis on smear techniques. Cytological problems of special interest may be undertaken. Prerequisite: Bot 470 or equivalent. Professor Smith.
- Bot 580. **Biological Micrography.** 2 hours winter. 2 ③  
Problems involved in applying optical research tools to various types of biological materials and problems. Prerequisite: graduate standing in biological science. Associate Professor Phinney.

## Chemistry

In the first three years of the chemistry curricula provision is made for thorough grounding in fundamental chemistry and related sciences and other liberal studies. Undergraduate students major in chemistry as a field of concentration for a liberal arts degree or as preparation for professional work in the field of chemistry. Beginning with the second or third year numerous elective choices permit the student to begin more intensive study in one of the classical fields—analytical, inorganic, organic, and physical, or in some field of special interest such as agricultural chemistry, biochemistry, colloids, electrochemistry, or forest products chemistry. In addition the student is urged to broaden his training by utilizing some of the large numbers of elective hours to take courses in the humanities.

The Department of Chemistry aims to prepare its major students for (1) graduate work in pure or applied chemistry; (2) governmental work under the Civil Service; (3) teaching positions in colleges, universities, junior colleges, and secondary schools; (4) positions as research chemists and technical experts in commercial testing laboratories of all types, and in chemical industries; (5) positions as chemists in laboratories of state agricultural experiment stations, or in industries specializing in the manufacture of food or agricultural products.

A student with an interest in chemistry who does not expect to make it a profession may, by careful choice and full use of the many electives, use the undergraduate curriculum as a core for an attractive liberal arts program.

Additional training beyond the baccalaureate degree is highly advantageous in obtaining better positions in any field of chemical activity whether it be teaching, governmental, or industrial work. The undergraduate curricula serve well as a foundation for this specialization, and qualified students are encouraged to continue toward the master's or doctor's degree involving research.

Prerequisite to graduate work leading to an advanced degree with a major in chemistry is the completion of undergraduate work in chemistry, mathematics, physics, and biology, substantially equivalent to that required of undergraduate students in the several chemistry curricula.

The curriculum, staff, library, and laboratory facilities of the Department of Chemistry have been examined by the Committee on Professional Training of Chemists of the American Chemical Society. Graduating chemistry majors are approved as having met all requirements of the American Chemical Society. The department is well equipped for graduate study and research, with a well-trained and diversified staff.

### Lower Division Courses

<sup>1</sup>Ch 101, 102, 103. **General Chemistry.** 3 hours each term. 2 ① 1 ③

A basic sequence covering fundamentals of chemistry. Students whose college aptitude test scores indicate the need will be permitted to attend one extra recitation per week without additional credit. High school chemistry is not prerequisite.

<sup>1</sup>Ch 104, 105, 106. **General Chemistry.** 4 hours each term. 3 ① 1 ③

Required for nursing-education and medical-technology students. (See statement under Ch 101 concerning aptitude examinations.)

<sup>1</sup>Certain courses cover somewhat similar subject matter, and credit cannot be granted for duplication. For any sequence or combination of General Chemistry courses the terminal course being Ch 103, a maximum of 9 term hours is allowed; the terminal course being Ch 106, a maximum of 12 term hours is allowed; the terminal course being Ch 206, a maximum of 15 term hours is allowed. Credit for Ch 221 will not be allowed if Ch 226 is taken. Ch 251 and Ch 226 will not both be credited. Ch 226, 227, and Ch 432 can be used as a sequence, but this does not give upper division credit for Ch 226, 227. Credit cannot be had for both Ch 232 and Ch 234.

- Ch 111, 112, 113. **Chemistry Survey.** 1 hour each term. 1 ① 1 ②  
To acquaint students with chemistry as a profession, and orient them in chemical methodology.
- <sup>1</sup>Ch 130. **Descriptive General Chemistry.** 3 hours spring. 3 ①  
Nonlaboratory course as an aid to better understanding of the numerous chemical developments in the commercial and industrial world. May not be substituted for other chemistry courses.
- <sup>1</sup>Ch 201, 202, 203. **General Chemistry.** 3 hours each term. 2 ① 1 ③  
Course content particularly adapted for students in engineering.
- <sup>1</sup>Ch 204, 205. **General Chemistry.** 4 or 5 hours each term. 3 ①, 1 or 2 ③  
Basic principles of general chemistry for students majoring in chemistry, chemical engineering, pharmacy, and certain other curricula. High school chemistry recommended as prerequisite. Students registered for 4 credits take but one laboratory period.
- <sup>1</sup>Ch 206. **Qualitative Analysis.** 4 or 5 hours spring or fall. 3 ① 2 ③  
Chemistry of selected metallic elements and semimicro qualitative analysis. A sequence with Ch 204 and 205, or with Ch 101, 102, 103.
- <sup>1</sup>Ch 221. **Organic Chemistry.** 4 hours. 2 ① 2 ③  
Organic chemistry adapted to use of home economics students. Prerequisite: Ch 103.
- <sup>1</sup>Ch 226. **Organic Chemistry.** 5 hours. 3 ① 2 ③  
Carbon compounds of the aliphatic series. Prerequisite: Ch 206.
- <sup>1</sup>Ch 227. **Organic Chemistry.** 5 hours winter or spring. 3 ① 2 ③  
An intensive study of the chemistry of the aromatic series. Prerequisite: Ch 226.
- <sup>1</sup>Ch 232, 233. **Quantitative Analysis.** 4 or 5 hours each term, winter and spring. 2 ①, 2 or 3 ③  
Fundamental principles and laboratory practice. For chemistry majors 5 hours; for chemical engineering majors 4 hours. Prerequisite: Ch 206.
- <sup>1,2</sup>Ch 234. **Quantitative Analysis.** 5 hours fall or spring. 2 ① 2 ③  
Principles of gravimetric analysis and volumetric analysis. Designed for pharmacy, premedical, and medical-technology students. Prerequisite: Ch 103.
- Ch 241. **Chemical Theory.** 4 hours fall. 3 ① 1 ②  
Theory and calculations in general chemistry as a foundation for physical and engineering chemistry. Prerequisite: Ch 206.
- Ch 243. **Commercial Methods of Analysis.** 4 hours spring. 2 ① 2 ③  
Theory and practice in analysis and testing of water, oil, gaseous, and solid fuels and other materials of industrial importance. Prerequisite: Ch 232, 233.
- Ch 250. **Elements of Biochemistry.** 4 hours winter. 2 ① 2 ③  
Proteins, carbohydrates, fats, and other compounds having biochemical significance; fundamentals of analysis as applied to this work. Prerequisite: Ch 221 or equivalent.
- <sup>1</sup>Ch 251, 252. **Organic and Agricultural Biochemistry.** 5 hours fall, 3 hours winter. 3 ① 2 ③, 3 ①  
Fall: a one-term course in organic chemistry for students in agriculture, intended to provide a background for elementary biochemistry. Prerequisite: Ch 103. Winter: an introductory study of the chemistry and biochemistry of carbohydrates, liquids, and proteins. Prerequisite: Ch 251 or equivalent.
- Ch 253. **Agricultural Biochemistry.** 2 hours winter. 2 ③  
Laboratory work to accompany Ch 252.

#### Upper Division Courses

- Ch 321, 322, 323. **Metallurgical Chemistry.** 3 hours each term. 1 ① 1 ③  
Chemistry and techniques in winning various metals from ores, including principles of fire assaying; special attention to chemical treatment and analysis of Northwest minerals. Prerequisite: Ch 206. Professor Caldwell.

<sup>1</sup> See footnote on previous page.

<sup>2</sup> Ch 234 will be offered with 4 hours credit in special section for students majoring in curricula of the School of Agriculture.

- Ch 330, 331. **Physiological Chemistry.** 2 hours winter, 3 hours spring.  
1 ① 1 ③, 2 ① 1 ③  
For home economics, pharmacy, and bacteriology students. Prerequisite: Ch 251 or 227.  
Professor Pease.
- <sup>2</sup>Ch 340. **Elementary Physical Chemistry.** 3 hours. 3 ①  
Kinetic theory, atomic structure, molecular weights, classification of elements, solubility, ionization, colloids, hydrogen-ion measurements, electrochemistry. Use of mathematics minimized. Prerequisite: Ch 203 or equivalent and some knowledge of physics.
- Ch 350, 351, 352. **Agricultural Chemistry.** 3 hours each term. 1 ① 2 ③  
Fundamental analytical chemistry of carbohydrates, lipids, proteins, food industries products, feed materials, fertilizers, insecticides, etc. Prerequisite: organic and quantitative analysis. Assistant Professor Reese.
- Ch 370, 371, 372. **Glass Blowing.** 1 hour each term. 2 ②  
Practice in manipulation of glass and assembling setups. Prerequisite: one year of laboratory science. May be started any term.
- Ch 401. **Research.** Terms and hours to be arranged.
- Ch 403. **Thesis.** Terms and hours to be arranged.
- Ch 405. **Reading and Conference.** Terms and hours to be arranged.
- Ch 407. **Seminar.** Terms and hours to be arranged.
- Ch 411, 412, 413. **Descriptive Inorganic Chemistry.** (G) 3 hours each term. 2 ① 1 ③  
Chemistry of inorganic elements and compounds from standpoint of periodic table and atomic structure; chemical conversion of inorganic materials for industrial use; advanced experimental techniques in inorganic chemistry. Prerequisite: three years of college chemistry. Professor Caldwell; Assistant Professor Parsons.
- Ch 418. **History of Chemistry.** (G) 3 hours. 3 ①  
Rise and development of chemical theories and laws. Prerequisite: three years of chemistry. Associate Professor Slabaugh.
- Ch 419. **Radioactive Tracer Methods.** (g) 4 hours. 2 ① 2 ③  
For students in biological sciences and agriculture. Elements of radiochemistry; safe handling of radioactive isotopes; measurement of radioactivity; principles and techniques in applying tracer methods in various fields. Prerequisite: two years of chemistry. Associate Professor Wang.
- Ch 420, 421, 422. **Advanced Quantitative Analysis.** (g) 3 hours each term. 1 ① 2 ③  
Analytical procedures such as those of electroanalysis, fuel analysis, analysis of non-ferrous alloys, water, iron, and steel. Prerequisite: three years college chemistry. Associate Professor Freund.
- Ch 424. **Chemical Microscopy.** (G) 3 hours fall. 1 ① 2 ③  
Theory and use of microscope in microscopical measurements, quantitative analysis of mixtures, identification of organic compounds, optical crystallography, crystallization phenomena, etc. Prerequisite: three years of college chemistry, college physics. Associate Professor Williams.
- Ch 427, 428, 429. **Advanced Laboratory Methods.** (G) 2 hours each term. 1 ① 1 ③  
Principles and practice in advanced organic laboratory techniques; distillation, fractionation, crystallization, filtration, chromatography, extraction, high and low pressure hydrogenation, chlorination, oxidation, and important methods of synthesis. Prerequisite: Ch 432, 442. Professor Christensen.
- Ch 430, 431, 432. **Organic Chemistry.** (g) 4 or 5 hours each term. 3 ① 1 ③, 3 ① 2 ③  
Compounds of carbon; compounds important from the theoretical, technical, and biological standpoints; aliphatic compounds; aromatic series. Prerequisite: two years of college chemistry. Professor Christensen.

<sup>2</sup> Credit will not be given for Ch 340 if Ch 440, 441, 442 are taken later.



- Ch 434. **Organic Preparations.** (G) 1 or 2 hours each term, maximum 5 hours. 1 ③ 2 ③  
Important methods of synthesis, such as Grignard's Friedel-Craft's, Perkin's reaction, and others. Prerequisite: Ch 432 or equivalent. Professor Pease.
- Ch 435, 436. **Organic Analysis.** (G) 2 hours winter, 3 hours spring. 1 ① 1 ③, 1 ① 2 ③  
Qualitative tests and analysis of organic compounds and mixtures. Prerequisite: Ch 232, Ch 432 or 227. Professor Pease.
- Ch 437, 438. **Survey of Organic Chemistry.** (G) 3 hours each term. 3 ①  
Designed for advanced chemistry students who are neither major nor minor students in organic chemistry, and for students who plan to take advanced work in organic chemistry but have not passed the organic qualifying examinations. Prerequisite: Ch 432 or equivalent. Staff.
- Ch 440, 441, 442. **Physical Chemistry.** (g) 4 hours each term. 3 ① 1 ③  
Molecular weights, properties of liquids, solids, and solutions, chemical equilibrium, reaction kinetics, electrochemistry, atomic and molecular structure. Prerequisite: quantitative analysis, and calculus. Professor Gilbert, Professor Decius.
- Ch 443. **Chemical Literature.** (G) 1 hour fall. 1 ①  
Use of the chemical literature; character of various chemical journals, dictionaries, reference books, and other sources of information. Prerequisite: senior or graduate standing. Professor Gilbert.
- Ch 445, 446. **Chemical Thermodynamics.** (G) 3 hours each term. 3 ①  
Chemical principles from standpoint of thermodynamics. Prerequisite: Ch 442. Professor Gilbert.
- Ch 447. **Electrochemistry.** (G) 3 hours. 3 ①  
Lecture course dealing with theoretical and applied electrochemistry, including electrochemistry of solutions. With Ch 445, 446 constitutes a year sequence. Prerequisite: Ch 442. Professor Scott.
- Ch 448, 449. **Colloidal Chemistry.** (G) 3 hours each term. 3 ①  
Properties and preparation of substances in the colloidal state. Laboratory work may be arranged to accompany these courses. Prerequisite: three years of college chemistry. Associate Professor Slabaugh.
- Ch 450, 451, 452. **Biochemistry.** (G) 2, 3, or 5 hours each term. 3 ① 2 ③  
Lectures (3 hours) and laboratory (2 hours) may be taken either together or separately. Fall: carbohydrates, proteins and fats of importance in biological systems. Winter: vitamins and enzymes. Spring: metabolism. Prerequisite: organic chemistry. Students who have taken the lecture for 3 hours each term may take in later terms the laboratory for 2 hours. Professors Butts, Cheldelin; Assistant Professor Loomis.
- Ch 453. **Plant Biochemistry.** (G) 3 or 5 hours spring. 3 ① 2 ③  
Chemical processes and metabolism in plant systems. Prerequisite: Ch 451. Assistant Professor Loomis.
- Ch 454, 455, 456. **Agricultural Biochemical Methods.** (G) Hours to be arranged. 2 ①, 2 or 3 ③  
Advanced theory and practice on the chemistry of colloids, carbohydrates, lipids, amino acids and proteins, vitamins, enzymes, pigments, etc., of both plant and animal significance. Emphasis on newer analytical methods and techniques, both instrumental and chemical. Prerequisite: organic chemistry and quantitative analysis. Assistant Professor Reese.
- Ch 457. **Dairy Chemistry.** (g) 3 hours. 3 ①  
Physical, physicochemical, and chemical properties of milk and milk products; chemistry of the individual constituents of milk, including the enzyme systems; principles involved in processing dairy products. Prerequisite: Ch 251. Ch 340 recommended. Professor Richardson.
- Ch 458. **Dairy Chemistry Laboratory.** (g) 2 hours. 2 ③  
Laboratory course to accompany Ch 457. Professor Richardson.
- Ch 465. **Applied Electrochemistry.** (G) 3 hours. 2 ① 1 ④  
Laboratory study of fundamental phenomena of applied electrochemistry, such as polarization, overvoltage, corrosion, electro-deposition, instruments. Prerequisite: Ch 442. Professor Scott.

- Ch 466. **Advanced Electrochemistry.** (G) 3 hours. 2 ① 1 ④  
Theoretical and experimental electrochemistry of solids, fused salts, and solutions. Electrical measurements in experimental chemistry. Prerequisite: Ch 442. Professor Scott.
- Ch 470. **Forest Products Chemistry.** (G) 3 hours fall. 3 ①  
Chemistry of natural plant materials with special attention to woods and other sources of cellulose, hemicellulose, lignin, and extractives. Prerequisite: organic chemistry. Professor Kurth.
- Ch 471. **Chemical Analysis of Wood and Related Products.** (G) 3 hours winter. 1 ① 2 ③  
Laboratory methods of analysis of woods and related fibrous materials. Prerequisite: analytical and organic chemistry. Professor Kurth.
- Ch 472, 473. **Pulp and Paper Chemistry.** (g) 3 hours winter and spring. 3 ①  
Fundamental chemical processes of pulp and paper industry. Prerequisite: Ch 470. Professor Kurth.
- Ch 474. **Pulp and Paper Chemistry.** (G) 3 hours spring. 1 ① 2 ③  
Laboratory studies on preparation of chemical and semichemical wood cellulose pulps and their evaluation; beating characteristics, bleachability measurement and bleaching, copper number, viscosity, fiber classification, and strength properties. Prerequisite: Ch 472, 473.
- Ch 480, 481. **Survey of Physical Chemistry.** (G) 3 hours each term. 3 ①  
Designed for advanced chemistry students who are neither major nor minor students in physical chemistry, and for students who plan to take advanced work in physical chemistry but have not passed the physical chemistry qualifying examination. Prerequisite: Ch 442 or equivalent. Staff.
- Ch 490, 491. **Survey of Biochemistry.** (G) 3 hours fall and winter. 3 ①  
Compounds of biological interest including carbohydrates, fats, proteins, nucleic acids, and vitamins. Enzyme systems and intermediary metabolism; comparative biochemistry. Prerequisite: three years of chemistry. Biochemistry staff.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Ch 501. **Research.** Terms and hours to be arranged.
- Ch 503. **Thesis.** Terms and hours to be arranged.  
Qualified students have all the facilities of the laboratory at their disposal and receive the advice and assistance of the department.
- Ch 505. **Reading and Conference.** Terms and hours to be arranged.
- Ch 507. **Seminar.** Terms and hours to be arranged.  
A reading knowledge of German and French is expected.
- Ch 511, 512, 513. **Advanced Inorganic Chemistry.** 2 hours each term. 2 ①  
Chemistry of several groups of nonmetals and metals, complex compounds, acid-base reactions and reactions in nonaqueous solvents. Prerequisite: Ch 442. Associate Professor Norris.
- Ch 516, 517, 518. **Radiochemistry.** 2 hours each term. 2 ①  
Radioactivity, nuclear properties, nuclear reaction, and associated nuclear-chemical phenomena; application to theoretical and applied chemistry; instrumentation and laboratory techniques. Prerequisite: Ch 442. Associate Professor Norris.
- Ch 519. **Radioactive Tracer Technology.** 3 hours spring. 1 ① 2 ③  
Fundamental principles and experiments on radioactivity measurements; characteristics of radioactive substances; design of simple tracer experiments; synthesis and degradation of labeled compounds. Prerequisite: Ch 432, Ch 442 and Ch 517 or Ph 471, 472, 473. Associate Professor Wang.
- Ch 520, 521, 522. **Advanced Analytical Chemistry.** 3 hours each term. 3 ①  
Two terms on principles underlying modern methods of analysis and their application to the analytical chemistry of the elements. Third term devoted to special fields of current interest. Prerequisite: Ch 442. Associate Professor Freund.

- Ch 523. **Organic Quantitative Microanalysis.** 3 hours. 1 ① 2 ③  
Laboratory practice in methods of quantitative organic microanalysis. Prerequisite: Ch 233, 432. Professor Christensen.
- Ch 525, 526. **Instrumental Analysis.** 3 hours winter and spring. 1 ① 2 ③  
Principles and practice in use of special optical and electrical instrumental methods of analysis; spectroscopy, colorimetry, spectrophotometry, etc. Prerequisite: Ch 442. Associate Professors Williams and Freund.
- Ch 527. **Organic Radioactive Tracer Techniques.** 3 hours. 1 ① 2 ③  
Design of tracer experiments; synthesis of labeled compounds; application of tracer technique in reaction mechanism and biochemical studies; isolation and isotopic dilution technique; radioautograph; degradation studies. Prerequisite: Ch 519 or equivalent. Associate Professor Wang.
- Ch 530, 531, 532. **Advanced Organic Chemistry.** 2 hours each term. 2 ①  
Course in organic chemistry designed to give advanced students intimate acquaintance with facts and theories essential to organic research. Prerequisite: passing grade in graduate qualifying examination. Staff.
- Ch 533, 534, 535. **Theoretical Organic Chemistry.** 2 hours each term. 2 ①  
A three-term sequence on the theories of organic chemistry. Physical basis for structural organic chemistry, reaction mechanisms. Prerequisite: Ch 438, 481 or equivalent and consent of instructor. Assistant Professor Marvell.
- Ch 536, 537, 538. **Selected Topics in Organic Chemistry.** 2 hours each term. 2 ①  
Topics: (1) Organic nitrogen compounds, Professor Pease; (2) Carbohydrates, Professor Pease; (3) Terpenes, Professor Pease; (4) Organic-metallic compounds, Associate Professor Logan; (5) Steroids; (6) Heterocyclic compounds, Professor Christensen. Prerequisite: Ch 432 or equivalent.
- Ch 540, 541, 542. **Advanced Physical Chemistry.** 3 hours each term. 3 ①  
Theories of atomic and molecular structure; nature of chemical bond; statistical calculation of thermodynamic functions. Professor Decius.
- Ch 543, 544, 545. **Selected Topics in Physical Chemistry.** 2 hours each term. 2 ①  
Reaction kinetics including photochemistry; phase rule; magnetochemistry; physical chemistry of solids; experimental determination of molecular structure; solution chemistry. Not all topics are covered each year. Professors Gilbert, Scott, and Decius, Assistant Professor Hedberg.
- Ch 550, 551, 552. **Selected Topics in Biochemistry.** 3 hours each term.  
Nonsequence courses designed to acquaint student with recent advances in biochemistry and their application to special fields of study. 1957-58: Ch 550, proteins; Ch 551, fermentations; Ch 552, chemotherapy and intermediary metabolism. Prerequisite: Ch 452 or equivalent. Professor Cheldelin, Associate Professor King, Assistant Professor Reese.
- Ch 554. **Biochemical Preparations.** Terms and hours to be arranged.  
Preparation, purification, and analysis of compounds of biological importance; chemical and biological resolutions. Prerequisite: Ch 432.
- Ch 555. **Biochemical Techniques.** 3 hours winter. 1 ① 2 ③  
Concentration of biochemical compounds (enzymes, coenzymes, and various physiologically important intermediates and metabolites) by recently developed methods; study of their properties by enzymic, manometric, and other special techniques. Prerequisite: quantitative analysis, Ch 452 or 453 or equivalent. Associate Professor King.

## Entomology

Entomology courses are planned to acquaint the student with the proper relationship of entomology to other sciences, to train for commercial positions in entomology, to prepare for State and Federal service in entomology, and to meet needs of students from other departments who desire work in entomology. The department affords opportunity to major in entomology for a liberal arts

degree as well as to prepare for professional service in entomology or allied fields. Advanced work is offered in the fields of general entomology, economic entomology, forest entomology, insect toxicology, aquatic entomology, and systematic entomology. Advanced courses are planned to equip students specializing in entomology with a fundamental groundwork in the science sufficient to prepare them for effective service in applied entomology or for further study.

Certain types of commercial and inspection work may not require more training than is represented by the bachelor's degree. The student who intends to engage in research work or college teaching should clearly appreciate the fact that the four-year curriculum does not give him adequate preparation for a career in these fields; additional study at the graduate level of from one to three years is essential.

The insect collection consists of nearly 200,000 insects, a large part of which are named and classified. This collection of insects serves the institution and the department in performing the following functions: (1) undergraduate class instruction; (2) graduate student research; (3) research by staff members; (4) research by staff members conducted on agricultural pests; (5) technical advisory service—determination of injurious and beneficial insects and preparation of letters about control.

Because of the department's close ties with Agricultural Experiment Station work in entomology, many research facilities are available for use by students and staff. The entomology farm adjoining the campus includes an apiculture laboratory, insectary, fumigation equipment, shop facilities and the new forest insect research laboratory. Graduate assistantships, available to qualified graduate students, provide valuable work experience.

#### Lower Division Course

- Ent 200. **General Entomology.** 5 hours fall. 3 ① 2 ②  
For students whose principal interest is in biology. Classification, biology, morphology, physiology. Mr. Lattin.

#### Upper Division Courses

- Ent 314. **Introduction to Economic Entomology.** 4 hours fall or winter. 2 ① 2 ②  
Primarily for agriculture students. Typical economic insect forms; insect-pest control. Prerequisite: one term of zoology or chemistry. Associate Professor Martin.
- Ent 321. **Principles of Forest Entomology.** 3 hours fall. 2 ① 1 ②  
Forest losses due to insects; the groups responsible; prevention and control. Prerequisite: one year of forestry, or Ent 200 or equivalent. Associate Professor Rudinsky.
- Ent 333. **Insect Anatomy.** 3 hours spring. 3 ②  
Introductory insect morphology with emphasis on external anatomy of adult insects, mouthparts, appendages, and body regions. Prerequisite: Ent 200, 314. Mr. Hasbrouck.
- Ent 335. **Introduction to Bee Culture.** 3 hours spring. 2 ① 1 ③  
Habits and life history; management for honey production; pollination of fruit and seed crops. Prerequisite: upper division standing or consent of instructor. Assistant Professor Stephen.
- Ent 341. **Aquatic Entomology.** 4 hours spring. 1 ① 2 ②  
Aquatic insects, ecologies, life histories, and economic importance as food of game fishes. Prerequisite: upper division standing or consent of instructor. Associate Professor Martin.
- Ent 401. **Research.** Terms and hours to be arranged.  
Approved problems carried on in library, laboratory, or field.
- Ent 403. **Thesis.** Terms and hours to be arranged.

- Ent 405. **Reading and Conference.** Terms and hours to be arranged.
- Ent 407. **Seminar.** Terms and hours to be arranged.  
Reading, discussing, and abstracting the leading articles on entomological topics as they appear in current scientific literature.
- Ent 411. **Fruit Insects.** (G) 3 hours fall. 2 ① 1 ②  
Major fruit insects and their control. Especially for students in horticulture and entomology. Prerequisite: Ent 314 or equivalent. Professor Ritcher.
- Ent 412. **Insects Affecting Man and Animals.** (G) 3 hours fall. 2 ① 1 ②  
Insects attacking and annoying man and animals; disease vectors and carriers, and possible means of control. Prerequisite: fundamental courses in entomology or zoology. Assistant Professor Goulding.
- Ent 413. **Field and Truck-Crop Insects.** (G) 3 hours spring. 2 ① 1 ②  
Major field and truck-crop insects and their control. Especially for farm crops, vegetable crops, and entomology students. Prerequisite: Ent 314, or equivalent. Offered 1957-58. Associate Professor Crowell.
- Ent 423. **Advanced Forest Entomology.** (G) 3 hours. 2 ① 1 ③  
An intensive study of the bark beetles injurious to forest trees, important species of sawflies, Lepidoptera and Homoptera. Prerequisite: Ent 321 or equivalent. Associate Professor Rudinsky.
- Ent 431. **Biological Control.** (G) 3 hours spring. 3 ①  
Relationship of insect populations to environment; control of insects with other invertebrates and with disease organisms; resistant hosts; management of environment; control of insects with insects. Prerequisite: Ent 314 or equivalent. Offered alternate years. Offered 1957-58. Associate Professor Martin.
- Ent 451, 452, 453. **Systematic Entomology.** (G) 3 hours each term. 2 ③  
Taxonomy, nomenclature, literature, phylogeny, and distribution of insects. Prerequisite: Ent 200, 314, 333, or equivalent. Mr. Lattin.
- Ent 461. **General Acarology.** (G) 3 hours fall. 1 ① 2 ②  
Morphology, biology, and taxonomy of mites and ticks; methods of collecting, preserving, and mounting specimens. Prerequisite: Ent 333. Given in alternate years. Offered 1957-58. Assistant Professor Krantz.
- Ent 463. **Historical Entomology.** (G) 3 hours winter. 3 ①  
World history of basic and applied entomology and its relationship to the development of natural science. Prerequisite: Ent 200 or equivalent. Mr. Lattin.
- Ent 473. **Insect Ecology.** (G) 3 hours fall. 3 ①  
Environmental factors and their influence on insect development, distribution, and behavior. Prerequisite: Ent 200 or 314. Offered alternate years. Offered 1957-58. Associate Professor Martin.
- Ent 481, 482. **Insect Morphology.** (G) 3 hours fall and winter. 2 ① 1 ③  
Ent 481 (fall term): morphology of the external skeleton of insects and its appendages. Ent 482 (winter term): morphology of the internal organs of insects. Prerequisite: Ent 200 or 314. Offered alternate years. Not offered 1957-58. Associate Professor Martin.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Ent 501. **Research.** Terms and hours to be arranged.
- Ent 503. **Thesis.** Terms and hours to be arranged.
- Ent 505. **Reading and Conference.** Terms and hours to be arranged.
- Ent 507. **Seminar.** Terms and hours to be arranged.
- Ent 515. **Principles of Entomological Research.** 3 hours winter. 2 ① 1 ①  
Investigative procedures; applied biometry; insect populations; problems in indirect and direct control of insects. Prerequisite: Ent 314 or equivalent, Ent 473, St 421. Offered alternate years. Offered 1957-58. Associate Professor Martin.

- Ent 525. **Insect Transmission of Plant Viruses.** 3 hours spring. 2 ① 1 ③  
Principles in insect transmission; separation of virus complexes by insects; families and genera containing important vectors; transmission in the field; control measures against insect vectors; practical experiments. Prerequisite: Ent 452, Bot 551. Associate Professor Swenson.
- Ent 533. **Aquatic Entomology.** 3 hours. 2 ① 1 ②  
Aquatic insects with emphasis on biologies, habitats; classification of major groups. Prerequisite: Ent 341 or equivalent, Mr. Lattin.
- Ent 554. **Immature Insects.** 3 hours winter. 3 ②  
Methods of collection, preservation, and identification; emphasis on taxonomy and morphology of families of immature insects. Prerequisite: Ent 453, 481. Professor Ritcher.
- Ent 572. **Insect Physiology.** 3 hours spring. 2 ① 1 ③  
Principles of physiology as they apply to insects; emphasis on peculiar hexapod systems and functions such as metamorphosis, excretion, the integument and haemolymph. Prerequisite: Ent 482 and organic chemistry. Not offered 1957-58. Associate Professor Crowell.
- Ent 573. **Insect Toxicology.** 3 hours spring. 2 ① 1 ③  
Mode of action of insecticides; physical and chemical properties; mammalian toxicity; insect resistance to insecticides; testing, formulation, and application. Prerequisite: Ent 482. Offered 1957-58. Associate Professor Terriere.
- Ent 582. **Principles of Systematics.** 3 hours winter. 3 ①  
History, principles, trends in International Code as applied to zoological sciences; species; infraspecific and superspecific categories; type method. Prerequisite: systematic entomology, zoology, or botany; genetics; or consent of instructor. Offered 1957-58. Assistant Professor Stephen.

## Geology

Some knowledge and appreciation of the earth on which we live is essential for those who wish to face intelligently the problems of modern life. Geology is the science of the earth. The Department of Geology offers undergraduate majors for students who are interested in geology for a liberal arts degree, for students who wish a professional major in geology, and for students who wish to major in paleontology. The general major affords opportunity for the student to make wide electives in other fields.

The department is equipped to offer graduate work in geology including advanced petrology, economic geology, advanced studies in structure, stratigraphy, sedimentation, or paleontology. A field course of at least 9 hours is prerequisite to candidacy for an advanced degree.

### Lower Division Courses

- <sup>1</sup>G 200. **Physical Geology.** 3 hours. 3 ①  
Elective short course on earth materials, processes, and history.
- <sup>1</sup>G 201, 202, 203. **Geology.** 3 hours each term. 3 ①  
Processes of nature by which earth's surface has been built up, deformed, and torn down; natural history and occurrence of common rocks and useful minerals; outline of history of earth and life.
- G 204, 205, 206. **Geology Laboratory.** 1 hour each term. 1 ②  
Laboratory and field work to accompany G 201, 202, 203 for all students desiring a more intimate knowledge of geology.

<sup>1</sup>G 312, 313, 314 and G 315, 316, 317 are parallel sequences and credit may not be obtained for both. Similarly, credit may not be obtained for both G 200 and G 201.

## Upper Division Courses

- <sup>1</sup>G 312, 313, 314. **Mineralogy and Rock Study.** 4 hours each term. 2 ① 2 ③  
Physical and chemical methods useful in the recognition of materials of which the earth is composed. Prerequisite or corequisite: chemistry. Professor Wilkinson.
- <sup>1</sup>G 315, 316, 317. **Mineralogy and Rock Study.** 4 hours each term. 2 ① 2 ③  
Crystal forms, physical and chemical properties; identification of economic and rock-forming minerals; common rock types of special industrial importance. Prerequisite: one year of physical science. Professor Wilkinson.
- G 321. **Structural Geology.** 4 hours spring. 3 ① 1 ③  
Study of origin, interpretation, and mapping of minor rock structures and joints, faults, and folds. Prerequisite: G 201, 202.
- G 322. **Geomorphology.** 4 hours winter. 3 ① 1 ③  
Development of the surface features of the earth by erosion, deposition, earth movements, and volcanism. Prerequisite: general geology.
- G 323. **Sedimentology.** 4 hours fall. 3 ① 1 ③  
Genesis and subsequent history of stratified rocks; geologic processes concerned with sedimentation and cementation. Prerequisite: G 201, 202, 203.
- G 324, 325. **Engineering Geology.** 3 hours each term. 2 ①  
Application and use of geology in engineering and industrial arts. May be taken separately. Prerequisite: upper division standing. Some field trips required. Assistant Professor Taubeneck.
- G 330, 331, 332. **Life of the Past.** 3 hours each term. 3 ①  
History of life as recorded in fossil record. Fall: fossil plants and invertebrates. Winter: rise of vertebrates exclusive of Primates; emphasis on reptiles and mammals. Spring: geologic history of Primates, especially man. Prerequisite: one year of biology or geology. G 330 not open to geology majors. May be taken in any sequence. Assistant Professor Boyd.
- G 340, 341, 342. **Invertebrate Paleontology.** 4 hours each term. 2 ① 2 ③  
Major phyla of fossil invertebrates, with emphasis on comparative morphology of fossil and living representatives; important Paleozoic and Mesozoic guide fossils. Prerequisite: general geology or one year of biological science. Mr. Bostwick.
- G 350. **Rocks and Minerals.** 3 hours fall. 2 ① 1 ②  
Opportunity to become acquainted with rocks and minerals without prerequisites of the more technical courses. Especially useful to students expecting to teach general science. Prerequisite: upper division standing. Professor Wilkinson.
- G 352. **Geology of Oregon.** 3 hours spring. 3 ①  
Origin and geologic history of landscape features of Oregon; for students without prior geologic background. Assistant Professor Taubeneck.
- G 380. **Field Methods.** 3 hours. 1 ① 1 ⑥  
Geologic mapping and surveying methods; pace-and-compass traverses, plane table plotting. Prerequisite: one year of general geology. Professor Wilkinson.
- G 401. **Research.** Terms and hours to be arranged.
- G 403. **Thesis.** Terms and hours to be arranged.
- G 405. **Reading and Conference.** Terms and hours to be arranged.
- G 407. **Seminar.** 1 hour any term. 1 ①
- G 412, 413, 414. **Petrography.** (G) 4 hours each term. 2 ① 2 ③  
Use of microscope in identification of minerals and in rock classification. Prerequisite: G 312, 313, 314. Assistant Professor Taubeneck.

<sup>1</sup> G 312, 313, 314 and G 315, 316, 317 are parallel sequences and credit may not be obtained for both.

- G 420. **Interpretation of Geophysical Data.** (G) 3 hours. 3 ①  
Physical methods now used in mining and oil prospecting, with particular emphasis on the geologic interpretation of data obtained by these methods. Prerequisite: Ph 203, G 321, 323. Professor Wilkinson.
- <sup>1</sup>G 421, 422. **Mining Geology and Industrial Minerals.** 4 hours each term. 3 ① 1 ②  
Origin, occurrence, exploration, mining, technology, and uses of metals, nonmetallic minerals, and other geologic resources. Prerequisite: G 315, 316, 317, or G 312, 313, 314. Some field trips required. Assistant Professor Koch.
- G 423. **Oil Geology.** 4 hours spring. 3 ① 1 ②  
Origin, occurrence, exploration, and technology of gas and oil. Prerequisite: G 201, 202, 203. Some field trips required. Assistant Professor Koch.
- G 424. **Biostratigraphy.** (G) 4 hours fall. 2 ① 2 ③  
Principles of stratigraphic paleontology governing use of fossils in chronology and correlation; paleo-ecology; the stratigraphic succession of invertebrates; experience in collection, preparation, and identification of megafossils. Prerequisite: G 340, 341, 342. Assistant Professor Boyd.
- G 430. **Principles of Stratigraphy.** (G) 4 hours fall. 3 ① 1 ③  
Interpretation of stratigraphic column; environmental, biologic, tectonic factors; correlation; field and laboratory procedures. Prerequisite: two years of geology including G 323. Assistant Professor Boyd.
- G 431. **Stratigraphy of North America.** (G) 4 hours. 4 ①  
The geologic development of the North American continent. Prerequisite: G 323, 430. Assistant Professor Boyd.
- G 432. **Geologic History of the Pacific Coast.** (G) 4 hours. 4 ①  
The geologic history of the Pacific Coast of North America. Prerequisite: G 323, 340, 341. Assistant Professor Boyd.
- G 440. **Micropaleontology.** (g) 4 hours. 2 ① 2 ③  
Collecting, preparation, classification, and identification of microfossils; biology and bionomics of living foraminifers; elements of biostratigraphy and ecologic evaluation of fossil foraminiferal assemblages. Prerequisite: three years of geology or zoology, G 340. Mr. Bostwick.
- G 441. **Advanced Micropaleontology.** (G) Terms and hours to be arranged.  
Morphologic and stratigraphic studies of Paleozoic microfossils: fusulinids, conodonts, and ostracodes; techniques for study and photography of microfossils. Prerequisite: G 440. Mr. Bostwick.
- G 471, 472. **Map Interpretation.** 2 hours each term. 1 ① 1 ③  
Structural, stratigraphic, and historical interpretation of geologic and topographic maps. Prerequisite: G 321, 322. Assistant Professor Boyd.
- G 473. **Photogeology.** 2 hours. 1 ① 1 ③  
Stereoscopic analysis of aerial photographs as a tool for geologic mapping. Prerequisite: G 471, 472. Assistant Professor Boyd.
- G 480. **Field Geology.** 12 hours.  
Intensive study of small area, conducted in summer camp of eight weeks. Prerequisite: G 380. Professor Wilkinson.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- G 501. **Research.** Terms and hours to be arranged.
- G 503. **Thesis.** Terms and hours to be arranged.
- G 505. **Reading and Conference.** Terms and hours to be arranged.

<sup>1</sup> Credit may not be obtained for both G 421, 422 and G 521, 522.



- G 507. **Seminar.** Terms and hours to be arranged.
- G 512, 513, 514. **Petrology.** Hours to be arranged.  
 Petrogenesis of igneous and metamorphic rocks. Prerequisite: G 414. Assistant Professor Taubeneck.
- G 520. **Petroleum Geology.** 3 hours spring. 2 ① 1 ③  
 Origin, occurrence, and exploration of natural gas, petroleum, and oil shales. Prerequisite: G 321. Assistant Professor Koch.
- G 521, 522. **Economic Geology.** 3 hours each term. 2 ① 1 ③  
 Origin and occurrence of metallic and nonmetallic ore deposits. Prerequisite: G 312, 313, 314. Not open to those who have taken G 421, 422. Assistant Professor Koch.
- G 523, 524, 525. **Sedimentary Petrology.** 3 hours each term. 1 ① 2 ③  
 Review and interpretation of current literature; laboratory techniques in analysis of fabric and mineralogical composition of sedimentary rocks. Fall: thin-section studies of sandstone. Winter: loose-grain analysis of sands and sandstones. Spring: thin-section and insoluble residue studies of carbonate rocks. Prerequisite: G 323, 414. Assistant Professor Boyd.
- G 580. **Graduate Field Geology.** Terms and hours to be arranged.  
 Advanced field problems assigned to meet the requirements of the graduate student. Staff.

## Mathematics

Mathematics—the language of quantity and relation—is necessarily part of many curricula in science and technology. Physical scientists and engineers all study the calculus, and many go on to differential equations. In the biological sciences and agriculture, mathematical requirements are largely directed toward preparation for work in the Department of Statistics. For students in business administration and in teacher training, special courses have been designed. Those who enter college poorly prepared in arithmetic or high school algebra, or both, will be delayed by having to take remedial courses before starting work at college level.

Graduates with mathematics majors usually find employment as teachers in the secondary schools or as mathematical aides in industrial plants or governmental laboratories. Those who intend to teach in colleges or universities, or to qualify for the better positions in government or industry, should include advanced calculus and at least one modern foreign language as preparation for graduate work. The languages of chief mathematical importance, besides English, are French, German, Italian, and Russian. In addition, an undergraduate would be wise to lay the foundation for a graduate minor in some physical, biological or social science, or in engineering.

**Graduate study.** Candidates for the degrees M.A. or M.S. are expected to present Introduction to Higher Analysis (Mth 511, 512, 513) and to take part in a Problems Seminar. They are expected to acquire grounding in Algebra (e.g., Mth 441, 442, 443) and Geometry. The thesis may be written in any field of mathematics. Candidates for the Ph.D. degree are ordinarily accepted in the fields of analysis, applied mathematics, and numerical analysis.

**Facilities.** The Library is strong in most branches of pure and applied mathematics. There is an excellent collection of the works of great mathematicians, and journals and historical works are well represented. The Department has two laboratories for computation: one contains an electronic digital computer (an ALWAC III-E, a binary machine with 8,192-word magnetic drum memory), and the other is equipped with various electrical and mechanical desk calculators.

**Employment.** The demand for mathematicians is keen at all training levels. Competent mathematicians who are also stimulating teachers are badly needed in high schools and colleges. Many numerical analysts, programmers, and coders are needed to staff electronic digital computers. Insurance companies and similiar agencies need actuaries. Salaries are high, especially for those with advanced training and consulting or research ability.

#### Lower Division Courses

- <sup>1</sup>Mth 5. **Elementary Mathematics.** 3 hours. 3 ①  
Numerical calculations, designed for students entering with a deficiency in elementary school mathematics. Credit not counted toward graduation.
- <sup>1</sup>Mth 10. **Elementary Algebra.** 4 hours. 4 ①  
Fundamental operations with polynomials and rational fractions, linear equations and stated problems. For students with little or no algebra.
- Mth 20. **Elementary Geometry.** 4 hours. 4 ①
- Mth 100. **Intermediate Algebra.** 4 hours. 4 ①  
Functions and graphs, linear equations in two unknowns, quadratic equations, negative and fractional exponents, radicals, progressions, binomial theorem, logarithmic computation. Prerequisite: Mth 10 or equivalent.
- Mth 101. **College Algebra.** 4 hours. 4 ①  
Review of high school algebra with emphasis on the number system, logarithms, progressions, binomial series, theory of equations, determinants. Prerequisite: Mth 100 or equivalent.
- Mth 102. **Trigonometry.** 4 hours. 4 ①  
Trigonometric functions for general angles, solution of triangles, addition formulas, trigonometric equations, graphs, complex numbers, and De Moivre's theorem. Prerequisite: Mth 101 or equivalent.
- Mth 103. **Analytic Geometry.** 4 hours. 4 ①  
The straight line, circle, conics, translation and rotation of axes, parametric equations, and polar coordinates. Planes and lines in three dimensions. Prerequisite: Mth 102 or equivalent.
- <sup>1</sup>Mth 104, 105, 106. **Mathematics for Business and Industry.** 3 hours each term. 3 ①  
Fundamentals of arithmetic and algebra; simple and compound interest, discount, annuities, amortization of debts, sinking funds.
- Mth 201, 202, 203. **Differential and Integral Calculus.** 4 hours each term. 4 ①  
Derivatives of elementary functions, the definite integral, techniques of integration, series expansion, partial differentiation, multiple integration. Applications to problems in physics and engineering.
- Mth 211, 212. **Mathematics for Elementary Teachers.** 3 hours each term. 3 ①  
To aid prospective elementary teachers in understanding why arithmetic works and how to teach it to children. Different kinds of arithmetic and some history included to broaden view; concepts rather than techniques stressed.
- Mth 230. **Spherical Trigonometry and Rudiments of Navigation.** 2 hours spring. 2 ①  
Prerequisite: Mth 102 or equivalent.

#### Upper Division Courses

- Mth 311. **History of Elementary Mathematics.** 3 hours. 3 ①  
Prerequisite: upper division standing.

<sup>1</sup>No more than 3 term hours may be earned for Mth 5 and Mth 104 and 4 term hours for Mth 10 and Mth 105.

- Mth 315. **Computer Coding.** 3 hours. 3 ①  
Coding instruction and practical laboratory work on electronic digital computer. Prerequisite: Mth 100 or 106.
- Mth 321, 322. **Differential Equations.** 3 hours each term. 3 ①  
Ordinary differential equations arising in geometry, physics, and engineering. Exact and approximate solutions. Prerequisite: calculus.
- Mth 331. **Theory of Equations and Determinants.** 3 hours 3 ①  
Properties and methods of solution of algebraic equations; brief study of determinants and their applications. Prerequisite: calculus. Offered alternate years. Not offered 1957-58. Professor Williams.
- Mth 332. **Theory of Numbers.** 3 hours. 3 ①  
Properties of integers, Euclid's algorithm, diophantine equations, prime numbers, congruences, residues of powers, and quadratic residues.
- Mth 401. **Research.** Terms and hours to be arranged.
- Mth 403. **Thesis.** Terms and hours to be arranged.
- Mth. 405. **Reading and Conference.** Terms and hours to be arranged.
- Mth 407. **Seminar.** Terms and hours to be arranged.
- Mth 410. **Foundations of Elementary Mathematics.** (g) 3 hours. 3 ①  
Fundamental concepts and logical structure of arithmetic, algebra, and geometry. Designed for prospective teachers of high school mathematics and mathematics majors. Prerequisite: calculus. Associate Professor Arnold.
- Mth 413. **Advanced Plane Analytic Geometry.** (g) 3 hours. 3 ①  
Prerequisite: calculus. Offered alternate years. Not offered 1957-58. Professor Williams.
- Mth 414. **Solid Analytic Geometry.** (G) 3 hours. 3 ①  
Prerequisite: calculus. Offered alternate years. Offered 1957-58. Professor Williams.
- Mth 415. **Advanced Geometry.** (G) 3 hours. 3 ①  
Euclidean geometry from a modern point of view. Prerequisite: calculus. Offered alternate years. Not offered 1957-58. Professor Williams.
- Mth 416. **Projective Geometry.** (G) 3 hours. 3 ①  
Introduction to analytic and synthetic projective geometry. Prerequisite: calculus. Offered alternate years. Offered 1957-58. Professor Williams.
- Mth 423. **Partial Differential Equations.** (G) 3 hours. 3 ①  
Introduction to concepts and methods of partial differential equations of first and higher orders; applications to problems of physics and engineering. Prerequisite: differential equations. Associate Professor Saunders.
- Mth 431, 432, 433. **Advanced Calculus.** (G) 3 hours each term. 3 ①  
Partial differentiation with applications, Stieltjes integral, multiple integrals, line and surface integrals, indeterminate forms, infinite series, improper integrals. Prerequisite: calculus. Professor C. L. Clark.
- Mth 435, 436, 437. **Numerical Calculus.** (G) 3 hours each term. 3 ①  
Finite differences, interpolation, numerical differentiation and integration, numerical solution of differential equations, use of electronic digital computer. Prerequisite: differential equations. Associate Professor Goheen.
- Mth 441. **Matrices and Quadratic Forms.** (G) 3 hours. 3 ①  
Vectors in n-dimensional linear spaces; linear transformations and matrices; matrix algebra: vector and matrix norms; determinants; quadratic forms, characteristic numbers and vectors, reduction to canonical form by orthogonal transformations. Prerequisite: Mth 322 or consent of instructor. Offered alternate years. Offered 1957-58.
- Mth 442. **Logic and Boolean Algebra.** (G) 3 hours. 3 ①  
Logical constants and variables; sentences; sentential and designatory functions; quantifiers; connectives; truth functions; postulates for sentential calculus; postulates for Boolean algebra and examples; partial ordering, lattices. Prerequisite: Mth 322 or consent of instructor. Offered alternate years. Offered 1957-58.

- Mth 443. **Abstract Algebra.** (G) 3 hours. 3 ①  
 Mappings and semigroups, isomorphism, equivalence; groups, rings, integral domains, ideals; examples from number theory, algebra, logic, matrix theory, and analysis. Prerequisite: Mth 322 or consent of instructor. Offered alternate years. Offered 1957-58.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Mth 501. **Research.** Terms and hours to be arranged. Staff.
- Mth 503. **Thesis.** Terms and hours to be arranged. Staff.
- Mth 505. **Reading and Conference.** Terms and hours to be arranged. Staff.
- Mth 507. **Seminar.** Terms and hours to be arranged. Staff.
- Mth 511, 512, 513. **Introduction to Higher Analysis.** 3 hours each term. 3 ①  
 Real and complex number systems, convergence of infinite processes, Riemann integration; analytic functions of one complex variable, including theory and application of contour integration. Prerequisite: Mth 431, 432, 433 or consent of instructor. Associate Professor Goheen.
- Mth 514. **Calculus of Variations.** 3 hours. 3 ①  
 Elements of variational calculus with applications. Professor Hostetter.
- Mth 517, 518, 519. **Topology.** 3 hours each term. 3 ①  
 Point sets, metrisation, compactness, continua, mappings, homology, combinatorial topology. Associate Professor Arnold.
- Mth 521, 522, 523. **Differential Equations of Mathematical Physics.** 3 hours each term. 3 ①  
 Second order partial differential equations governing various physical phenomena; vibrational problems and equations of hyperbolic type; heat-flow and diffusion problems and equations of parabolic type; stationary problems and equations of elliptic type; orthogonal expansions, Green's functions. Professor Lonseth.
- Mth 525. **Vector Analysis.** 3 hours. 3 ①  
 Modern vector and matrix methods with applications for students of physics, engineering, and mathematics. Prerequisite or parallel: differential equations. Professor Hostetter.
- Mth 526, 527. **Vectors, Matrices, and Tensors.** 3 hours each term. 3 ①  
 Modern matrix and tensor analysis with applications to mechanics, elasticity, fluid dynamics, and electricity. Professor Hostetter.
- Mth 531, 532, 533. **Theory of Probability.** 3 hours each term. 3 ①  
 Classical problems, theorems of total and compound probabilities; Riemann-Stieltjes integrals and random variables; James Bernoulli's theorem, laws of large numbers, approach to normal distribution; small sample theory; estimation, testing hypotheses; Markov chains, physical applications. Prerequisite: advanced calculus. Offered alternate years. Offered 1957-58.
- Mth 541, 542, 543. **Mathematical Theory of Statistics.** 3 hours each term. 3 ①  
 Mathematical derivation of various formulas used in statistical analysis and some applications of these formulas to practical problems. Associate Professor Kirkham.
- Mth 554, 555, 556. **Modern Algebra.** 3 hours each term. 3 ①  
 Advanced theory of matrices, finite groups, rings, and fields, Galois theory of equations; associative linear algebras, non-associative algebras, group representations. Offered alternate years. Not offered 1957-58. Associate Professor Brewer.
- Mth 561, 562, 563. **Mathematics in Engineering and Physics.** 3 hours each term. 3 ①  
 Analytical methods in obtaining solutions of problems in engineering and physics. Dynamics, vibrating systems, boundary value problems in electricity and elasticity, operational calculus, numerical methods. Associate Professor Stone.

- Mth 565, 566, 567. **Differential Geometry of Curves and Surfaces.** 3 hours each term. 3 ①  
Metric geometry of 3-space with introduction to tensor theory of Riemannian space. Prerequisite: differential equations. Professor Hostetter.
- Mth 571, 572, 573. **Theory of Functions of Real Variables.** 3 hours each term. 3 ①  
Measurable sets and functions, Lebesgue-Stieltjes and other integrals in one and several dimensions. Applications to such topics as Fourier series, surface area, and probability. Prerequisite: Mth 511, 512, 513 or consent of instructor. Offered alternate years. Not offered 1957-58. Assistant Professor Arnold.
- Mth 574, 575, 576. **Theory of Functions of Complex Variables.** 3 hours each term. 3 ①  
Advanced topics in theory of functions of one or several complex variables, such as differential equations in the complex domain, elliptic functions, Abelian integrals, conformal mapping. Prerequisite: Mth 511, 512, 513 or consent of instructor. Offered alternate years. Offered 1957-58. Assistant Professor McLeod.
- Mth 577, 578, 579. **Limit Theorems and Stochastic Processes.** 3 hours each term. 3 ①  
Limit theorems; central-limit problem in modern form; extensions to theory of stochastic processes. Prerequisite: Mth 533; Mth 573 or concurrent registration in Mth 571, 572, 573. Offered alternate years. Not offered 1957-58. Dr. Kimme.
- Mth 581, 582. **Fluid Dynamics.** 3 hours each term. 3 ①  
Fundamental mathematical concepts of subsonic, transonic, and supersonic flow, with applications to modern aerodynamics.

## Natural Resources

The Department of Natural Resources curriculum prepares resource geographers for employment in such fields as area and industrial resource analysis, planning, resources administration, and intelligence, and in such services as information specialists, chamber of commerce secretaries, and teaching. The Department provides courses open to all students in techniques of geographic research, cartographic representation, area and resource analysis, synthesis and reporting; in resources of the world and of selected areas; in physical geography and in principles and practices of conservation.

At the undergraduate level emphasis is placed on developing background in fundamental correlary sciences, on study of world resources as the basis for man's economies, on methods and techniques of library and field research, and on development of ability to organize and synthesize information into a written report.

At the graduate level emphasis is placed on more detailed study of United States resources including problems of management and administration; on refinement of analytical and prediction ability through practice in writing, and making oral presentations; and on principles and philosophy. Students may develop concentration in study of specific resources or in selected areas of the Pacific Basin.

Oregon State College offers outstanding facilities for the study of resource geography. As one of the Nation's land-grant colleges, the campus has specialists available for consultation and course work in all fields of technology and applied sciences dealing with specific resources as well as strong faculties in the social sciences and business fields. The Library contains an outstanding collection of scientific and technical source material and there is a generous opportunity for a wide variety of field study.

**Lower Division Courses**

- NR 261, 262, 263. **Cartography.** 3 hours each term. 3 ① 2 ②  
Development and utility of cartography; tools and materials; study and practice in using, compiling and drafting maps, charts and diagrams; reproduction problems; use of aerial photographs and their interpretation. Professor Jensen.

**Upper Division Courses**

- NR 327, 328, 329. **Physical Geography.** 3 hours each term. 3 ①  
Physical aspects of earth's surface; their distribution, classification, interpretation, utility, and interrelationships. Fall: elements of climate. Winter: climates of the World. Spring: landforms. Prerequisite: upper division standing and one year college geography or physical science. Professors Jensen, Highsmith.
- NR 361. **Techniques of Field Research.** 5 hours spring. 1 ① 2 ③  
Field practice in techniques of gathering, recording, classifying, and analyzing natural resources data. Professor Highsmith.
- NR 401. **Research.** Terms and hours to be arranged.
- NR 403. **Thesis.** Terms and hours to be arranged.
- NR 405. **Reading and Conference.** Terms and hours to be arranged.
- NR 407. **Seminar.** Terms and hours to be arranged.
- NR 411. **Conservation Principles and Practices.** 3 hours spring. 3 ①  
Examination and appraisal of conservation; resources development practices and policies of public agencies and private enterprise. Prerequisite: upper division standing. Professor Jensen.
- NR 413. **Aerial Photointerpretation.** 3 hours. 1 ① 2 ②  
Identification, analysis, and interpretation of landscape elements from aerial photographs—topographical, industrial, and cultural; use of aerial photographs in geographic analysis, map compilation, planning, and intelligence. Prerequisite: NR 263.
- NR 421, 422, 423. **Natural Resources of the World.** 3 hours each term. 3 ①  
Resource inventory, distribution, development, and potentialities. Fall: forest, range, and sea. Winter: agricultural geography. Spring: minerals. Prerequisite: upper division standing. Professors Jensen, Highsmith, Associate Professor Heintzelman.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G)  
may be taken for graduate credit.

- NR 501. **Research.** Terms and hours to be arranged.
- NR 503. **Thesis.** Terms and hours to be arranged.
- NR 505. **Reading and Conference.** Terms and hours to be arranged.
- NR 507. **Seminar.** Terms and hours to be arranged.
- NR 511. **Conservation in the United States.** 3 hours fall. 3 ①  
Analysis of principles and needs of conservation. Prerequisite: graduate standing. Professor Highsmith.
- NR 512. **Resources of the Western Pacific Basin.** 3 hours winter. 3 ①  
Resource geography of the Asiatic Pacific. Prerequisite: graduate standing. Professor Heintzelman.
- NR 513. **Resources of the Eastern Pacific Basin.** 3 hours spring. 3 ①  
Resource geography of the American Pacific. Prerequisite: graduate standing. Professor Jensen.

NR 527, 528, 529. **Natural Resources of the United States.** 3 hours each term. 3 ①

Resource inventory, distribution, development, and potentialities. Fall: agricultural geography. Winter: minerals. Spring: forest, range, and seas. Prerequisite: NR 327, 328, 329 or equivalent. Staff.

NR 538. **The Natural Resources of the Soviet Union.** 3 hours winter. 3 ①

Strengths and weaknesses of Soviet Union; resource inventory, distribution, development, potentialities, and problems. Prerequisite: graduate standing. Professor Highsmith.

## Nursing Education

The prenursing curriculum offered by Oregon State College is devoted chiefly to general and basic subjects in preparation for professional work at the Medical School and its hospitals and clinics. The Department of Nursing Education also offers to registered nurses advanced curricula in nursing specialties, credit for which may be applied toward a degree.<sup>1</sup>

### Lower Division Courses

Nur 111, 112, 113. **Backgrounds of Nursing.** 1 hour each term. 1 ①  
Backgrounds of modern social and health movements; relation to evolution of nursing as a profession; present aims and problems in nursing at home and abroad. Mrs. Corcoran.

### Upper Division Courses

Nur 311, 312, 313. **Modern Nursing Problems.** 1 hour each term. 1 ①  
Present aims and problems of nursing at home and abroad. Open only to registered nurses.

## Physics

Undergraduate students may major in physics either for a liberal arts degree or as preparation for professional service in physics and allied fields. Students planning to major in physics should offer a maximum of high school mathematics and physics for entrance. The lower division program should include mathematics through the calculus, general chemistry, and ordinarily two years of physics. Those planning for graduate study and research should lay the foundations of a reading knowledge of German, Russian, or French, or all. In special cases courses in related departments, involving considerable study of physical principles, may be accepted as part of a major in physics.

### Lower Division Courses

Ph 191. **Rudiments of Meteorology.** 1 hour any term. 1 ①  
A descriptive treatment of meteorological phenomena including winds, air masses, fronts, clouds, the wave cyclone, precipitation. Assistant Professor Decker.

\*Ph 201, 202, 203. **General Physics.** 4 hours each term. 4 ① 1 ②  
Mechanics, sound, heat, light, electricity and magnetism. Prerequisite: Mth 100 or equivalent. Associate Professor Nicodemus.

<sup>1</sup> For further description of the complete basic nursing program and programs for graduate nurses, see the Bulletin of the Department of Nursing Education.

- Ph 204, 205, 206. **Astronomy.** 3 hours each term. 2 ① 1 ②  
Descriptive treatment. Coordinate systems; astronomical instruments; the solar system; star types and groupings.
- \*Ph 207, 208, 209. **Engineering Physics.** 4 hours each term. 3 ① 2 ②  
Studies in general physics adapted to students in engineering. Prerequisite: Mth 103 or equivalent and calculus previously or concurrently. Assistant Professor Decker and others.
- \*Ph 211, 212. **Abridged General Physics.** 3 hours each term. 3 ① 1 ②  
Mechanics, heat, light, electricity. Sequence is started fall and winter.

#### Upper Division Courses

- Ph 311, 312, 313. **Introduction to Modern Physics.** 3 hours each term. 2 ① 1 ②  
Kinetic theory, the electron, radioactivity; photoelectricity, thermionic emission, X-rays, electronic devices, gaseous conduction, cosmic rays, nuclear physics. Prerequisite: Ph 203 or 209. Professor Brady and others.
- Ph 314, 315. **Mechanics.** 4 hours fall and winter. 3 ① 1 ②  
Statics and dynamics of particles; introduction to vector algebra, mechanics of rigid bodies, and potential theory. Prerequisite: Ph 203 or 209, Mth 203. Assistant Professor Trigg.
- Ph 331, 332, 333. **Electricity and Magnetism.** 3 hours each term. 2 ① 1 ②  
Electrical and magnetic theory and measurements. Prerequisite: calculus, previously or concurrently; Ph 203 or 209. Professor Varner.
- Ph 334. **Fundamentals of Radio.** 3 hours spring. 2 ① 1 ②  
Underlying principles; vacuum tubes; circuits; antennas and wave propagation. Prerequisite: Ph 203 or 209 or consent of instructor. Associate Professor Vinyard.
- Ph 337, 338, 339. **Electronics and Radio.** 3 hours each term. 2 ① 1 ②  
Alternating current theory; circuits; electron tubes; amplification; radio frequency generators; modulation; timing circuits; transmission and radiation; measurements at audio and high frequencies. Prerequisite: Ph 209 or 203 and a second year of approved physics or electrical engineering or equivalent. Associate Professor Vinyard.
- Ph 353. **Heat.** 4 hours spring. 3 ① 1 ②  
Heat theory and measurements; thermodynamics. Prerequisite: Ph 209 or 203, Mth 103. Professor Varner.
- Ph 361. **Photography.** 3 hours any term. 1 ① 2 ②  
Hand camera and its use, developing, printing, toning, enlarging. Prerequisite: college chemistry or physics or previous photographic experience with consent of instructor. Associate Professor Garman.
- Ph 362. **Commercial Photography.** 3 hours winter. 1 ① 2 ②  
View camera; copying, photography of small objects, lighting, photo-sketching, lantern slides, photographic solutions. Prerequisite: Ph 361. Associate Professor Garman.
- Ph 363. **Commercial Photography.** 3 hours spring. 1 ① 2 ②  
Continuation of Ph 362. Composition; exteriors, interiors, flashlights, telephoto lenses, infrared. Associate Professor Garman.
- Ph 365, 366. **Geometrical and Physical Optics.** 3 hours each term. 2 ① 1 ②  
Prerequisite: Ph 203 or Ph 209, and calculus.
- Ph 390. **Basic Meteorology.** 3 hours. 2 ① 1 ②  
Weather phenomena; weather instruments. Prerequisite: college physics.
- Ph 401. **Research.** Terms and hours to be arranged.

<sup>1</sup>The sequences Ph 201, 202, 203; Ph 207, 208, 209; and Ph 211, 212 cover somewhat similar ground and credit cannot be obtained for duplication. For any combination of courses for which either Ph 203 or Ph 209 is a terminal course a maximum of 12 term hours is allowed. Credit cannot be allowed for both Ph 207 and Ph 201; Ph 208 and Ph 202; Ph 209 and Ph 203. The maximum credit allowed for any combination of Ph 207, Ph 201, and Ph 211 or of Ph 209, Ph 203, and Ph 212 is 4 term hours.



- Ph 403. **Thesis.** Terms and hours to be arranged.
- Ph 405. **Reading and Conference.** Terms and hours to be arranged.
- Ph 407. **Seminar.** 1 hour each term. 1 ①
- Ph 411, 412, 413. **Biophysics.** (G) 3 hours each term. 2 ① 1 ②  
 Physical phenomena and measurements applied to biological problems. Prerequisite: one year of college physics; one year of college biology; senior standing in one of the biological or physical sciences. Offered alternate years. Not offered 1957-58. Professor Dempster.
- Ph 431, 432, 433. **Experimental Electronics and High-Frequency Measurements.** (G) 3 hours each term. 1 ① 2 ②  
 Special topics to fit needs of individual students. May include: microwaves; electronic and high-frequency techniques; modern electronic devices and research methods as applied to physics, chemistry, engineering, psychology, and medicine. Prerequisite: Ph 339 or EE 323. Offered alternate years. Offered 1957-58. Associate Professor Vinyard.
- Ph 434. **X-Rays.** (G) 3 hours. 2 ① 1 ③  
 Production, absorption, scattering, spectra, applications. Prerequisite: Ph 313, Mth 203.
- Ph 461, 462, 463. **Advanced Photography.** (G) 3 hours each term. 1 ① 2 ②  
 Color, X-ray, and ultraviolet photography; stereophotographs, photomicrography, photography of cathode ray screens. Students may enter any term. Prerequisite: Ph 362. Offered alternate years. Offered 1957-58. Associate Professor Garman.
- Ph 468. **Spectroscopy.** (G) 3 hours. 2 ① 1 ③  
 Instruments, sources, spectra; qualitative and quantitative analysis. Prerequisite: Ph 313.
- Ph 471, 472, 473. **Atomic and Nuclear Physics.** (G) 3 hours each term. 3 ①  
 Atomic and nuclear structure and subatomic particles as revealed by studies of photoelectricity, spectra, X-rays, radioactivity, etc. Prerequisite: calculus; Ph 313 or graduate standing in chemistry or engineering. Professor Dempster.
- Ph 491, 492, 493. **Meteorology.** (G) 3 hours each term. 3 ①  
 Theories of atmospheric process; air-mass and frontal analysis; evaluation of weather data; weather forecasting; theories of upper atmosphere measurements by rockets, sound-waves, radio-waves, meteorites, and sky radiation; structure of the atmosphere. Prerequisite: one year college physics; one year calculus; senior standing. Assistant Professor Decker.

#### Graduate Courses

*Courses at the graduate level are given when warranted by demand. An appended date indicates that the course is offered only in alternate years.*

Courses numbered 400-499 and designated (p) or (G) may be taken for graduate credit.

- Ph 501. **Research.** Terms and hours to be arranged.
- Ph 503. **Thesis.** Terms and hours to be arranged.
- Ph 505. **Reading and Conference.** Terms and hours to be arranged.
- Ph 507. **Seminar.** Terms and hours to be arranged.
- Ph 510. **Laboratory Arts.** Terms and hours to be arranged.  
 Demonstration and laboratory techniques; shop practice; care, adjustment, and design of apparatus. Prerequisite: one year of upper division college physics. Lectures, assigned readings, and laboratory. Staff.
- Ph 511, 512, 513. **Introduction to Theoretical Physics.** 3 hours each term. 3 ①  
 A mathematical treatment of the theories of classical physics. Required of all physics majors for the master's degree. Prerequisite: three years of approved physics, differential equations. Professor Dempster.

- Ph 514. **Physics of the Solid State.** 3 hours. 3 ①  
Dielectric properties; paramagnetism; free electron theory; semiconductors; transistor theory; imperfections. Prerequisite: Ph 313. Professor Brady.
- Ph 515. **Relativity.** 3 hours. 3 ①  
Relativity of uniform motion and its formulation through Lorentz transformation; applications to mechanics and electrodynamics; introduction to relativity of nonuniform motion. Prerequisite: Ph 513. Professor Dempster.
- Ph 517, 518, 519. **Quantum Mechanics.** 3 hours each term. 3 ①  
Schrodinger's equation; expectation values, transition probabilities, probability densities and currents; scattering; applications. Prerequisite: Ph 473, 513. Assistant Professor Trigg.
- Ph 521. **Dynamics.** 3 hours. 3 ①  
Lagrangian and Hamiltonian mechanics. Prerequisite: Ph 512. Professor Dempster.
- Ph 523. **Statistical Mechanics.** 3 hours. 3 ①  
Prerequisite: Ph 512. Professor Dempster.
- Ph 531, 532. **Electromagnetic Theory.** 3 hours each term. 3 ①  
Mathematical treatment of classical theories of electricity. Prerequisite: Ph 513. Offered alternate years. Offered 1957-58. Professor Varner.
- Ph 537, 538. **Conduction of Electricity Through Gases.** 3 hours each term. 3 ①  
Processes taking place at electrodes, in the gas, and at walls of tube; glow, arc, and spark discharges. Prerequisite: Ph 313. Professor Brady.
- Ph 551. **Thermodynamics.** 3 hours. 3 ①  
Thermodynamics and heat transfer. Prerequisite: three years of approved physics; Mth 433 or 563. Offered alternate years. Not offered 1957-58. Professor Varner.
- Ph 552. **Kinetic Theory.** 3 hours. 3 ①  
Prerequisite: three years of approved physics, Mth 423 or 433. Offered alternate years. Not offered 1957-58. Professor Varner.
- Ph 562, 563. **Physical Optics.** 3 hours each term. 3 ①  
Electromagnetic theory of light; theory of optical instruments. Prerequisite: Ph 366, 513. Offered alternate years. Offered 1957-58.
- Ph 573. **Nuclear Physics.** 3 hours. 3 ①  
Selected topics, such as neutron physics, properties and interaction of nuclei; fission; elementary pile theory. Prerequisite: Ph 473. Associate Professor Nicodemus.
- Ph 574. **Selected Topics in Theoretical Physics.** 3 hours 3 ①  
Theoretical nuclear physics; relativistic quantum mechanics; quantum electrodynamics; nuclear forces; elementary particles; general theory of relativity; theoretical astrophysics; reactor theory. Topics vary from year to year. May be repeated for credit. Prerequisite: Ph 515, 519. Assistant Professor Trigg.
- Ph 575, 576, 577. **Experimental Nuclear Physics.** 3 hours each term. 2 ③  
Cyclotron technology; detectors and counters; nuclear reactions; scattering; production of radioisotopes. Prerequisite: Ph 573. Assistant Professor Schecter.

## Science Education

Professional preparation for prospective teachers of biological and physical science and mathematics is offered by the Department of Science Education, a joint department within the School of Science and the School of Education. Students preparing to teach science in secondary schools may major in one of the sciences, or in general science, according to the degree or emphasis on subject matter or professional preparation. Combination of subjects to be taught and scope of preparation desired influence the choice of major school.

The requirements for the State High School Teacher's Certificate and list of approved teaching majors and minors in science on page— may be supple-

mented by additional courses in the several fields. Teaching majors in general biology, general science, mathematics, and physical science provide electives that permit flexibility in selection of courses. The major in health education is made up of required courses and may well be augmented by additional courses in biology and related fields. A wide range of health-education courses is available in the schools of Science, Education, Agriculture, Engineering, and Home Economics, and the Division of Physical Education. Both undergraduate and graduate majors in hygiene and sanitation are offered in the Department of Bacteriology and Hygiene.

#### Lower Division Courses

- SEd 123. **Introduction to Health Education.** 3 hours spring. 3 ①  
 Historical background and underlying philosophy of health education; study of statistical facts that indicate need for health education; survey of modern practices in, and organizations for, health education; opportunities for professional work in field.
- F 260. **Conservation of Natural Resources.** (See FORESTRY.)

#### Upper Division Courses

- SEd 321. **School Health Education.** 3 hours. 3 ①  
 Procedures, processes, and techniques in developing ability of public school student to understand and guide his own health and to contribute to health of community. Prerequisite: SEd 123 or junior standing.
- SEd 322. **School Health Services.** 3 hours. 3 ①  
 School procedures in development, maintenance, and protection of health of student; organization of services, examinations, screening, special services, communicable disease control, emergency care, school environment, forms and records. Prerequisite: SEd 123 or junior standing.
- SEd 401. **Research.** Terms and hours to be arranged.
- SEd 403. **Thesis.** Terms and hours to be arranged.
- SEd 405. **Reading and Conference.** Terms and hours to be arranged.
- SEd 407. **Seminar.** Terms and hours to be arranged.
- Ed 408. **Special Secondary Methods.** 3 hours any term.  
 (b) Biological Science. (f) Mathematics. (g) Physical Science. See Ed 408 under SCHOOL OF EDUCATION.
- GS 411, 412, 413. **History of Science.** (G) (See GENERAL SCIENCE.)
- GS 421, 422, 423. **Classics of Science.** (G) (See GENERAL SCIENCE.)
- SEd 431, 432, 433. **School Health Problems.** (G) 3 hours each term. 3 ①  
 Maintenance of health of school children; communicable diseases; school sanitation; planning of school buildings; health of school child; hygiene instruction. Prerequisite: Ed 310, 312, and one year of upper division biology. Professor Langton.
- SEd 441, 442, 443. **Health Education.** (G) 3 hours each term. 3 ①  
 Philosophy and principles of health education; organization and administration; health education curriculum; coordination of school health activities with other health resources. Prerequisite: one year of upper division biological science and SEd 321 and 322, or equivalent.
- SEd 481. **Alcohol Studies in School Curriculum.** (G) 3 hours. 3 ①  
 Incorporation of scientific information about alcohol in school curriculum; physiological, psychological, sociological, and legal aspects of alcoholism. Prerequisite: 24 hours upper division education.

#### Graduate Courses

Courses numbered 400-499 and designated (p) or (G) may be taken for graduate credit.

- SEd 501. Research. Terms and hours to be arranged.
- SEd 503. Thesis. Terms and hours to be arranged.
- SEd 505. Reading and Conference. Terms and hours to be arranged.
- SEd 507. Seminar. Terms and hours to be arranged.  
Current trends in science education; administration of science education; evaluation techniques in science instruction; science in general education.
- Ph 510. Laboratory Arts. (See PHYSICS.)
- SEd 521. Physical Growth and Development. 3 hours. 3 ①  
Normal physical changes from birth to adulthood with consideration of deviation; determination and appraisal of levels of growth and development. Prerequisite: Consent of instructor.
- SEd 598. Science Curriculum in Secondary Schools. 3 hours. 3 ①  
Trends, problems, and procedures in junior high and secondary school science program. Prerequisite: 24 hours upper division education including Ed 416. Associate Professor Williamson.

## Statistics

The Department of Statistics offers three beginning courses, each designed to fit the needs of a particular group of students. St 311, a terminal course, is intended for the undergraduate student who desires only a cursory view of the field of statistics. The sequence St 314, 315 is intended to acquaint the undergraduate student with the basic techniques of statistics. The sequence St 421, 422, 423 is designed for prospective research workers and is taught as the technology of scientific method. Therefore only graduate students and seniors who contemplate graduate study are encouraged to enroll for this series.

A graduate student may take statistics as a split or full minor for an advanced degree in another field. It is being contemplated that a master's degree in statistics will be offered in the near future.

The Department also operates a limited consulting and computing service available to the faculty of the college.

### Upper Division Courses

- St 311. Introduction to Statistics. 3 hours. 2 ① 1 ②
- St 314, 315. Basic Techniques. 3 hours each term. 3 ①  
Prerequisite: Junior standing; Mth 100 or equivalent.
- St 401. Research. Terms and hours to be arranged.
- St 405. Reading and Conference. Terms and hours to be arranged.
- St 407. Seminar. Terms and hours to be arranged.
- St 421, 422, 423. Methods for Research. (G) 3 hours each term. 3 ①  
Prerequisite: Senior standing; Mth 100 or equivalent. Professor Li.
- St 424. Regression Analysis. (G) 3 hours. 2 ① 1 ②  
Use and interpretation of linear, curvilinear, and multiple regression methods. Prerequisite: St 422. Associate Professors Calvin, Korzan.
- St 425. Analysis by Least Squares. (G) 3 hours. 3 ①  
Application of method of least squares to general linear regression models; analysis of nonorthogonal experimental data. Prerequisite: St 422. Assistant Professor Petersen.

St 434. **Design of Experiments.** (G) 3 hours. 3 ①  
Principles used in designing experiments; general comparison of designs; interpretation of results. Prerequisite: St 422. Associate Professor Calvin.

St 441. **Sampling Methods.** (G) 3 hours. 3 ①  
Simple and stratified random sampling; ratio and regression estimates; estimation of sample size; special sampling techniques. Prerequisite: St 315 or 422. Associate Professor Calvin.

#### Graduate Courses

Courses numbered 400-499 and designated (P) or (G) may be taken for graduate credit.

St 501. **Research.** Terms and hours to be arranged.

St 503. **Thesis.** Terms and hours to be arranged.

St 505. **Reading and Conference.** Terms and hours to be arranged.

St 507. **Seminar.** Terms and hours to be arranged.

St 521, 522, 523. **Theory.** 3 hours each term. 3 ①  
Sampling distributions, estimation, and test of hypothesis. Prerequisite: Mth 203, St 422. Assistant Professor Link.

## Zoology

Basic requirements for an undergraduate major in zoology, whether for a liberal arts degree or as preparation for professional study at the graduate level, are included in the Curriculum in Zoology printed on a previous page. The eight term hours of approved electives in invertebrate zoology may be taken at a marine station.

The undergraduate student must also select one of the following options:

A. Minimum of nine term hours selected from: Natural History of Oregon III (Z 376), Ornithology (Z 371), Mammalogy (Z 372), Herpetology (Z 473), Animal Ecology (Z 483).

B. Eight or more term hours selected from: Comparative Vertebrate Histology (Z 461), Microtechnique (Z 462), Experimental Embryology (Z 463).

C. Microtechnique (Z 462) and any two of the courses listed under option A, above.

Graduate students who have met the basic requirements for an undergraduate major in zoology may specialize in one of the following areas: (1) anatomy and embryology, (2) physiology, (3) invertebrate zoology and parasitology, (4) cellular biology, (5) natural history and ecology, (6) genetics. The department is well equipped for graduate study and research in each of these areas and has a well trained and diversified staff.

Both undergraduate and graduate majors in zoology are urged to attend a summer session at a marine station or at an inland field laboratory. Candidates for the Doctor of Philosophy degree are strongly advised to spend one summer at a marine station.

#### Lower Division Courses

<sup>1</sup>Z 114, 115, 116. **Human Biology.** 3 hours each term. 3 ①  
Science as a process; characteristics of living organisms; maintenance of the individual; maintenance of the species; interrelationships; human populations; history of life on earth. Professor Anderson.

<sup>1</sup> Credit is granted for only one of the following combinations: Z 114, 115, 116; or Z 201, 202, 203; or Z 200, 203.

- Z 117, 118, 119. **Human Biology Laboratory.** 1 hour each term. 1 ②  
Laboratory work to accompany Z 114, 115, 116. Professor Anderson.
- <sup>1</sup>Z 200. **General Zoology.** 5 hours spring. 3 ① 2 ③  
Introduction to basic topics in present-day zoology. For students of biology, agriculture, and others. Professor de Laubenfels.
- <sup>1</sup>Z 201, 202, 203. **General Zoology.** 3 hours each term. 2 ① 1 ③  
For zoology majors and premedical, pre dental, prenursing, pharmacy, physical education, psychology, fish and game management students, and others. Professor de Laubenfels.

#### Upper Division Courses

- Z 321, 322. **Elementary Human Anatomy.** 3 hours each term, fall and winter. 2 ① 1 ②  
Designed especially to meet the needs of physical education students. Prerequisite: Z 114, 115, 116, or equivalent. Professor Allman.
- Z 323. **Applied Human Anatomy.** 3 hours spring. 2 ① 1 ②  
For physical education students. Prerequisite: Z 321, 322. Professor Allman.
- Z 324, 325. **Comparative Vertebrate Anatomy.** 4 hours winter and spring. 2 ① 2 ③  
Gross dissection and comparison of organ systems in representative vertebrates. Prerequisite: Z 200 or Z 202 or Z 116. Professor Hillemann.
- Z 326. **Comparative Vertebrate Embryology.** 4 hours fall. 2 ① 2 ③  
Comparative study of development of several representative vertebrate forms. Prerequisite: Z 200 or Z 202 or Z 116. Professor Hillemann.
- Z 331, 332. **Physiology.** 3 hours fall and winter, or winter and spring. 2 ① 1 ②  
For students in home economics, medical technology, pharmacy, and physical education; not for zoology majors. Prerequisite: Z 200, Z 202, or Z 116; or one year of any laboratory science as required in home economics. Assistant Professor Pritchard.
- Z 336. **Applied Human Physiology.** 3 hours spring. 2 ① 1 ②  
For students in physical education. Prerequisite: Z 331, 332. Professor Allman.
- Z 341. **Genetics.** 3 hours fall and spring. 3 ①  
The gene as basis of variation and heredity; introduction to principles of genetics. Prerequisite: college course in zoology, botany, or biology. Assistant Professor Mohler.
- Z 345. **Evolution.** 3 hours winter. 3 ①  
Evidences of evolution; mechanisms of evolution, including genetic variation, selection, isolation, etc. Prerequisite: Z 341. Assistant Professor Mohler.
- Z 371. **Ornithology.** 3 hours spring. 2 ① 1 ③  
Structure, classification, distribution, and life habits of birds. Prerequisite: Z 200 or Z 202, or consent of instructor. Associate Professor Storm.
- Z 372. **Mammalogy.** 3 hours winter. 2 ① 1 ③  
Classification, distribution, life habits, and identification of mammals. Prerequisite: Z 200 or Z 202, or consent of instructor. Associate Professor Storm.
- Z 374, 375. **Natural History of Oregon I, II.** 3 hours each term, fall and winter. 2 ① 1 ③  
Environment: influence of topography, climate, and plant cover on distribution of animals. Common invertebrates; local distribution, habits, collection and maintenance in laboratory. Prerequisite: one year of biology. Professor Gordon.
- Z 376. **Natural History of Oregon III.** 4 hours spring. 2 ① 2 ③  
Identification, distribution, and habits of common land vertebrates. Prerequisite: Z 374, 375, or consent of instructor. Professor Gordon.
- Z 401. **Research.** Terms and hours to be arranged.

<sup>1</sup> Credit is granted for only one of the following combinations: Z 114, 115, 116; or Z 201, 202, 203; or Z 200 and Z 203.

- Z 403. Thesis. Terms and hours to be arranged.
- Z 405. Reading and Conference. Terms and hours to be arranged.  
Reading and reports on special topics.
- Z 407. Seminar. 1 hour each term. 1 ①
- Z 434, 435, 436. Comparative Physiology. (G) 3 hours each term.  
2 ① 1 ③  
Comparison of physiological systems among major animal groups, with emphasis on physiological adaptations to environmental stresses. Prerequisite: two years of zoology and one year of general chemistry. Assistant Professor Pritchard.
- Z 442. *Drosophila* Genetics. (G) 2 hours spring. 2 ③  
Experiments on *Drosophila* to illustrate operation of hereditary mechanisms. Prerequisite: Z 341. Assistant Professor Mohler.
- Z 451, 452. Invertebrate Zoology. (G) 4 hours each term, winter and spring. 2 ① 2 ③  
Structure, classification, distribution, and life histories of the invertebrates. Prerequisite: two years of zoology. Professor Pratt.
- Z 456. Parasites of Man. (G) 4 hours fall. 2 ① 2 ③  
Identification, bionomics, prophylaxis, treatment, and geographic distribution. Prerequisite: two years of biology. Professor Pratt.
- Z 457. Parasites of Fish. (G) 2 hours fall. 1 ① 1 ③  
Life histories, identification, economic importance, and control of commoner parasites of fish. Prerequisite: two years of biology. Professor Pratt.
- Z 461. Comparative Vertebrate Histology. (G) 5 hours fall. 3 ① 3 ②  
Comparative microscopic study of tissues and organs, with special attention to their evolutionary relationships and functional adaptations. Prerequisite: Z 324, 325, 326. Professor Dornfeld.
- Z 462. Microtechnique. (G) 4 hours winter. 1 ① 3 ③  
Principles and practice in methods of preparing histological, embryological and cytological specimens for microscopic study. Prerequisite: two years of biology. Professor Dornfeld.
- Z 463. Experimental Embryology. (G) 4 hours spring. 3 ① 1 ③  
Mechanics of cleavage and gastrulation; inductors and organizers; gradient fields; integration; regeneration; genic action. Prerequisite: Z 324, 325, 326. Professor Dornfeld.
- Z 473. Herpetology. (G) 3 hours fall. 2 ① 1 ③  
Classification, distribution, life habits, and identification of amphibians and reptiles. Prerequisite: two years of zoology and consent of instructor. Associate Professor Storm.
- Z 475. Methods in Field Zoology. (G) 4 hours spring. 2 ① 2 ③  
Problems, principles, and methods in field zoology, including wildlife photography. Prerequisite: two years of upper division biology. Associate Professor Storm.
- Z 483. Animal Ecology. (G) 3 hours fall. 2 ① 1 ③  
Living animals in relation to their environment. Prerequisite: two years of biology, or consent of instructor. Professor Gordon.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G)  
may be taken for graduate credit.

- Z 501. Research. Terms and hours to be arranged.
- Z 503. Thesis. Terms and hours to be arranged.
- Z 505. Reading and Conference. Terms and hours to be arranged.
- Z 507. Seminar. Terms and hours to be arranged.

- Z 508. Advanced Field Zoology.** 2 to 6 hours.  
Methods used in field work; intensive studies of limited areas. Conducted field trips of variable length as conditions require. Prerequisite: senior or graduate standing and consent of instructor. Professor Gordon and staff.
- Z 510. Zoological Literature.** 1 hour fall. 1 ①  
Use of zoological literature; character of zoological journals and reference works. Prerequisite: one year of upper division zoology. Professor de Laubenfels.
- Z 512. Principles of Systematic Zoology.** 2 hours winter. 2 ①  
History, principles, and practice of zoological taxonomy. Prerequisite: two years of zoology, including a course in genetics. Professor de Laubenfels.
- Z 513. History of Zoology.** 3 hours winter. 3 ①  
Rise and development of zoological theories and laws. Prerequisite: one year of upper division zoology. Professor Hillemann.
- Z 521. Organogeny and Fetal Physiology.** 4 hours fall. 2 ① 2 ③  
Lectures on embryonic and fetal physiology; laboratory work on the later stages of morphogenesis (organogeny); student projects in developmental anatomy and physiology. Prerequisite: Z 331, 332, and 326 or equivalent. Professor Hillemann.
- Z 531, 532, 533. Mammalian Physiology.** 3 hours each term. 3 ①  
Neuromuscular system, central nervous system, autonomic system, circulation, respiration, gastro-enterology, kidney secretion, metabolism. Prerequisite: general zoology, histology, comparative vertebrate anatomy, general chemistry or equivalents. Professor Krueger.
- Z 534, 535, 536. Mammalian Physiology Laboratory.** 2 hours each term. 2 ③  
Laboratory work accompanying Z 531, 532, 533. Professor Krueger.
- Z 542, 543. Theoretical Genetics.** 3 hours fall and winter. 3 ①  
Genetical phenomena discussed at advanced levels with emphasis on contemporary problems in research. Prerequisite: Z 341 or equivalent. Assistant Professor Mohler.
- Z 551. Biology of Protozoa.** 3 hours fall. 2 ① 1 ③  
Morphology, physiology, and ecology of freshwater, marine, terrestrial, and parasitic protozoa. Prerequisite: Z 451, 452. Professor Pratt.
- Z 553. Invertebrate Embryology.** 3 hours spring. 2 ① 1 ③  
Cleavage, organogeny, and larval development of marine and freshwater invertebrates. Prerequisite: Z 451, 452. Professor Pratt.
- Z 558. Parasitology.** 3 hours winter. 2 ① 1 ③  
Collection, preparation, and identification of parasites; culturing of parasitic forms; systematics; evolution and phylogeny of parasitism. Prerequisite: Z 456 or 457 or equivalent. Professor Pratt.
- Z 561, 562, 563. Biology of the Cell.** 3 hours each term. 2 ① 1 ③  
Structure, physics, and chemistry of cellular components; cellular physiology; chromosomes in genetics and evolution; problems of differentiation. Prerequisite: Z 461, 462, 463. Professor Dornfeld.
- Z 565. Microscopic Cytochemistry.** 3 hours fall. 2 ① 1 ③  
Identification and localization of chemical substances in cells and tissues. Prerequisite: Z 461, 462, Z 561, 562, 563, and biochemistry. Professor Dornfeld.
- Z 571, 572, 573. Ichthyology.** 3 hours each term. 2 ① 1 ③  
Taxonomy of orders and families of fishes; intensive study of morphology, distribution, and ecology of selected groups and species. Prerequisite: FG 274, 275, 276, or equivalent. Assistant Professor Bond.
- Z 581. Zoogeography.** 3 hours winter. 3 ①  
Factors affecting distributions of animals; general principles; faunal areas of world and of North America. Prerequisite: Z 371, 372, and 483, or consent of instructor. Professor Gordon.



# School of Agriculture

## Faculty

- FREDERICK EARL PRICE, B.S., Dean of the School of Agriculture.  
WILBUR TARLTON COONEY, M.S., Associate Dean of the School of Agriculture.  
WILLIAM MARTIN LANGAN, B.S., Agricultural Student Personnel Adviser.  
WILLIAM ALFRED SCHOENFELD, M.B.A., Professor Emeritus of Agriculture (Dean, School of Agriculture 1931-50).
- Agricultural Economics:** Professors WOOD (department head), BLANCH<sup>1</sup>, HOLLANDS, MUMFORD, POTTER (emeritus); Associate Professors DAVIS, KORZAN, PLATH; Assistant Professors BECKER, BROWN, CASTLE, CHRISTENSEN, SITTON.
- Agricultural Education:** Associate Professor TEN PAS (department head); Assistant Professor AGAN.
- Agricultural Engineering:** Professors RODGERS (department head), GILMORE (emeritus), LUNDE, SINNARD; Associate Professors CROPEY, KIRK, WOLF; Assistant Professors BONNICKSEN, LONG; Instructors BOOSTER, RILEY.
- Animal Husbandry:** Associate Professor LANDERS (acting chairman); Professors MCKENZIE<sup>2</sup>, BOGART, HAAG, KRUEGER, NELSON (emeritus); Associate Professors HEDRICK, JOHNSON, OLDFIELD, OLIVER, POULTON; Assistant Professor FOX; Instructors CHURCH, RUTLAND, WU.
- Dairying:** Professors BRANDT (department head), JONES, RICHARDSON, WILSTER; Associate Professors STEIN, WOLBERG; Instructors SPROWLS, YOUNG<sup>3</sup>.
- Extension Methods:** Professor CHARLES W. SMITH.
- Farm Crops:** Professors HILL (department head), COWAN<sup>4</sup>, FORE; Associate Professors FOOTE, HEDRICK, JENSEN, MCGUIRE, POULTON; Assistant Professor SCHUDEL; Instructors CHILCOTE, FURTICK.
- Fish and Game Management:** Professors DIMICK (department head), DOUDOROFF, EINARSEN; Associate Professors BOND, KATZ, KUHN, LONG; Assistant Professors WARREN, SCHNEIDER.
- Food Technology:** Professors SCHULTZ (department head), LITWILLER, WIEGAND (emeritus); Associate Professors CAIN, ONSDORFF, WORTHINGTON, YANG; Assistant Professors SAMUELS, WILDER, DIETZ; Instructor BOCKIAN.
- Horticulture:** Professors APPLE (department head), BOUQUET (emeritus), FRAZIER, HANSEN, HARTMAN; Associate Professors COMPTON, ROBERTS, WADSWORTH, ZIELINSKI; Assistant Professors BLANEY, GARREN; Instructors CLARKSON, MACK, WAGNER.
- Poultry Husbandry:** Professors PARKER (department head), BERNIER; Associate Professor HARPER; Assistant Professor ARSCOTT; Instructor MCCLUSKEY.
- Soils:** Professors CHENEY (department head), POWERS (emeritus), RUZEK (emeritus), STEPHENSON (emeritus); Associate Professors EVANS, YOUNGBERG; Assistant Professors ALBAN, DAWSON, HARWARD, KNOX; Instructor KIRSCH.
- Veterinary Medicine:** Professors DICKINSON (department head), SCHNAUTZ<sup>4</sup>, SHAW; Assistant Professor BONE.

## General Statement

**P**ROGRAMS OF STUDY in the School of Agriculture cover a wide variety of professional and vocational fields in agriculture and related industries. The School seeks to assist young men and women to become good farmers, stockmen, dairymen, poultrymen, or fruit or truck crop growers and wise users of the land and related resources; to become efficient managers of farm or orchard properties, commercial creameries, cheese plants, ice cream factories, market milk plants, and other enterprises in which a knowledge of practical and scientific agriculture is of value; to serve as agricultural advisers and land appraisers for banks, trust companies, land companies, and realtors; to become specialists in the U.S. Department of Agriculture and the Department of the Interior; to work in agricultural colleges as teachers, investigators, extension specialists, or county extension agents; to serve as teachers of agriculture in secondary schools; to become specialists in research and control laboratories and in sales departments of industries related to or serving agriculture.

<sup>1</sup> On detached duty. Kasetsart University, Thailand; see page 85.

<sup>2</sup> On leave.

<sup>3</sup> On sabbatical leave

<sup>4</sup> On leave 1957-58

The School also prepares students for employment with manufacturers and dealers in farm implements, machinery, equipment, and building materials; for work in food procurement, marketing, and preservation; and for work in landscape construction and maintenance and nursery management.

Two curricula are offered for students planning to enter the fields of wildlife management, fur farming, and fisheries. Many of the courses in these programs are also available to students in allied fields who wish to understand the practical aspects of wildlife conservation, especially as it relates to the livestock industry and public land-use problems.

Other study programs lead directly into graduate work and the attainment of advanced degrees such as Master of Agriculture, Master of Science, or Doctor of Philosophy. Specialized and technical fields of work and research require this additional training in order that the individual may be adequately prepared to engage in tasks that will confront him.

Oregon State College, through the School of Agriculture, is cooperating with the Conference on Relationships between Colleges of Agriculture and Theological Seminaries to afford students who are preparing to enter the rural "town and country" ministry the opportunity to complete a major in agriculture before entering a theological seminary.

Major courses of study and curricula are listed on following pages.

**High school preparation.** Because of ever-increasing technical developments in agriculture, all students, regardless of major interest, should come to college prepared to study basic sciences, particularly chemistry, bacteriology, botany, zoology, and entomology. In many programs of study physics is essential. Courses in economics and marketing are required in most curricula. Each student should possess a good understanding of fundamental principles of grammar and be able to demonstrate these principles through effective oral and written expression. He should also be able to demonstrate a reasonable degree of competence in arithmetic, algebra, and geometry. Study in agriculture requires an ability to perceive, analyze, and work with problems involving surface areas, configurations, volumes, and equations in which at least one unknown exists. The ability to work with problems involving fractions, percentages, and proportions is necessary. Students in agriculture should be completely familiar with weights and measures in the metric system. The ability to read rapidly with good comprehension and to study effectively is extremely valuable.

**Individual counseling.** Every student is an important individual, and his or her study program will be developed with the aid of efficient and sympathetic counselors to assure maximum benefits from college work. Where previous preparation is found inadequate, the student will be encouraged to enroll in courses that will provide training and experience necessary to help assure success at college level even though such work may require one or more additional terms to complete a prescribed four-year curriculum. Faculty members of the School of Agriculture accept their responsibility to provide each student with opportunities for discovering, improving, and developing an appreciation of social, aesthetic, and ethical values. These opportunities are provided through the many courses offered on the campus and through the extracurricular student activities. This school is dedicated to the philosophy of promoting the well-being of each student to the extent of his capacity.

**Navy ROTC.** In any of the curricula which follow, students desiring to register for Naval Science instead of Air or Military Science should consult with the Dean of Agriculture.

## Curricula for Undergraduates

### Common Freshman Year

	Term hours		
	F	W	S
General Chemistry (Ch 101, 102, 103) .....	3	3	3
General Botany (Bot 201, 202).....	3	3	---
Intermediate Algebra (Mth 100) or equivalent.....	---	---	4
<sup>1</sup> Elements of Agronomy I (FC 111), Elements of Horticulture (Hrt 111), Introduction to Agricultural Economics (AEc 111).....	3	3	3
<sup>1</sup> Introduction to Animal Husbandry (AH 121), Introduction to Dairying (D 121), Poultry Production (PH 121).....	3	3	3
Air or Military Science.....	1	1	1
Physical Education.....	1	1	1
	14	14	15

### Common Sophomore Year

	Term hours		
	F	W	S
English Composition (Wr 111, 112, 113) .....	3	3	3
<sup>2</sup> Biochemistry, Statistics, or Journalism.....	5	(3-5)	(3)
<sup>3</sup> Elements of Agronomy II (FC 211), or Plant Propagation (Hrt 311).....	3	3	(3)
Soils (Sls 211, 212).....	3	3	---
<sup>4</sup> General Zoology (Z 200), Extempore Speaking (Sp 111), or Physical Geology (G 200).....	(3)	(3)	3-5
Principles of Economics (Ec 201, 202, 203) or Outlines of Economics (Ec 212); Practical Psychology (Psy 212); General Sociology (Soc 212).....	3	3	3
Agricultural Engineering Survey (AE 211).....	(3)	3	(3)
Principles of Farm Management (AEc 211).....	(5)	---	5
Air or Military Science.....	1	1	1
Physical Education.....	1	1	1
	14-16	14-17	16-18

### Curriculum in General Agriculture

#### B.S. Degree

(See Common Freshman and Sophomore years.)

#### Junior Year

	Term hours		
	F	W	S
General Bacteriology (Bac 204).....	(3)	3	---
Introduction to Economic Entomology (Ent 314).....	---	4	---
Extempore Speaking (Sp 111).....	(3)	3	(3)
Genetics (Z 341).....	3	---	(3)
American Governments (PS 201).....	(3)	(3)	3
Elementary Journalism (J 111).....	3	(3)	(3)
Principles of Accounting (BA 211).....	(3)	(3)	3
Food Industries Survey (FI 340).....	---	3	---
<sup>5</sup> Electives .....	11	4	11
	17	17	17

#### Senior Year

Principles of Agricultural Marketing (AEc 341).....	3	(3)	---
Farm Buildings (AE 361), or House Planning and Architectural Draw- ing (AA 178).....	3	(3)	(3)
Business Law (BA 411).....	---	---	3
Diseases of Livestock (VM 341) or Principles of Plant Pathology (Bot 351).....	4	---	---
Elective in animal or plant nutrition .....	---	3	---
<sup>5</sup> Electives .....	7	14	13
	17	17	16

<sup>1</sup> Students may take only one of these three courses any one term.

<sup>2</sup> Animal husbandry students take Organic and Agricultural Biochemistry (Ch 251); agricultural economics students take Introduction to Statistics (St 311); agricultural journalism students take Elements of Journalism (J 111).

<sup>3</sup> Horticulture students take Plant Propagation (Hrt 311). Poultry students may take Incubation (PH 321) as sophomores and Elements of Agronomy II (FC 211) as juniors.

<sup>4</sup> Dairying and animal and poultry husbandry students take General Zoology (Z 200). Soils students take Physical Geology (G 200).

<sup>5</sup> Electives selected in conference with adviser and Dean to include a total of at least 45 upper division hours with 24 in agriculture.

### Curriculum in General Agriculture with Minor in Journalism

*B.S. Degree*

(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
Soil Management and Conservation (Sls 314).....	.....	.....	4
Editorial Writing (J 223) or approved elective.....	3	.....	.....
Public Information Methods (J 318).....	.....	.....	3
Elementary Journalism (J 112).....	.....	.....	3
Journalism Projects (J 351, 352, 353) or approved electives.....	2	2	2
Photography (Ph 361).....	.....	2-3	.....
Principles of Agricultural Marketing (AEc 341).....	.....	.....	3
Introduction to Economic Entomology (Ent 314).....	4	(4)	.....
Electives (upper division courses in agriculture).....	3	3	3
Electives.....	5	6	3
	17	16-17	18
<b>Senior Year</b>			
Special Feature Articles (J 317).....	.....	3	.....
Technical Writing (J 319).....	.....	3	.....
Radio Speaking (Sp 361, 362, 363).....	3	3	3
American Governments (PS 201).....	3	.....	.....
Soil Fertility Lectures (Sls 424).....	.....	3	.....
Farm Crops (upper division).....	.....	.....	3
Horticulture (upper division).....	3	.....	.....
Dairy Production (upper division).....	3	.....	.....
Animal Husbandry (upper division).....	.....	.....	3
Electives.....	4	5	7
	16	17	16

### Curriculum in Agricultural Economics

*B.S. Degree*

(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
Applied Agricultural Economics (AEc 312).....	3	.....	.....
Principles of Agricultural Marketing (AEc 341).....	(3)	3	.....
Principles of Accounting (BA 211).....	(3)	3	.....
Practical Psychology (Psy 212).....	.....	.....	3
Sociology of Rural Life (Soc 364) or General Sociology (Soc 212).....	3	(3)	.....
American Governments (PS 201).....	.....	3	3
Introduction to Statistics (St 311).....	12	6	11
Electives.....	18	15	17
<b>Senior Year</b>			
Farm Organization (AEc 414).....	3	.....	.....
Current Economic Theory and Problems (Ec 475,476,477).....	3	3	3
Agricultural Finance (AEc 431).....	.....	.....	3
Agricultural Land Economics (AEc 462).....	.....	3	.....
Agricultural Prices (AEc 451).....	3	.....	.....
Agricultural Policy (AEc 411).....	.....	.....	3
Seminar (AEc 407).....	1	1	1
Electives.....	8	9	8
	18	16	18

In cooperation with production departments concerned, students may emphasize the marketing of fruits, vegetables, dairy products, poultry, livestock, or farm crops.

For B.S. degree, students take at least 36 term hours in science or 36 term hours in social science or 45 term hours in science and social science.

**Curriculum in Agricultural Education**

*B.S. Degree*

(See Common Freshman year.)

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
Outlines of Economics (Ec 212).....	3	(3)	(3)
Soils (Sls 211, 212).....	3	3	---
Principles of Agricultural Marketing (AEc 341).....	(3)	3	---
Elements of Agronomy II (FC 211).....	(3)	3	---
Stock Judging and Selection (AH 131).....	3	(3)	---
Principles of Farm Management (AEc 211).....	---	---	5
General Psychology (Psy 201, 202).....	(3)	3	3
American Governments (PS 201).....	(3)	(3)	3
Elementary Journalism (J 111).....	(3)	(3)	3
Vocational Education in Agriculture (AEEd 220).....	2	---	---
Air or Military Science.....	1	1	1
Physical Education.....	1	1	1
	16	17	19

<b>Junior Year</b>			
Animal Nutrition I (AI 311).....	4	---	---
Forging and Welding (IE 250).....	2	(2)	---
Farm Motors and Tractors (AE 311).....	(3)	(3)	3
Farm Mechanics (AE 221).....	(3)	3	---
Farm Organization (AEc 414).....	3	---	---
Principles of Accounting (BA 211).....	---	3	---
Applied Agricultural Economics (AEc 312) or Agricultural Appraisal (AEc 425).....	---	---	3
Diseases of Livestock (VM 341).....	4	---	---
School in American Life (Ed 310).....	(3)	3	(3)
Educational Psychology: Learning (Ed 312).....	(3)	3	(3)
Program Report Analysis (AEEd 411).....	---	---	2
<sup>1</sup> Special Secondary Methods (Ed 408).....	---	---	3
General Bacteriology (Bac 204).....	---	3	---
Air or Military Science or electives.....	3	3	3
Electives.....	---	---	3
	16	18	17

<b>Senior Year</b>			
<sup>1</sup> Special Secondary Methods (Ed 408).....	(3)	3	(3)
Seed Production (FC 414) or Forage Crops (FC 324).....	3	---	(3)
<sup>2</sup> Student Teaching: Secondary (Ed 416).....	(9)	9	---
History of Pacific Northwest (Hst 478).....	3	(3)	(3)
Oregon School Law and Organization (Ed 476).....	2	(2)	(2)
The Agricultural Curriculum (AEEd 417).....	---	---	3
<sup>2</sup> Program Report Analysis (AEEd 411).....	3	(3)	(3)
<sup>2</sup> Reading and Conference (AEEd 405).....	(3)	(3)	3
Introduction to Economic Entomology (Ent 314).....	4	---	---
Air or Military Science or electives.....	3	3	10
	18	15	16

**Curricula in Animal Husbandry**

*B.S. Degree*

*Animal Husbandry*

*Range Management (See page 210)*

**Animal Husbandry**  
(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
Genetics (Z 341).....	3	---	---
Anatomy of Domestic Animals (VM 320).....	3	---	---
Physiology of Domestic Animals (VM 321, 322).....	---	3	3
General Bacteriology (Bac 204).....	---	3	---
Animal Breeding (AI 316).....	---	3	---
Principles of Agricultural Marketing (AEc 341).....	3	---	---
Business Law (BA 411).....	---	---	3
American Governments (PS 201).....	3	---	---
Extempore Speaking (Sp 111).....	---	---	3
Electives.....	6	9	9
	18	18	18

<sup>1</sup> Ed 408 may be taken two terms (total 6 term hours). Sequence should begin spring term, junior year.

<sup>2</sup> Student teaching will be offered in the fall or winter term and will consist of one full term away from the College while registered for Ed 416, 9 term hours; AEEd 411, 2 term hours; and AEEd 405, 3 term hours.

	Term hours		
	F	W	S
<b>Senior Year</b>			
Animal Nutrition II (AI 411).....	4	---	---
Diseases of Livestock (VM 441, 442, 443).....	3	3	3
Range Management (AH or FC 341).....	3	---	---
Livestock Economics (AEc 440).....	3	---	---
Seminar (AH 407).....	---	---	1
Elementary Journalism (J 111).....	---	3	---
Electives.....	4	10	12
	17	16	16

### Curricula in Dairying

#### B.S. Degree

#### Milk Production

#### Milk Processing

#### Milk Industry Management

#### Milk Production

(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
General Bacteriology (Bac 204).....	---	3	---
Anatomy of Domestic Animals (VM 320).....	3	---	---
Physiology of Domestic Animals (VM 321).....	---	3	---
Diseases of Livestock (VM 341).....	4	---	---
Dairy Herd Management (D 322).....	3	---	---
Dairy Cattle Judging (D 321).....	---	---	3
Dairy Products Standards (D 118).....	---	---	1
Genetics (Z 341).....	3	---	---
Market Milk (D 310).....	---	---	3
Extempore Speaking (Sp 111).....	---	3	---
Elementary Journalism (J 111).....	---	3	---
American Governments (PS 201).....	---	---	3
Electives.....	3	6	6
	16	18	16

#### Senior Year

Animal Nutrition II (AI 411).....	4	---	---
Principles of Agricultural Marketing (AEc 341).....	3	---	---
Dairy Cattle Feeding (D 422).....	---	---	3
Seminar (D 407).....	1	1	1
Dairying electives.....	3	3	3
Science and Social Science electives.....	3	3	3
Electives.....	3	8	6
	17	15	16

### Milk Processing and Milk Industry Management

#### Common Freshman Year

Introduction to Dairying (D 121).....	3	---	---
English Composition (Wr 111, 112, 113).....	3	3	3
General Chemistry (Ch 101, 102, 103).....	3	3	3
Intermediate Algebra (Mth 100).....	---	---	4
Introduction to Agricultural Economics (AEc 111).....	---	---	3
Testing Milk and Cream (D 122).....	---	1	---
Elementary Journalism (J 111).....	---	3	---
Extempore Speaking (Sp 111).....	---	3	---
Dairy Products Standards (D 118).....	---	---	1
General Botany (Bot 201).....	3	---	---
Military Science.....	1	1	1
Physical Education.....	1	1	1
	14	15	16

	Term hours		
	F	W	S
<b>Common Sophomore Year</b>			
General Bacteriology (Bac 204).....		3	.....
Outlines of Economics (Ec 212).....	3	.....	.....
General Sociology (Soc 212).....		3	.....
Practical Psychology (Psy 212).....		.....	3
Organic and Agricultural Biochemistry (Ch 251).....	5	.....	.....
Organic and Agricultural Biochemistry (Ch 252).....		3	.....
Quantitative Analysis (Ch 234).....		.....	4
Market Milk (D 310).....		.....	3
American Governments (PS 201).....	3	.....	.....
Abridged General Physics (Ph 211, 212).....		3	3
Business English (Wr 214).....	3	.....	.....
Electives.....		3	3
Military Science.....	1	1	1
Physical Education.....	1	1	1
	16	17	18

### Milk Processing

	Term hours		
	F	W	S
<b>Junior Year</b>			
Butter; Cheese; Ice Cream (D 312, 313, 314).....	3	3	3
Butter, Cheese, and Ice Cream Laboratory (D 315, 316, 317).....	3	3	3
Principles of Agricultural Marketing (AEc 341).....	3	.....	.....
Group Discussion (Sp 232).....		.....	3
Principles of Accounting (BA 211).....	3	.....	.....
Dairy Chemistry (Ch 457).....		2	.....
Dairy Chemistry Laboratory (Ch 458).....		3	.....
Food Sanitation (Bac 411).....		3	.....
Electives.....	6	3	6
	18	17	15

### Senior Year

Milk Plant Operation (D 416).....		3	.....
Dry and Condensed Milk (D 411).....		3	.....
Dairy Food Specialties (D 414).....		.....	3
Refrigeration and Cold Storage (ME 335).....	3	.....	.....
Seminar (D 407).....	1	1	1
Electives.....	12	9	11
	16	16	15

### Milk Industry Management

	Term hours		
	F	W	S
<b>Junior Year</b>			
Butter; Cheese; Ice Cream (D 312, 313, 314).....	3	3	3
Butter, Cheese, and Ice Cream Laboratory (D 315, 316, 317).....	3	3	3
Principles of Accounting (BA 211, 212, 213).....	3	3	3
Production (BA 311).....	4	.....	.....
Marketing (BA 313).....		4	.....
Finance (BA 312).....		.....	4
Electives.....	4	3	3
	17	16	16

### Senior Year

Principles of Agricultural Marketing (AEc 341).....	3	.....	.....
Extension Methods (EM 411).....		3	.....
Marketing Dairy Products (AEc 444).....		3	.....
Group Discussion (Sp 232).....		.....	3
Seminar (D 407).....	1	1	1
Business electives.....	6	6	6
Electives.....	6	3	6
	16	16	16

<sup>1</sup> Students in Milk Industry Management may select business electives.

**Curricula in Farm Crops<sup>1</sup>***B.S. Degree**Farm Crops**Range Management (See page 210)***Farm Crops**

(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
Genetics (Z 341).....	3	---	---
Principles of Plant Pathology (Bot 351).....	4	---	---
Cereal Production Lectures (FC 322).....	---	3	---
Cereal Morphology (FC 323).....	---	2	---
Principles of Plant Physiology (Bot 331).....	---	---	4
Principles of Agricultural Marketing (AEc 341).....	---	3	---
General Bacteriology (Bac 204).....	---	3	---
Introduction to Economic Entomology (Ent 314).....	---	4	---
Extempore Speaking (Sp 111).....	---	---	3
Elementary Journalism (J 111).....	3	---	---
American Governments (PS 201).....	3	---	---
Forage Crops (FC 324).....	---	---	3
Weed Control (FC 317).....	---	---	3
Electives.....	5	3	5
	18	18	18
<b>Senior Year</b>			
Seed Production (FC 414).....	3	---	---
Crop Inspection (FC 411).....	---	4	---
Plant Breeding (FC 415).....	---	---	3
Soil Physics Lectures (Sls 421).....	3	---	---
Soil Fertility Lectures (Sls 424).....	---	3	---
Animal Nutrition I (AI 311) or Animal Nutrition II (AI 411).....	4	---	---
Seminar (FC 407).....	1	1	1
Electives.....	6	7	12
	17	15	16

**Curriculum in Fisheries***B.S. Degree*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
General Zoology (Z 201, 202).....	3	3	---
Wildlife Conservation (FG 251, 252).....	3	3	---
Wildlife Technique (FG 261).....	---	---	3
General Botany (Bot 201) and Field Botany (Bot 203).....	3	---	3
Agricultural Engineering Survey (AE 211).....	---	---	3
Intermediate Algebra (Mth 100).....	---	4	---
Air or Military Science.....	1	1	1
Physical Education.....	1	1	1
	14	15	14
<b>Sophomore Year</b>			
Economic Ichthyology (FG 274, 275, 276).....	3	3	3
Elementary Journalism (J 111).....	---	---	3
Extempore Speaking (Sp 111).....	---	3	---
Principles of Economics (Ec 201, 202, 203).....	3	3	3
General Chemistry (Ch 101, 102, 103).....	3	3	3
Wildlife Management (FG 281, 282, 283).....	3	3	3
Introduction to Statistics (St 311).....	3	---	---
Air or Military Science.....	1	1	1
Physical Education.....	1	1	1
	17	17	17

<sup>1</sup> Beginning in junior year and in consultation with adviser a student in farm crops may specialize in seed technology, weed control, research, plant improvement, or commercial and regulatory activities.



	Term hours		
	F	W	S
<b>Junior Year</b>			
Commercial Fisheries (FG 464, 465, 466).....	3	3	3
Abridged General Physics (Ph 211, 212).....	.....	3	3
Aquatic Plants (Bot 316).....	3	.....	.....
Organic and Agricultural Biochemistry (Ch 251, 252).....	5	3	.....
Quantitative Analysis (Ch 234).....	.....	.....	5
General Bacteriology (Bac 204, 205).....	.....	3	3
Aquatic Entomology (Ent 341).....	.....	.....	4
American Governments (PS 201).....	.....	3	.....
Genetics (Z 341).....	3	.....	.....
Electives .....	3	3	.....
	17	18	18
<b>Senior Year</b>			
Management of Game Fish (FG 454, 455, 456).....	3	3	3
Invertebrate Zoology (Z 451, 452).....	.....	4	4
Technical Writing (J 319).....	.....	3	.....
Sanitary Water Measurements (CE 414).....	3	.....	.....
Animal Nutrition I (AI 311).....	4	.....	.....
Parasites of Fish (Z 457).....	2	.....	.....
Seminar (FG 407).....	1	1	1
Electives .....	3	6	6
	16	17	14

**Curriculum in Food Technology**

*B.S. Degree*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Introduction to Food Technology (FT 111).....	3	.....	.....
Mathematics (Mth 101, 102).....	4	4	.....
General Chemistry (Ch 101, 102, 103).....	3	3	3
English Composition (Wr 111, 112, 113).....	3	3	3
General Botany (Bot 201) or General Zoology (Z 200).....	.....	3-5	.....
Inspection of Processed Foods (FT 271).....	.....	.....	2
Elements of Horticulture (Hrt 111) or Introduction to Dairying (D 121) or Introduction to Animal Husbandry (AH 121).....	.....	.....	3
Elective .....	.....	.....	3
Air, Military, or Naval Science.....	1	1	1
Physical Education, General Hygiene.....	1	1	1
	15	15-17	16
<b>Sophomore Year</b>			
General Bacteriology (Bac 204).....	3	.....	.....
Extempore Speaking (Sp 111).....	.....	.....	3
General Psychology (Psy 201, 202).....	3	3	.....
Food Manufacturing Methods (FT 221, 222, 223).....	3	3	3
Quantitative Analysis (Ch 234).....	.....	.....	4
Organic Chemistry (Ch 226, 227).....	5	5	.....
Food Plant Graphics (AE 351).....	.....	3	.....
Nutrition (FN 225).....	.....	.....	3
American Governments (PS 201).....	.....	.....	3
Air, Military, or Naval Science.....	1	1	1
Physical Education.....	1	1	1
	16	16	18
<b>Junior Year</b>			
Elementary Biochemistry (Ch 353x).....	3	.....	.....
Elementary Biochemistry Laboratory (Ch 356x).....	1	.....	.....
Principles of Plant Physiology (Bot 331) or Animal Nutrition II (AI 411).....	4	.....	.....
Production (BA 311).....	4	.....	.....
Food Bacteriology (Bac 460).....	3	.....	.....
Food Sanitation (Bac 411).....	.....	3	.....
Food Science (FT 342, 343).....	.....	4	4
Abridged General Physics (Ph 211, 212).....	.....	3	3
Outlines of Economics (Ec 212) or Economic Development of the United States (Ec 215).....	.....	3	.....
*Electives .....	3	3	9
	18	16	16

<sup>1</sup> A minimum of 3 hours additional upper division food technology courses are required. All other electives must be approved by the Food Technology Department.

	Term hours		
	F	W	S
<b>Senior Year</b>			
Basic Techniques (St 314) .....		3	.....
Refrigeration and Cold Storage (ME 335).....	3	.....	.....
Food Plant Mechanics (AE 352) .....		3	.....
Food Products Evaluation (FT 423).....	4	.....	(4)
Heat Transfer in Food Manufacturing (FT 433).....		.....	3
Federal and State Food Regulation (FT 421).....		.....	3
Seminar (FT 407).....	1	1	1
<sup>1</sup> Electives .....	9	9	9
	17	16	16

## Curricula in Horticulture

### B.S. Degree

*Pomology and Vegetable Crops*                      *Floriculture and Nursery Management*  
*Landscape Construction and Maintenance*

### Pomology and Vegetable Crops

(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
Basic Horticulture (Hrt 315).....	3	.....	.....
Fruit and Nut Production (Hrt 333).....	.....	.....	4
Vegetable Production (Hrt 341).....	.....	.....	4
Principles of Plant Physiology (Bot 331).....	4	.....	.....
Introduction to Economic Entomology (Ent 314).....	.....	4	.....
Principles of Plant Pathology (Bot 351).....	.....	.....	4
Food Industries Survey (FT 340).....	.....	3	.....
Genetics (Z 341).....	3	.....	.....
General Bacteriology (Bac 204).....	.....	3	.....
Home-Ground Planning (LA 279).....	.....	3	.....
Electives .....	7	4	5
	17	17	17

### Senior Year

<sup>1</sup> Systematic Pomology (Hrt 433) or Systematic Vegetable Crops (Hrt 443).....	4-3	.....	.....
<sup>2</sup> Fruit Handling and Distribution I (Hrt 431) or Vegetable Handling and Distribution (Hrt 441).....	.....	4-3	.....
Spraying, Dusting, and Fumigation (Hrt 415).....	.....	.....	3
Plant Materials (LA 326).....	3	.....	.....
History and Literature of Horticulture (Hrt 317).....	.....	.....	3
Horticultural Plant Breeding (Hrt 413) or Business Law (BA 413).....	3	.....	.....
Principles of Agricultural Marketing (AEC 341).....	3	.....	.....
American Governments (PS 201).....	.....	3	.....
Principles of Accounting (BA 211).....	.....	.....	3
Elementary Journalism (J 111).....	.....	.....	7
Electives .....	4-5	6-7	7
	17	16	16

### Floriculture and Nursery Management

#### Freshman Year

General Botany (Bot 201, 202) Field Botany (Bot 203) .....	3	3	3
General Chemistry (Ch 101, 102, 103).....	3	3	3
English Composition (Wr 111, 112, 113).....	3	3	3
Elements of Horticulture (Hrt 111).....	3	.....	.....
General Floriculture (Hrt 151).....	.....	3	.....
Intermediate Algebra (Mth 100) or equivalent.....	1	.....	4
Physical Education, General Hygiene.....	1	1	1
Air or Military Science (men) .....	1	1	1
	14	14	15

<sup>1</sup> A minimum of 3 hours additional upper division food technology courses are required. All other electives must be approved by the Food Technology Department.

<sup>2</sup> Pomology majors take Hrt 433 and Hrt 431. Vegetable crops majors take Hrt 443 and Hrt 441.

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Home-Ground Planning (LA 279) .....		3	---
Soils (Sls 211, 212) .....	3	3	---
<sup>1</sup> Organic and Agricultural Biochemistry (Ch 251) .....	5	---	---
Outlines of Economics (Ec 212) .....	3	---	---
American Governments (PS 201) .....	---	---	3
Approved course in social science .....	---	---	3
Plant Propagation (Hrt 311) .....	---	3	---
Greenhouse Construction and Management (Hrt 313) .....	---	3	---
Basic Horticulture (Hrt 315) .....	3	---	---
Herbaceous Plant Materials (Hrt 355) .....	---	---	3
Flower Arrangement (Hrt 253) .....	---	---	3
Principles of Plant Physiology (Bot 331) .....	---	---	4
Elementary Journalism (J 111) .....	---	3	---
Physical Education .....	1	1	1
Air or Military Science (men) .....	1	1	1
	16	17	18

### Junior Year

Lower Division Landscape Design (LA 290) .....	2	2	2
<sup>2</sup> Commercial Floriculture (Hrt 351, 352) or Nursery Management (Hrt 361, 362) .....	3-4	3-4	---
Commercial Floriculture (Hrt 353) or approved elective .....	---	---	3
Plant Materials (LA 326, 327, 328) .....	3	3	3
History and Literature of Horticulture (Hrt 317) .....	---	3	---
Spraying, Dusting, Fumigation (Hrt 415) .....	---	---	3
Principles of Plant Pathology (Bot 351) .....	4	---	---
Introduction to Economic Entomology (Ent 314) .....	---	4	---
Genetics (Z 341) .....	3	---	---
Electives .....	4-3	4-3	4
	18-19	18-19	15

### Senior Year

Principles of Accounting (BA 211, 212) .....	3	3	---
Planting Plans (LA 392, 393, 394) .....	2	2	2
Horticultural Plant Breeding (Hrt 413) .....	---	---	3
Business Law (BA 413) .....	---	---	3
Extempore Speaking (Sp 111) .....	---	3	---
Salesmanship (BA 465) .....	---	---	3
Handling and Distribution of Florist Crops (Hrt 453) or Principles of Plant Ecology (Bot 341) .....	3-4	---	---
Flower Shop Operation (Hrt 451) or Drainage and Irrigation (AE 319) .....	3	---	---
Electives .....	4-3	10	4
	14-16	18	15

### Two-Year Curriculum in Nursery Management

The American Association of Nurserymen, after study of more than 100 universities, has selected Oregon State College as one of seven best situated and prepared to offer a two-year curriculum which will help meet a nationwide need. The proposed curriculum is as follows:

#### First Year

	Term hours		
	F	W	S
General Chemistry (Ch 101, 102, 103) .....	3	3	3
General Botany (Bot 201, 202), Field Botany (Bot 203) .....	3	3	3
English Composition (Wr 111, 112, 113) .....	3	3	3
Elements of Horticulture (Hrt 111) .....	3	---	---
Plant Propagation (Hrt 311) .....	---	3	---
Home-Ground Planning (LA 279) .....	---	---	3
Military Science .....	1	1	1
Physical Education .....	1	1	1
	14	14	14

<sup>1</sup> Other science courses may be substituted for Ch 251 with approval of major professor.

<sup>2</sup> Students majoring in nursery management will take Nursery Management (Hrt 361, 362) instead of Commercial Floriculture.

	Term hours		
	F	W	S
Nursery Management (Hrt 361, 362) .....	3	3	3
Plant Materials (LA 326, 327, 328) .....	3	3	3
Soils (Sls 211, 212) .....	3	3	3
Herbaceous Plant Materials (Hrt 355) .....	4	4	4
Principles of Plant Pathology (Bot 351) .....	4	4	4
Introduction to Economic Entomology (Ent 314) .....	4	4	4
Spraying, Dusting, Fumigation (Hrt 415) .....	3	3	3
Principles of Accounting (BA 211) .....	3	3	3
Greenhouse Construction and Management (Hrt 313) .....	3	3	3
Business Law (BA 411) .....	3	3	3
Military Science .....	1	1	1
Physical Education .....	1	1	1
	18	18	14

### Landscape Construction and Maintenance

#### Freshman Year

General Botany (Bot 201, 202), Field Botany (Bot 203) .....	3	3	3
General Chemistry (Ch 101, 102, 103) .....	3	3	3
English Composition (Wr 111, 112, 113) .....	3	3	3
Lower Division Architectural Design (AA 297) .....	1	1	1
Elements of Horticulture (Hrt 111) .....	3	3	3
Home-Ground Planning (LA 279) .....	3	3	3
Intermediate Algebra (Mth 100) .....	4	4	4
Physical Education, General Hygiene .....	1	1	1
Air or Military Science (men) .....	1	1	1
	15	15	16

#### Sophomore Year

Lower Division Landscape Design (LA 290) .....	2	2	2
History and Literature of Landscape Design (LA 356, 357, 358) .....	2	2	2
Soils (Sls 211, 212) .....	3	3	3
Photography (Ph 361) .....	3	3	3
Surveying for Landscape Architecture Students (CE 224, 225) .....	3	3	3
Principles of Accounting (BA 211) .....	3	3	3
American Governments (PS 201) .....	3	3	3
Approved course in social science .....	3	3	3
Physical Education .....	1	1	1
Air or Military Science (men) .....	1	1	1
	15	15	15

#### Junior Year

Intermediate Landscape Design (LA 390) .....	3	3	3
Maintenance and Construction (LA 359, 360, 361) .....	3	3	3
Plant Materials (LA 326, 327, 328) .....	3	3	3
Drainage and Irrigation (AE 319) .....	3	3	3
Plant Propagation (Hrt 311) .....	3	3	3
Business Law (BA 413) .....	6	6	5
<sup>1</sup> Electives .....	6	6	5
	18	18	17

#### Senior Year

Planting Plans (LA 392, 393, 394) .....	2	2	2
Layout of Small Properties (LA 382, 383, 384) .....	2	2	2
Principles of Plant Pathology (Bot 351) .....	4	4	4
Introduction to Economic Entomology (Ent 314) .....	4	4	4
Principles of Plant Ecology (Bot 341) .....	4	4	4
Nursery Management (Hrt 361, 362) .....	2	2	2
Lawns and Turfs (FC 313) .....	2	2	2
Farm Buildings (AE 361) .....	(3)	3	3
<sup>1</sup> Electives .....	3	4	4
	17	16	15

<sup>1</sup> To meet minimum requirements set forth in the training program of the National Landscape Nurserymen's Association students must elect at least four term hours of Construction I (AA 218, 219) and three approved term hours of business administration. Suggested electives: AA 160, 161, 195; AA 211, 212; AE 451; Hrt 315, 355.

**Curriculum in Mechanical Technology in Agriculture***B.S. Degree*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Mechanical Problems in Agriculture (AE 101, 102, 103).....	1	1	1
General Chemistry (Ch 101, 102, 103).....	3	3	3
Elements of Horticulture (Hrt 111).....	3	.....	.....
Farm Mechanics (AE 221).....	.....	3	.....
Introduction to Animal Husbandry (AH 121) or Dairying (D 121) or Poultry Production (PH 121).....	3	3	.....
Intermediate Algebra (Mth 100).....	4	.....	.....
General Botany (Bot 201).....	.....	3	.....
Elements of Agronomy I (FC 111).....	.....	.....	3
Extempore Speaking (Sp 111).....	.....	.....	3
Engineering Drawing (GE 115).....	.....	.....	3
Physical Education, General Hygiene.....	1	1	1
Air or Military Science.....	1	1	1
	16	15	15

<b>Sophomore Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
Mathematics (Mth 101, 102).....	4	4	.....
Plane Surveying (CE 226).....	.....	.....	3
Abridged General Physics (Ph 211, 212).....	3	3	.....
House Planning and Architectural Drawing (AA 178).....	.....	.....	3
Outlines of Economics (Ec 212).....	3	.....	.....
Machine Tool Practices (IE 260).....	.....	.....	2
Soils (Sls 211, 212).....	3	3	.....
Principles of Farm Management (AEc 211).....	.....	.....	5
Physical Education.....	1	1	1
Air or Military Science.....	1	1	1
	18	15	18

<b>Junior Year</b>			
General Bacteriology (Bac 204).....	.....	3	.....
General Bacteriology (Bac 205) or science elective.....	.....	.....	3
Social science.....	3	3	.....
Farm Motors and Tractors (AE 311).....	3	.....	.....
Automobile Mechanics (AE 313).....	.....	3	.....
Farm Electricity (AE 331).....	.....	3	.....
Elementary Journalism (J 111) or Technical Report Writing (Wr 227).....	.....	.....	3
Elementary Hydraulics (CE 322).....	.....	3	.....
Farm Implements (AE 231).....	.....	.....	3
Irrigation Management (Sls 311).....	3	.....	.....
Basic Accounting and Financial Analysis (BA 217).....	3	.....	.....
Air or Military Science or electives.....	3	3	3
Electives.....	.....	.....	3
	15	18	15

<b>Senior Year</b>			
Business Law (BA 417).....	3	.....	.....
Farm Buildings (AE 361).....	.....	.....	3
Pumps and Irrigation Equipment (AE 321).....	.....	.....	3
Seminar (AE 407).....	.....	1	1
Drainage and Irrigation (AE 319).....	3	.....	.....
Air or Military Science or electives.....	3	3	3
Electives.....	6	12	6
	15	16	16

**Curriculum in Poultry Husbandry**

(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
Genetics (Z 341).....	3	---	---
Principles of Agricultural Marketing (AEc 341).....	3	---	---
<sup>1</sup> Turkey Management (PH 351).....	3	---	---
<sup>1</sup> Incubation (PH 321).....	---	3	---
Principles of Accounting (BA 211).....	3	---	---
Elementary Journalism (J 111).....	---	3	---
Anatomy and Physiology of the Fowl (VM 311).....	---	3	---
American Governments (PS 201).....	---	---	3
<sup>1</sup> Poultry Judging (PH 341).....	---	3	---
Diseases of Poultry (VM 351).....	---	---	4
Brooding and Broiler Production (PH 322).....	---	---	3
Electives.....	6	6	7
	18	18	17
<b>Senior Year</b>			
Extempore Speaking (Sp 111).....	---	3	---
Poultry Feeding (PH 411, 412).....	4	---	---
Marketing Poultry Products (PH 421).....	3	---	---
<sup>1</sup> Poultry Plant Management (PH 431).....	---	---	3
<sup>1</sup> Poultry Breeding (PH 441).....	---	---	3
Seminar (PH 407).....	---	1	1
Electives.....	9	12	9
	16	16	16

**Curriculum in Range Management***B.S. Degree**Administered jointly by Animal Husbandry and Farm Crops Departments*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
General Chemistry (CH 101, 102, 103).....	3	3	3
General Botany (Bot 201, 202), Field Botany (Bot 203).....	3	3	3
Extempore Speaking (Sp 111).....	---	3	---
English Composition (Wr 111, 112, 113).....	3	3	---
General Zoology (Z 200).....	---	---	5
Introduction to Animal Husbandry (AH 121).....	3	---	---
Physical Education.....	1	1	1
Air or Military Science.....	1	1	1
	14	14	16
<b>Sophomore Year</b>			
Organic and Agricultural Biochemistry (Ch 251, 252).....	5	3	---
Principles of Economics (Ec 201, 202, 203).....	3	3	3
Systematic Botany (Bot 321).....	---	---	4
Elements of Agronomy I (FC 111).....	3	---	---
General Bacteriology (Bac 204).....	---	3	---
Soils (Sls 211, 212).....	3	3	---
Mathematics (Mth 102).....	---	---	4
Elements of Agronomy II (FC 211).....	---	3	---
Physical Education.....	1	1	1
Air or Military Science.....	1	1	1
	16	17	13

<sup>1</sup> Offered alternate years. May be taken in junior or senior year.

	Term hours		
	F	W	S
<b>Junior Year</b>			
<sup>1</sup> Range Management (AH or FC 341).....	3	(3)	.....
Range Improvement (AH or FC 342).....	3	.....	.....
Forest Engineering (FE 123, 223).....	3	.....	4
Principles of Plant Physiology (Bot 331).....	.....	.....	4
Principles of Plant Ecology (Bot 341).....	.....	.....	4
Agrostology (Bot 314).....	3	.....	.....
Farm Forestry (F 344) or Forest Land Use (F 411).....	.....	3	.....
Wildlife Management (FG 281, 282) or Forest Wildlife Management (FG 310, 311).....	3	3	.....
Elementary Journalism (J 111).....	3	.....	.....
Electives .....	5	6	6
	17	18	18

<b>Senior Year</b>			
Range Methods (AH or FC 441).....	.....	.....	4
Methods for Research (St 421).....	3	.....	.....
Elective (Range Management) AH or FC.....	.....	3	.....
Beef Cattle Husbandry (AH 426).....	.....	.....	3
Animal Nutrition II (AI 411).....	4	.....	.....
Agricultural Land Economics (AEc 462).....	.....	3	(3)
American Governments (PS 201).....	.....	3	.....
Diseases of Livestock (VM 341).....	4	.....	.....
Electives .....	6	7	9
	17	16	16

### Curriculum in Soils

#### *B.S. Degree*

(See Common Freshman and Sophomore years.)

	Term hours		
	F	W	S
<b>Junior Year</b>			
General Bacteriology (Bac 204).....	3	.....	.....
Principles of Plant Physiology (Bot 331).....	.....	.....	4
Rocks and Minerals (G 350).....	3	.....	.....
Extempore Speaking (Sp 111).....	.....	3	.....
Drainage and Irrigation (AE 319) or Pumps and Irrigation Equipment (AE 321).....	3	.....	(3)
Quantitative Analysis (Ch 234).....	5	.....	.....
Irrigation Management (Sls 311).....	3	.....	5
Soil Management and Conservation (Sls 314).....	.....	.....	4
Elementary Journalism (J 111) or Technical Report Writing (Wr 227).....	.....	3	.....
American Governments (PS 201).....	.....	3	.....
Electives .....	5	8	4
	17	17	17

<b>Senior Year</b>			
Soil Bacteriology (Bac 421).....	4	.....	.....
Genetics (Z 341).....	3	.....	.....
Basic Horticulture (Hrt 315).....	3	.....	.....
Soil Physics Lectures (Sls 421).....	3	.....	.....
Soil Physics Laboratory (Sls 422).....	.....	2	.....
Soil Fertility Lectures (Sls 424).....	.....	3	.....
Soil Fertility Laboratory (Sls 425).....	.....	.....	2
Soil Survey (Sls 432).....	.....	.....	4
Seminar (Sls 407).....	1	1	1
Electives .....	3	10	9
	17	16	16

<sup>1</sup> Students may register through either the Department of Animal Husbandry or the Department of Farm Crops. Courses prefixed with combined AH and FC numbers will be accepted and applied toward graduation only once in any degree program.

## Curriculum in Wildlife Management

## B.S. Degree

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113).....	3	3	3
General Zoology (Z 201, 202).....	3	3	---
Wildlife Conservation (FG 251, 252).....	3	3	---
Wildlife Technique (FG 261).....	---	---	3
Tree Identification (F 153).....	3	---	---
Elements of Agronomy I (FC 111).....	---	---	3
Intermediate Algebra (Mth 100).....	---	4	---
Agricultural Engineering Survey (AE 211).....	---	---	3
Air or Military Science.....	1	1	1
Physical Education.....	1	1	1
	14	15	14
<b>Sophomore Year</b>			
Economics and social sciences.....	3	3	3
General Chemistry (Ch 101, 102, 103).....	3	3	3
Wildlife Management (FG 281, 282, 283).....	3	3	3
General Botany (Bot 201, 202), Field Botany (Bot 203).....	3	3	3
Economic Ichthyology (FG 274).....	3	---	---
Mammalogy (Z 372).....	---	3	---
Ornithology (Z 371).....	---	---	3
Air or Military Science.....	1	1	1
Physical Education.....	1	1	1
	17	17	17
<b>Junior Year</b>			
Management of Game Birds (FG 451, 452, 453).....	3	3	3
Aquatic Plants (Bot 316).....	3	---	---
Principles of Plant Ecology (Bot 341).....	(4)	---	4
Aquatic Entomology (Ent 341).....	---	---	4
Anatomy of Domestic Animals (VM 320).....	3	---	---
Anatomy and Physiology of the Fowl (VM 311).....	---	3	---
Diseases of Poultry (VM 351).....	---	---	4
Introduction to Statistics (St 311).....	---	3	---
Genetics (Z 341).....	3	---	---
Animal Nutrition I (AI 311).....	4	---	---
Elementary Journalism (J 111).....	---	---	3
Extempore Speaking (Sp 111).....	---	3	---
Electives.....	2	6	---
	18	18	18
<b>Senior Year</b>			
Management of Game Fish (FG 454, 455, 456).....	3	3	3
Management of Big Game (FG 457, 458).....	3	---	3
Management of Fur Bearers (FG 460).....	---	3	---
Invertebrate Zoology (Z 451, 452).....	---	4	4
Parasitic Diseases of Domestic and Game Animals (VM 361).....	---	4	---
Wildlife Food Crops (FC 318).....	3	---	---
American Governments (PS 201).....	---	---	3
Technical Writing (J 319).....	---	---	3
Seminar (FG 407).....	1	1	1
Electives.....	6	3	---
	16	18	17



**Two-Year Terminal Curriculum**  
*Certificate in Agriculture*

**First Year**

<sup>1</sup> Science .....	3	3	3
Elements of Agronomy I (FC 111) .....	3	.....	.....
Elements of Horticulture (Hrt 111) .....	.....	.....	3
Introduction to Animal Husbandry (AH 121) .....	3	.....	.....
Poultry Production (PH 121) .....	.....	3	.....
Introduction to Dairying (D 121) .....	.....	3	.....
Agricultural Engineering Survey (AE 211) .....	3	.....	.....
Air or Military Science .....	1	1	1
Physical Education .....	1	1	1
Electives .....	1	4	7
	15	15	15

**Second Year**

Principles of Farm Management (AEc 211) .....	.....	.....	5
Principles of Accounting (BA 211) .....	.....	3	.....
Elements of Agronomy II (FC 211) .....	.....	3	.....
Diseases of Livestock (VM 341) .....	4	.....	.....
Farm Structures (AE 461) or House Planning and Agricultural Drawing (AA 178) .....	3	.....	.....
American Governments (PS 201) .....	.....	3	.....
Public speaking .....	.....	.....	3
Air or Military Science .....	1	1	1
Physical Education .....	1	1	1
Electives .....	6	4	5
	15	15	15

**Agricultural Economics**

The Department of Agricultural Economics emphasizes the business and economic aspects of agriculture. A wide range of electives permits a student in this Department to choose course work in the agricultural sciences, social science, business, or education. A student can adapt his study program to his interests and needs.

The Department serves three types of students: those preparing for employment as farmers, farm managers, county extension agents, or soil conservation supervisors; those preparing for employment in businesses serving agriculture; those preparing for employment with State and Federal service in land-grant colleges or departments of agriculture.

The study program for any one of these also prepares a student for graduate study in preparation for a professional career as a teacher, research worker, or extension specialist in agricultural economics. Graduate study is integrated with the research program. The Department gives major emphasis to training graduate students in the application of scientific methodology to obtain realistic solutions to problems of farmers and the agricultural industry. A student working for a Master of Science or Doctor of Philosophy degree in agricultural economics may emphasize agricultural marketing, agricultural policy, agricultural finance, agricultural prices, land economics, or production economics and farm management, and may carry out a research project in one of these areas. A graduate student in another department may take a minor in agricultural economics.

<sup>1</sup> Courses in the basic sciences may be selected from following: Biological Science Survey, Physical Science Survey, chemistry, botany, zoology, entomology.

## Lower Division Courses

- AEc 111. **Introduction to Agricultural Economics.** 3 hours. 3 ①  
 Nature of agricultural resources and their management, buying of farm production supplies, selling of farm products, financing of farm operations and introduction to farm policies and programs. Staff.
- AEc 211. **Principles of Farm Management.** 5 hours fall and spring. 5 ①  
 Farming as a business; reasons for success and failure; what and how much to produce; acquiring and combining land, labor, and capital resources. Prerequisite: sophomore standing in agriculture. Assistant Professors Castle and Becker.

## Upper Division Courses

- AEc 311. **Farm Income Tax Management.** 2 hours spring. 1 ① 1 ②  
 Management and accounting procedures as influenced by Federal income tax laws and regulations. Computation of State and Federal taxable income. Prerequisite: AEc 211. Assistant Professor Becker.
- AEc 312. **Applied Agricultural Economics.** 3 hours. 3 ①  
 Use of economic principles in solving problems of costs and returns of specific farm enterprises; capital, labor, size of business; yields, feeding; production possibilities and markets. Prerequisite: Ec 203 or equivalent.
- AEc 331. **Food and Agriculture.** 3 hours fall. 3 ①  
 Role of agriculture in meeting population and industrial growth in a developing economy; influence of technology in production and marketing. Offered alternate years. Offered 1957-58. Professor Hollands.
- AEc 341. **Principles of Agricultural Marketing.** 3 hours fall or winter. 3 ①  
 Marketing farm products; markets, marketing services, prices; role of producers, middlemen and consumers; improving the marketing of major agricultural products. Prerequisite: Ec 203 or 212, or consent of instructor. Professor Hollands, Associate Professor Korzan.
- AEc 342. **Agricultural Cooperation.** 3 hours winter. 3 ①  
 Organization, financing, management, price policies, membership and public relations, and factors affecting success of cooperative associations with emphasis on Oregon cooperatives. Prerequisite: AEc 341. Associate Professor Korzan.
- AEc 401. **Research.** Terms and hours to be arranged.
- AEc 405. **Reading and Conference.** Terms and hours to be arranged.
- AEc 407. **Seminar.** Terms and hours to be arranged.
- AEc 408. **Workshop.** (g) Terms and hours to be arranged.  
 Application of agricultural economics to specific locality in Oregon in areas of agricultural marketing, policy, finance, and farm management. Staff.
- AEc 411. **Agricultural Policy.** (g) 3 hours spring. 3 ①  
 Application of economic principles to agricultural problems, and particularly to agricultural policies established by State and Federal agencies. Prerequisite: Ec 203 or 214. Professor Wood.
- AEc 412. **Consumers and the Market.** 3 hours winter. 3 ①  
 Consumption patterns for food and fiber, income, technological developments, merchandising practices, and legislation as factors influencing consumer behavior in the market. Prerequisite: AEc 341 or consent of instructor. Professor Hollands.
- AEc 414. **Farm Organization.** (G) 3 hours fall. 2 ① 1 ③  
 Application of farm management principles to the organization of the individual farm; trips to farms showing specific organizational features; organization plans for selected farms. Prerequisite: AEc 211. Assistant Professor Sitton.
- AEc 418. **Federal Programs and the Farmer.** (G) 3 hours winter. 1 ① 1 ②  
 Federal and state programs (ASC, SCS, FHA, AMS, state and county committees) as they affect the operation of Oregon farms. Prerequisite: senior standing. Professor Mumford.

- AEc 421. **Marketing Efficiency Analysis.** (G) 3 hours winter. 3 ①  
Techniques for determining costs and efficiency of marketing and processing operations of agricultural products; reducing costs and improving efficiency through work methods, equipment, materials handling, and plant layout. Prerequisite: senior standing, Ec 212, AEc 341.
- AEc 425. **Agricultural Appraisal.** (G) 3 hours spring. 2 ① 1 ③  
Appraisal principles and purposes. Commercial and Federal appraisal methods; field work in appraisal of land and farms of different types. Prerequisite: senior standing and consent of instructor.
- AEc 431. **Agricultural Finance.** (G) 3 hours spring. 3 ①  
Principles of credit and finance as applied to agriculture; credit requirements of agriculture; existing credit agencies, strength and weakness. Prerequisite: Ec 203, upper division standing. Assistant Professor Sitton.
- AEc 440. **Livestock Economics.** (G) 3 hours fall. 3 ①  
Economic and financial phases of the livestock industry, trends in investment, cost-price relationships, and development of market functions and institutions. Prerequisite: upper division standing. Assistant Professor Christensen.
- AEc 444. **Marketing Dairy Products.** (G) 3 hours winter. 3 ①  
Trends in production and consumption, agencies and institutions in marketing, current research and development, and marketing as affected by present State and Federal offerings. Prerequisite: AEc 341 or consent of instructor. Offered alternate years. Offered 1957-58. Assistant Professor Christensen.
- AEc 451. **Agricultural Prices.** (g) 3 hours fall. 3 ①  
Price trends; prices of agricultural and nonagricultural products; prices in relation to production and marketing program; elasticity functions. Prerequisite: St 311, AEc 341 or equivalent. Associate Professor Korzan.
- AEc 461. **Agricultural Resource Development.** (G) 3 hours fall. 3 ①  
Benefits and costs of developing and conserving water, soil, and timber resources; types of management necessary to attain various public and private ends. Prerequisite: senior standing. Assistant Professor Castle.
- AEc 462. **Agricultural Land Economics.** (g) 3 hours winter. 3 ①  
Supply of and demand for agricultural land; population pressure on land; economic principles governing value and use of land; institutional factors. Prerequisite: Ec 203, upper division standing. Associate Professor Plath.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit. Courses Ec 413, 435, 440, 475, 476, 477, 510, 511, 512, 513, 514, 515, 516 (Department of Economics) may be taken as part of a graduate major in agricultural economics.

- AEc 501. **Research.** Terms and hours to be arranged.
- AEc 503. **Thesis.** Terms and hours to be arranged.
- AEc 505. **Reading and Conference.** Terms and hours to be arranged.
- AEc 507. **Seminar.** 1 hour. 1 ①
- AEc 508. **Workshop.** Terms and hours to be arranged.  
Application of agricultural economics to specific locality in Oregon in areas of agricultural marketing, policy, finance, and farm management.
- Ec 510, 511. **History of Economic Thought.** 3 hours each term. 3 ①  
Contribution of greatest economic thinkers from earliest times to present with particular attention to schools of thought. Limited to candidates for advanced degrees in Department of Agricultural Economics.
- Ec 512, 513. **Economic History.** 3 hours each term. 3 ①  
Economic history of Europe and United States (alternate years) with emphasis on major trends in agriculture, manufacturing, trade, transportation, money, banking, and finance. Limited to candidates for advanced degrees in Department of Agricultural Economics.

- Ec 514, 515, 516. **Contemporary Economic Thought.** 3 hours each term. 3 ①  
 Twentieth century economics; value theory, welfare economics, imperfect competition; institutionalism; theory of employment, money, national income, economic fluctuations, growth; innovations in methodology. Prerequisite: Ec 475, 476, 477, or equivalent. Limited to candidates for advanced degrees in Department of Agricultural Economics.
- AEc 520. **Research Methodology.** 3 hours winter. 3 ①  
 Logic of the sciences; deduction and induction in research; use of theory and statistics in research, with particular attention to integrating deductive and inductive phases of research; preparation of research reports. Prerequisite: consent of instructor. Assistant Professor Brown.
- AEc 521, 522. **Agricultural Production Economics.** 3 hours each term. 3 ①  
 AEc 521: Principles of production economics applied to individual farm; conditions of risk and uncertainty; price, production, and technology. AEc 522: Principles applied to agricultural industry; obstacles to efficiency; functioning of land, capital, and labor markets. Assistant Professor Castle.
- AEc 523. **Analysis of Agricultural Policies.** 3 hours spring. 3 ①  
 Economic and social criteria for public policy; value conflicts; welfare and efficiency goals in agricultural policy; process in development of policy; integration of economic and political objectives; critical appraisal of current and proposed agricultural policies. Professor Wood.
- AEc 562. **Advanced Agricultural Land Economics.** 3 hours winter. 3 ①  
 Contemporary land problems and policies; distribution of major land uses, reclamation, conservation, and techniques and objectives of land planning and classification. Prerequisite: AEc 462. Associate Professor Plath.
- AEc 572. **Advanced Agricultural Marketing.** 3 hours fall. 3 ①  
 Functions of the market, characteristics of demand and supply in market place; establishment of guideposts in development of marketing programs; analysis of selected research results in marketing farm products. Professor Hollands.
- AEc 573. **Agricultural Price Analysis.** 3 hours spring. 3 ①  
 Supply and demand theory; market prices under perfect and imperfect competition; relation of price research to production and distribution of agricultural commodities. Prerequisite: two terms of statistics; Ec 475, 476, 477; AEc 451 or equivalent. Associate Professor Korzan.

## Agricultural Education

The Department of Agricultural Education is a joint department within the schools of Agriculture and Education. It trains teachers and supervisors of agriculture for secondary schools and for schools and classes of adult farmers and young men not enrolled in regular day schools. The strong demand for teachers of vocational agriculture in Oregon, in the Pacific Region including Hawaii, and throughout the United States, is expected to continue indefinitely. Special consideration is given to George-Barden Act and to Smith-Hughes Act. Certain field activities, including a followup service for new teachers and preparation of instructional material for use by agricultural instructors, are handled by this department in cooperation with staff members of the School of Agriculture.

**Requirements for Teaching Agriculture.** The prospective vocational agriculture teacher should confer early with the department head. Discussion will center on attainment of certain fundamental qualifications and knowledge as well as a high level of practical ability necessary for admission to this field of teaching. The Agricultural Education curriculum is printed on another page.

### Requirements in Agriculture:

- Graduation from a college of agriculture of standard rank.
- 80 term hours, or equivalent, or special work in agriculture. Courses depend somewhat on previous training and experience and recommendations of head of department.

**Requirements in Education and for Certification:**

- Course requirements in Education: A minimum of 25 term hours in the 4-year curriculum, including courses in special secondary methods and supervised teaching.
- Vocational Teaching Certificate: The curriculum in Agricultural Education is designed to fulfill requirements for a vocational teaching certificate. The State Director of Vocational Education will issue this certificate after determining applicant's qualifications for teaching vocational agriculture and after applicant has been placed in a teaching position.
- It is expected that persons who have been employed to teach vocational agriculture, after receiving the vocational certificate and completing the 4-year curriculum, will continue systematic work in education and agriculture, as needed, through summer courses and otherwise during their period of employment in full-time teaching. Such work may carry college credit leading to a master's degree.

**Graduate Study and Apprentice Teaching.** For those wishing to continue studies beyond a bachelor's degree, a program of experience and graduate study leading to a master's degree will be developed to meet individual needs. A portion of such experience may be in apprentice teaching for graduate credit whereby students of approved standing are placed in high school centers, and outstanding departments of agriculture, under the general supervision of the Department of Agricultural Education and the immediate supervision of the local agriculture instructor.

**Lower Division Courses**

- AEd 220. Vocational Education in Agriculture. 2 hours. 2 ①  
Principles and development of vocational education in agriculture; significance of national aims and objectives in vocational education.

**Upper Division Courses**

- AEd 401. Research. Terms and hours to be arranged.
- AEd 405. Reading and Conference. Terms and hours to be arranged.
- Ed 408. Special Secondary Methods. 3 hours.  
Section 1: Supervised Farming, FFA. Section 2: Shop and Manipulative Skills. See Ed 408 under SCHOOL OF EDUCATION.
- AEd 411. Program Report Analysis. 2 hours fall and spring. 2 ①  
Analysis of Federal, State, and local reports and records prepared by the vocational agriculture teacher. Prerequisite: AEd 220.
- Ed 416. Student Teaching: Secondary. 3 to 15 hours.  
See School of Education. Associate Professor Ten Pas.
- AEd 417. The Agricultural Curriculum. (G) 3 hours. 3 ①  
Determining course content and evaluating types of course organization with reference to the objectives to be attained in the field of agriculture. Prerequisite: Ed 314, 416. Associate Professor Ten Pas.
- AEd 418. Adult Education in Agriculture. (G) 3 hours. 3 ①  
Developing programs for young and adult farmer groups; supervision of classes for young farmers, for older farmers, and for farm veterans and special classes of veterans. Prerequisite: AEd 417. Associate Professor Ten Pas.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- AEd 501. Research. Terms and hours to be arranged.
- AEd 503. Thesis. Terms and hours to be arranged.
- AEd 505. Reading and Conference. Terms and hours to be arranged.
- AEd 507. Seminar. Terms and hours to be arranged.

**AEd 516. Extension Course in Teacher Training.** Hours to be arranged, any term.

Enables present and prospective teachers of agriculture to continue professional improvement; conferences, followup instruction, supervision, correspondence, reports. Prerequisite: Ed 310, 312.

**AEd 533. Rural Survey Methods.** 3 hours. 1 ③

Technique of surveys; analyzing, interpreting, and using results in evaluating and formulating programs in agricultural education; field studies. Prerequisite: Ed 310, 312, teaching experience.

**AEd 541. Community Programs of Agricultural Education.** 3 hours. 3 ①

Developing the natural and human resources of a community through agricultural education. Prerequisite: Ed 408a, teaching experience.

## Agricultural Engineering

### *Mechanical Technology in Agriculture*

The Department of Agricultural Engineering is a joint department within the schools of Agriculture and Engineering. The department offers three types of instruction:

- A curriculum leading to a Bachelor of Science degree in Mechanical Technology in Agriculture.
- A curriculum leading to a Bachelor of Science degree in Agricultural Engineering. (See SCHOOL OF ENGINEERING.)
- Service courses for students majoring in other departments.

The curriculum in Mechanical Technology in Agriculture provides a broad course of study which will enable a student to acquire a background in the agricultural sciences, business, communicative and manipulative skills, and elementary engineering principles. This study qualifies him for work of an applied nature in industry and in public and self-employment. Students majoring in other departments may take courses in this department if they have proper prerequisites or consent of instructor.

The increasing importance of modern agricultural machinery in reducing production costs and improving rural living conditions necessitates more complete and effective utilization of fundamental principles of agricultural and engineering sciences. Accordingly, there are facilities available for teaching and experimental work in farm power and machinery, soil and water control and conservation, farm structures, rural electrification, and crop processing. Adequate facilities are also available for teaching farm and automobile mechanics. The farm power laboratory is equipped with an engine-testing dynamometer, several makes and types of internal combustion engines, sectionalized automobile and tractor motors, and accessories. Farm machinery distributors loan the very latest farm equipment for study and observation. The department has samples of many different kinds and types of building material. Models of farm water systems and centrifugal and turbine pumps for sprinkler irrigation systems are available for study.

#### Lower Division Courses

**AE 101, 102, 103. Mechanical Problems in Agriculture.** 1 hour each term.

1 ① 1 ②

Lectures and problems in agricultural engineering. Assistant Professor Bonnicksen.

**AE 211. Agricultural Engineering Survey.** 3 hours each term. 1 ① 2 ②

Principles of mechanics, hydraulics, soil conservation, and electricity applied to farm problems. Prerequisite: Mth 100 or equivalent. Assistant Professor Long, Mr. Booster.

AE 213. **Mechanical Applications in Agriculture.** 3 hours spring. 1 ① 2 ③  
 Practical field work in farm surveying, mechanics, maintenance of equipment, and dehydration problems. Prerequisite: AE 211. Assistant Professor Long.

AE 221. **Farm Mechanics.** 3 hours fall or winter. 1 ① 2 ③  
 Use of hand and power tools for wood and metal working, roof framing, arc and acetylene welding, construction of wood and metal farm appliances, concrete work. Associate Professor Kirk.

AE 222. **Farm Mechanics.** 3 hours winter or spring. 1 ① 2 ③  
 Construction of larger farm appliances, machinery repair, hard surfacing of metals, paint and painting, plumbing, and shop equipment and layout. Prerequisite: AE 221. Associate Professor Kirk.

AE 231. **Farm Implements.** 3 hours fall or spring. 2 ① 1 ③  
 Construction, operation, and hitching of equipment used for seed-bed preparation; planting, fertilizing, cultivation, and harvesting machinery. Professor Rodgers.

**Upper Division Courses**

AE 311. **Farm Motors and Tractors.** 3 hours any term. 2 ① 1 ③  
 Farm motors and accessories, carburetors, magnetos, ignition, governing, cooling, lubricating systems; fuels and oils; testing, timing, trouble hunting. Professor Lunde.

AE 312. **Automobile Mechanics.** 3 hours fall. 2 ① 1 ③  
 The automobile and its parts; their functions, adjustment and simple repairs; latest developments. Professor Lunde.

AE 313. **Automobile Mechanics.** 3 hours any term. 1 ① 2 ③  
 Service and repair of automobiles, tractors, and trucks, with emphasis on preventive maintenance, lubrication, engine tuneup, brake adjusting, etc. Prerequisite: AE 311 or 312. Professor Lunde.

AE 314. **Automobile Mechanics.** 3 hours spring. 2 ① 1 ③  
 Engine rebuilding, advanced electrical testing, repairing and rebuilding of electrical accessories, use of precision equipment of all types commonly found in up-to-date repair shops. Prerequisite: AE 313. Professor Lunde.

AE 319. **Drainage and Irrigation.** 3 hours fall. 2 ① 1 ③  
 Land drainage, selection of method; planning and surveying for drainage systems; methods of gravity irrigation; irrigation water measurement. Prerequisite: SIs 212. SIs 311 recommended. Mr. Riley.

AE 321. **Pumps and Irrigation Equipment.** 3 hours spring. 2 ① 1 ③  
 Operation and testing of pumps, household water systems, and sprinkler irrigation equipment; design of sprinkler irrigation systems. Recommended preparation: SIs 311. Mr. Riley.

AE 331. **Farm Electricity.** 3 hours winter. 2 ① 1 ③  
 Fundamentals of electricity, wiring, electric motors, and the use of electricity on the farm. Prerequisite: AE 211 or equivalent. Associate Professor Cropsey.

AE 341. **Use of Explosives.** 2 hours winter. 1 ① 1 ③  
 Use of explosives in removing stumps, constructing drainage ditches, and rock blasting. One recitation; 30 hours laboratory and field work arranged during term.

AE 351. **Food Plant Graphics.** 3 hours winter. 1 ① 2 ③  
 Mechanical and architectural drawing; blueprint reading; reproduction processes; bill of materials; food plant layout. Assistant Professor Bonnicksen.

AE 352. **Food Plant Mechanics.** 3 hours spring. 2 ① 1 ③  
 Fundamentals of mechanics and plant equipment used in the food processing industry; demonstrations and practice in performing related shop operations. Prerequisite: Ph 212 or consent of instructor. Associate Professor Kirk.

AE 361. **Farm Buildings.** 3 hours spring. 1 ① 2 ②  
 Fundamentals, uses, economics, and requirements of farm buildings; materials and types of construction; elementary structural analysis and design; individual laboratory projects. Prerequisite: junior standing. Assistant Professor Bonnicksen.

- AE 401. **Research.** Terms and hours to be arranged.
- AE 405. **Reading and Conference.** Terms and hours to be arranged.
- AE 407. **Seminar.** Terms and hours to be arranged.
- AE 435. **Household Utilities.** (g) 3 hours spring. 2 ① 1 ③  
 Selection, installation, and use of major home services including heat, light, water, and sewage disposal; equipment and supplies; motors for household appliances. For men and women interested. Prerequisite: AE 361 or AA 178, or senior standing. Associate Professor Cropsey.
- AE 451. **Rural House Planning.** (g) 3 hours winter. 1 ① 2 ②  
 Structural materials and methods of construction; fundamental design of typical dwellings using planning and building standards developed by Agricultural Experiment Station and other research. Prerequisite: AA 178 and senior standing. Professor Sinnard.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- AE 501. **Research.** Terms and hours to be arranged.
- AE 503. **Thesis.** Terms and hours to be arranged.
- AE 505. **Reading and Conference.** Terms and hours to be arranged.
- AE 507. **Seminar.** Terms and hours to be arranged.

## Animal Husbandry

Courses in animal husbandry are planned to fit the student to produce high grade and registered livestock in the most economical and businesslike manner, with a range of electives adapted to the individual's needs, capabilities, and interests. Principles are stressed and practical details are thoroughly treated with current economic facts of the industry in proper perspective. Students specializing in animal husbandry are expected to familiarize themselves also with veterinary science, crop production, soil science, range management, marketing, and other agricultural studies as well as general education subjects. In livestock genetics, reproduction physiology, animal nutrition, range management, meats and wool, both undergraduates and graduates will find the department particularly well equipped. Special attention is given to training for professional careers in agriculture and for successful livestock production. Graduate students receive particular help in integrating their studies with research programs.

The Animal Husbandry and Farm Crops departments integrate the range management training so that a student may prepare himself equally well in the plant and animal phases of the livestock business. Students in range management preparing for a career with one of the State or Federal land-management agencies, or in research, teaching, or extension, may register in either department and obtain suitable training for professional work in range management.

#### Lower Division Courses

- AH 121. **Introduction to Animal Husbandry.** 3 hours any term. 3 ①  
 Economic importance and geographical distribution of beef cattle, horses, swine, sheep, and goats; breeding, feeding, care, management, and marketing of animals and products. Professor Bogart; Associate Professor Johnson.
- AH 131. **Stock Judging and Selection.** 3 hours fall or winter. 3 ②  
 Comparative judging of breeding, feeder, and fat livestock on conformation, production, and efficiency. Associate Professors Johnson, Oliver.



- AH 231. **Stock Judging.** 3 hours spring. 3 ②  
Judging of all kinds of livestock, with trips to fairs and stock farms. Prerequisite: at least 3 term hours in stock judging. Associate Professor Johnson.

**Upper Division Courses**

- AH 331. **Types and Market Classes of Livestock.** 3 hours winter. 3 ③  
Classification of all kinds of livestock, market types of animals on foot and in carcass. Prerequisite: AH 131. Associate Professor Oliver.
- AH or FC 341. **Range Management.** 3 hours fall or winter 2 ① 1 ②  
Principles and practices of range and pasture management, orientation in land-use management. Prerequisite: junior standing. Associate Professor Hedrick.
- AH or FC 342. **Range Improvement.** 3 hours winter. 2 ① 1 ②  
Reseeding, improvement, and maintenance of range, cut-over, overflow, marginal, and other grazing lands. Prerequisite: AH or FC 341. Assistant Professor Schudel.
- AH 351. **Meats.** 3 hours fall or spring. 1 ① 2 ③  
Meats of all meat animals; slaughtering, cutting, sanitation and inspection, packing houses, retail markets. Prerequisite: junior standing and consent of instructor. Associate Professor Oliver.
- AH 352. **Meat Identification and Selection.** 3 hours winter. 2 ① 1 ③  
Meat products; preparing meats for storage, identification of cuts, judging, Prerequisite: junior standing. Offered alternate years. Not offered 1957-58. Associate Professor Oliver.
- AH 401. **Research.** Term and hours to be arranged.
- AH 405. **Reading and Conference.** Terms and hours to be arranged.
- AH 407. **Seminar.** 1 hour spring. Professor McKenzie. 1 ②
- AH 412. **Livestock Feeding.** (G) 3 hours winter. 3 ①  
Application of nutrition principles to livestock feeding; reference to investigations carried on by agricultural experiment stations and elsewhere. Prerequisite: AI 311 or 411. Associate Professor Oldfield.
- AH 421. **Horse Husbandry.** 1 hour fall. 1 ②  
Feeding, care, and management of horses. Emphasis on light horse management. Prerequisite: AI 311 or 411. Offered alternate years. Offered 1957-58. Associate Professor Oliver.
- AH 422. **Sheep Husbandry.** (G) 3 hours winter. 2 ① 1 ②  
Feeding, care, and management for maintenance; breeding and fattening under farm and range conditions; selection of feeder lambs. Breed history. Prerequisite: AI 311 or 411. Assistant Professor Fox.
- AH 423. **Swine Husbandry.** (G) 3 hours spring. 2 ① 1 ②  
Feeding, care, and management of swine. Prerequisite: AI 311 or 411. Associate Professor Johnson.
- AH 426. **Beef Cattle Husbandry.** (G) 3 hours spring. 2 ① 1 ②  
Breed histories; feeding; care and management for maintenance; breeding and fattening under farm and range conditions; feeder steer selection. Prerequisite: AI 311 or 411. Associate Professor Johnson.
- AH 431. **Stock Judging.** 1 hour fall. 1 ③  
Judging and selection of swine, sheep, and beef cattle; emphasis on differences between show-ring and ranch-production standards. Prerequisite: AH 231 or equivalent. Associate Professor Johnson.
- AH or FC 441. **Range Methods.** (g) 4 hours spring. 3 ① 1 ③  
Methods in evaluating ranges; techniques for measurement of forage utilization, range condition, and trend and inventory; field problems; use of aerial photographs and application of sampling theory. Prerequisite: AH or FC 341. Associate Professor Hedrick.
- AH or FC 442. **Range Management Planning.** (G) 3 hours winter. 2 ① 1 ③  
Administration and management of range lands; elements of range management applied to actual problems; making and executing plans. Prerequisite: AH or FC 441. Offered alternate years. Not offered 1957-58. Associate Professor Poulton.

- <sup>1</sup>AH or FC 443. **Range Management.** 3 hours winter. 1 ① 2 ②  
Associate Professor Poulton.
- AH 473. **Livestock Genetics.** (G) 4 hours spring. 2 ① 2 ②  
Inheritance of anatomical and physiological abnormalities; systems of breeding in livestock production; genetic significance of inbreeding and crossbreeding; improvement through breeding. Prerequisite: Z 341. Professor Bogart.
- AH 476. **Reproduction Problems.** (G) 3 hours spring. 1 ① 2 ②  
Breeding efficiency of livestock; effect of nutritional, genetic, and physiological factors; care and management of young and breeding animals; artificial insemination. Prerequisite: AI 316. Professors McKenzie, Krueger; Mr. Wu.
- AH 481. **Wool and Mohair.** (G) 3 hours fall. 2 ① 1 ②  
Commercial value; physical and chemical structure; preparation and marketing; judging; sorting; grading; scouring; manufacture. Assistant Professor Fox.
- AH 483. **Wool Technology.** (G) 2 hours spring. 1 ① 1 ②  
Techniques in evaluating physical properties; relation to market value. Prerequisite: AH 481. Assistant Professor Fox.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- AH 501. **Research.** Terms and hours to be arranged.
- AH 503. **Thesis.** Terms and hours to be arranged.
- AH 505. **Reading and Conference.** Terms and hours to be arranged.
- AH 507. **Seminar.** Terms and hours to be arranged.  
Topics: (1) water metabolism in ruminants; (2) endocrine factors in livestock production; (3) literature synthesis on physiology of beef cattle; (4) genetic interpretations of data adjustments; (5) nutrient interrelationships in animal metabolism; (6) anti-metabolites in animal nutrition. All topics may not be covered each year.
- AH or FC 541. **Range Research Methods.** 3 hours spring. 3 ①  
Problems peculiar to range and pasture investigations; techniques used in measuring forage and animal production to facilitate integration of plant and animal research. Prerequisite: St 421, 422, AH 441. Offered alternate years. Not offered 1957-58. Associate Professor Hedrick.

## Animal Industries

Courses in animal industries for both undergraduate and graduate students are planned from the broad point of view of animal industries as a whole or are concerned with more than one field.

#### Upper Division Courses

- AI 311. **Animal Nutrition I.** 4 hours fall. 3 ① 1 ②  
Application of nutrition to the feeding of farm, game, and fur-bearing animals; various nutrients in the animal body; feeding standards and nutritive ratios; adaptability of feed to animal functions. Not recommended for animal, dairy, or poultry husbandry majors. Prerequisite: Ch 103. Associate Professor Oldfield.
- AI 316. **Animal Breeding.** 3 hours winter. 3 ②  
The male and female genital organs; estrus, semen; fertility and factors affecting it—nutritional, genetical, hormonal, etc.; artificial insemination. Course is designed to help the student analyze the fertility complex and exercise control over breeding efficiency through management of livestock.
- AI 411. **Animal Nutrition II.** (g) 4 hours fall. 3 ① 1 ②  
Nutrition principles; requirements for growth, maintenance, reproduction, lactation; functions and metabolism of nutrients in animal body; relation of chemical composition of feeds to their functions in the animal body. Prerequisite: Ch 251. It is recommended that animal husbandry majors take Ch 252 before this course. Associate Professor Oldfield.

<sup>1</sup> For course description see Farm Crops.

**Graduate Courses**

Course AI 411 may be taken for graduate credit.

- AI 511. **Animal Nutrition.** 5 hours winter. 5 ①  
 Nutritional research methods; energy concepts; protein metabolism; mineral and vitamin requirements; dietary deficiency disorders. Prerequisite: Ch 251, AI 411, or their equivalents. Offered alternate years. Not offered 1957-58. Professor Haag.
- AI 571. **Applied Animal Genetics.** 3 hours fall. 3 ①  
 New concepts and philosophies of genetics; recent literature relating to theoretical genetics and applications in animal industries. Prerequisite: AH 473. Offered alternate years. Offered 1957-58. Professors Bogart and Bernier.
- AI 573. **Physiology of Reproduction in Domestic Animals.** 3 hours spring. 3 ①  
 Physiology of ovaries, testes, uterus; role of genetic, nutritional, and endocrine factors in reproduction; role of physical factors and management; influence of micro-organisms on fertility and prenatal growth. Prerequisite: AH 476. Offered alternate years. Offered 1957-58. Professors Krueger, Bogart; Associate Professor Oldfield; Mr. Wu.
- AI 574. **Growth in Domestic Animals.** 3 hours fall. 3 ①  
 Endocrines and growth; bioenergetics and differentiation; genetic, bacterial, and nutritional aspects of growth. Prerequisite: Ch 452, Z 533, AI 411, AH 473. Offered alternate years. Not offered 1957-58. Professors Bogart, Krueger; Associate Professor Oldfield; Mr. Wu.

## Dairying

Three 4-year curricula are offered in Dairying. If a student has no preference at beginning of his freshman year, he may select the curriculum common for freshman agricultural students. If he has decided at the beginning of the sophomore year he should consult his adviser who will assist him in selecting courses for the training he desires.

**Milk Production.** The curriculum in Milk Production provides training for students who expect to be farmers with dairy cattle as a basis of their livestock operations and for those who want to become breeders of purebred dairy cattle. The curriculum allows a wide choice of electives to meet the needs of Oregon's diversified agriculture. It also provides the basis for a professional career as a dairy extension specialist, technician for artificial insemination, fieldman for a dairy plant, salesman or field specialist for a feed manufacturer, or milk inspector. It prepares students for advanced work leading to such professional positions as instructors and research workers in colleges and universities, in State or Federal service, in industrial organizations.

**Milk Processing.** The curriculum in Milk Processing prepares men and women for technical positions in the dairy products industry. Excellent training is offered in milk sanitation, quality improvement, dairy inspection, dairy products grading, and quality control. Those who desire to do advanced work may fit themselves for industrial research, university teaching, and research for State and Federal experiment stations. Never have opportunities been greater for women in quality control and related technical positions.

**Milk Industry Management.** Students completing the Milk Industry Management curriculum are fitted for positions in the management field of the dairy products industry. After the student has completed two years of basic technical courses, emphasis is placed on production management, advertising, sales, and related business phases. This curriculum has been designed to meet the demands made by the milk industry that students be trained in both technology and business.

A close relationship exists between the three options, and adjustment of courses between them to meet special interests or needs is encouraged. All three options permit the liberal selection of electives. Students are encouraged to consult their advisers frequently because substitution of courses is encouraged to meet their special interests.

By carefully selecting courses, students may complete at Portland State College two years of the curricula in Milk Processing and Milk Industry Management and one year of the curriculum in Milk Production. This arrangement, developed at the request of the Oregon Dairy Industries Association, will be of special interest to students who live in the area served by Portland State College, and especially attractive to those who may be employed in the dairy industry in Portland. Many of these courses may be taken at night.

**Facilities for Teaching and Research.** The Dairy Products Laboratory in Withycombe Hall embodies the latest developments in dairy plant construction and provides excellent facilities for processing milk. Other laboratories in the building are equipped for teaching and research in technological and production phases of the industry. Instruction in dairy bacteriology and dairy chemistry given in the School of Science is closely correlated with that given in the Department of Dairying. The Department operates a dairy farm, stocked with about 200 head of purebred dairy cattle. The dairy barn, surrounded by splendid irrigated pastures, is modern and provides facilities for production of milk of high quality. Students assist in herd operation. Laboratory and experimental barn facilities especially adapted to study of milk secretion, artificial insemination, and reproductive problems are immediately adjacent to dairy barn.

#### Lower Division Courses

- D 118. **Dairy Products Standards.** 1 hour spring. 1 ②  
Critical study of butter, cheese, milk, and ice cream with score cards; identification and causes of defects. Associate Professor Stein.
- D 121. **Introduction to Dairying.** 3 hours any term. 3 ④  
Introduction to dairy science. Associate Professor Wolberg.
- D 122. **Testing Milk and Cream.** 1 hour winter. 1 ②  
Testing milk, cream, buttermilk, skim milk for fat, sediment, acidity, and specific gravity. Prerequisite: D 121. Associate Professor Wolberg.

#### Upper Division Courses

- D 310. **Market Milk.** 3 hours spring. 2 ④ 1 ③  
Methods of producing and processing milk; sanitation; legal standards. Laboratory classes in Dairy Barn and Dairy Products Laboratory. Prerequisite: D 121, Bac 204. Professor Wilster, Associate Professor Stein, Mr. Sprowls.
- D 312, 313, 314. **Butter, Cheese, Ice Cream.** 3 hours each term. 3 ④  
Prerequisite: D 121, Ch 251. For D 314: Ph 211, 212. Professor Wilster.
- D 315, 316, 317. **Butter, Cheese, and Ice Cream Laboratory.** 3 hours each term. 1 ⑤ 1 ③  
Must parallel D 312, 313, 314 for students in milk processing and milk industry management. Associate Professor Stein.
- D 318. **Judging Dairy Products.** 1 hour fall. 1 ②  
Advanced judging of dairy products to qualify for intercollegiate contests and commercial and government grading work. Prerequisite: D 118. Associate Professor Stein.
- D 320. **Herd Record Systems.** 3 hours winter. 3 ④  
Methods of recording breeding, calving, health, identification, registration, and production for dairy herd; artificial insemination records, herd improvement association and official testing procedures. Prerequisite: D 121, 122. Associate Professor Wolberg.

- D 321. Dairy Cattle Judging. 3 hours spring. 2 ③  
Comparative judging of dairy breeds; show-ring terminology; fitting for show. Prerequisite: D 121. Associate Professor Wolberg.
- D 322. Dairy Herd Management. 3 hours fall. 3 ①  
Breed characteristics, individual animal selection; some factors influencing growth and milk production; management practices; cost of production. Prerequisite: D 121. Mr. Sprowls.
- D 401. Research. Terms and hours to be arranged.
- D 405. Reading and Conference. Terms and hours to be arranged.
- D 407. Seminar. 1 hour each term. 1 ①
- D 411. Dry and Condensed Milk. (g) 3 hours fall. 2 ① 1 ③  
Principles and methods of manufacture of condensed and dry milk products; trips to manufacturing plants. Prerequisite: Ph 212, Ch 251, and consent of instructor. Offered alternate years. Not offered 1957-58. Professor Wilster, Associate Professor Stein.
- D 412, 413. Dairy Technology. (G) 3 hours winter and spring. 2 ① 1 ③  
Detergency and methods of evaluating detergents and chemical sterilizers; water conditioning; waste disposal; chemical and physical methods for laboratory control of products and processes; tests for quality of dry milks, casein, dried whey, and other byproducts; methods of analysis of dairy products. Prerequisite: Ch 458. Ch 254 is recommended. Professor Richardson.
- D 414. Dairy Food Specialties. (g) 3 hours spring. 2 ① 1 ④  
Manufacturing food products from milk, including cheese varieties, process cheese, cheese foods, spreads, whey products, cultured milks, frozen milk, and milk products; State and Federal standards. Prerequisite: D 312, 313, 314, 316. Offered alternate years. Not offered 1957-58. Professor Wilster, Associate Professor Stein.
- D 415. Dairy Plant Management. 2 hours fall. 2 ①  
Milk and cream procurement; efficient operation of dairy plants; costs of processing milk and of preparing dairy products for market. Prerequisite: D 312, 313, 314, senior standing, and consent of instructor. Professor Wilster.
- D 416. Milk Plant Operation. (g) 3 hours winter. 2 ① 1 ③  
Advanced methods and practices; plant equipment; heat transfer; quality, sanitation, and efficiency tests; methods to correct defects in products normally handled in modern milk plant. Prerequisite: D 310, Bac 411, Ch 457. Offered alternate years. Not offered 1957-58. Professor Wilster, Associate Professor Stein.
- D 417. Dairy Foods. 3 hours fall. 3 ①  
For students in fields other than milk processing or milk industry management. Prerequisite: Bac 204. Professor Wilster, Associate Professor Stein.
- D 421. Breeding Dairy Cattle. (G) 3 hours winter. 3 ①  
Origin and development of dairy cattle; systems of breeding; inherited characteristics; pedigree study and analysis; progeny tests; planning the breeding program. Prerequisite: Z 341. Professor Jones.
- D 422. Dairy Cattle Feeding. (G) 3 hours spring. 3 ①  
Feeding standards and feedstuffs for growth, maintenance, reproduction, and milk production; experimental technique. Prerequisite: D 322, AI 411. Professor Jones.
- D 425. Dairy Cattle Judging. 2 hours fall. 2 ①  
Judging of dairy cattle including farm visits. Prerequisite: D 321. Associate Professor Wolberg.
- D 426. Artificial Insemination of Dairy Cattle. 3 hours winter or spring. 2 ② 1 ①  
Technique of artificial insemination of dairy cattle. Prerequisite: VM 321 and consent of instructor. Associate Professor Wolberg.
- D 430. Utilization of Dairy Products. (G) 3 hours spring. 3 ①  
Evaluation of milk and milk products; principles of preserving nutritive quality; by-products, their composition and utilization in food and nonfood products. Prerequisite: senior standing and consent of instructor. Professor Richardson.

- D 431. **Pedigree Studies.** (G) 2 hours. 1 ① 1 ③  
 Inheritance of foundation blood lines of major dairy breeds; selection of cattle on basis of pedigree, performance of ancestors, and other inherited characteristics. Prerequisite: D 320, 322, 421. Professor Jones.
- D 432. **Milk Secretion.** (G) 3 hours spring. 2 ① 1 ③  
 Hereditary and nutritional factors affecting milk secretion; role of hormones, management, disease, and environmental factors in relation to milk secretion; development of udder. Prerequisite: senior standing and consent of instructor. Offered alternate years. Offered 1957-58.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- D 501. **Research.** Terms and hours to be arranged.
- D 503. **Thesis.** Terms and hours to be arranged.
- D 505. **Reading and Conference.** Terms and hours to be arranged.
- D 507. **Seminar.** Terms and hours to be arranged.

## Extension Methods

Instruction in extension methods is intended to assist in the training of students for positions as county extension agents in agriculture, as 4-H club and home economics extension workers, as extension specialists, and as specialists in similar professional fields where extension methods are commonly used. It will also give students in other fields a better understanding of how to take advantage of services available through the county extension agents.

An extension worker must know not only the subject matter but also the methods by which extension work succeeds. He must be able to give or know how to obtain authoritative advice for his community or county on problems related to his field of service. He must know the technique of platform speaking and demonstration, radio speaking, conducting discussions, and publicizing the extension program. Combining a major in agriculture or home economics with training in journalism, speech and dramatics, economics, sociology, and other departments, supplemented by work in extension methods, should materially assist in meeting the need for better trained extension workers.

#### Upper Division Courses

- EM 405. **Reading and Conference.** Terms and hours to be arranged.
- EM 411, 412. **Extension Methods.** (G) 3 hours winter. 3 ①  
 First term: Philosophy and organization of extension work; methods employed by extension specialists, county agricultural and home demonstration agents, 4-H club leaders, etc.  
 Second term: Application of knowledge and skills gained in EM 411 and other college courses such as journalism, radio, etc., in the fields of agriculture and home economics extension.
- EM 453. **Field Work in Home Economics Extension.** (G) Terms and hours to be arranged.  
 Field practice in county extension work under supervision of professor of extension methods and county extension agents. Prerequisite: EM 411. Professor Clinton.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- EM 505. **Reading and Conference.** Terms and hours to be arranged.

## Farm Crops

The work of the Department of Farm Crops is closely related to six important fields: (1) daily food supply for our human population; (2) feed requirements of all classes of farm animals; (3) growth of plants for textiles; (4) seed and special crops such as drug plants; (5) plant problems of soil conservation; (6) range and wildlife food crops.

Problems of production, improvement, marketing, manufacture, and use of each of field crops produced for food, forage, textile, and special purposes are dealt with by this department. The primary purpose of the major curriculum is to teach students scientific, practical, and economical methods of crop production, marketing, and improvement. The courses make constant application of scientific principles from such fields of study as soils, physics, chemistry, bacteriology, plant pathology, and plant physiology.

The curricula are designed to enable men to fit themselves for business positions in connection with the marketing of seeds and other farm crops; for civil service positions in agronomy, forage crops, soil conservation, range management, grain standardization, plant breeding, and crop marketing; and for experiment station, extension, and teaching work. The object is to develop men trained for leadership in agriculture and to provide scientific training in professional and technical agriculture. Considerable flexibility in electives and the study of original problems is encouraged.

### Lower Division Courses

- FC 111. Elements of Agronomy I. 3 hours any term. 2 ① 1 ②  
Tillage and production; seed selection; identification; rotation; economics of crop production. Winter term adapted to needs of fish and game management studies. Prerequisite to all farm-crops courses except FC 311. Staff.
- FC 211. Elements of Agronomy II. 3 hours fall or winter. 2 ① 1 ②  
Distribution and importance of forage crops; economic grasses and legumes used for forage, turf, and range; application of pasture, silage, hay, range, and seed to forage crop production. Professor Cowan.

### Upper Division Courses

- FC 311. Potato Growing. 2 hours spring. 2 ①  
Production; improvement; storage; cost; marketing; distribution; uses; experimental work; varietal studies; identification, judging, and scoring. Professor Hill.
- FC 313. Lawns and Turfs. 2 hours winter. 1 ① 1 ②  
Turf plants and seeds; seedbed preparation, seeding, fertilization management, weed and pest control for lawns, golf courses, grass nurseries, etc. Assistant Professor Schudel.
- FC 317. Weed Control. 3 hours spring. 2 ① 1 ②  
Weed types; habits of growth; legislation; prevention, control, and eradication; noxious, persistent, perennial, and poisonous weeds of ranch and range. Mr. Furtick.
- FC 318. Wildlife Food Crops. 3 hours winter. 2 ① 1 ②  
Native and introduced food, forage, and cover plants for wildlife and game refuges, breeding areas, fur and game farms; seed and plant supplies and markets. Assistant Professor Schudel.
- FC 322. Cereal Production Lectures. 3 hours winter. 3 ①  
Cereals and allied grains; distribution; adaptability; ecological relationship; seed treatment; markets, manufacture, and movement in commerce. Prerequisite: Bot 202, or equivalent. Professor Fore.
- FC 323. Cereal Morphology. 2 hours winter. 2 ②  
Morphological and taxonomic characters of common cereals; identification; seed structure in relation to cereal manufacturing processes. Associate Professor Foote.

- FC 324. **Forage Crops.** 3 hours spring. 2 ① 1 ②  
Cultivated hay and pasture; grasses and legumes; pasture establishment and management; hay and silage production; forage crop improvement. Prerequisite: FC 211. Professor Cowan.
- FC 331. **Seed Testing Technique.** 3 hours winter or spring. 3 ②  
Technique of purity and germination tests in accordance with official procedures; use and care of laboratory equipment and supplies. Prerequisite: FC 211, Bot 202, or equivalents. Associate Professor Jensen.
- FC or AH 341. **Range Management.** 3 hours fall or winter. 2 ① 1 ②  
Principles and practices of range and pasture management, orientation in land-use management. Prerequisite: junior standing. Associate Professor Hedrick.
- FC or AH 342. **Range Improvement.** 3 hours winter. 2 ① 1 ②  
Reseeding, improvement, and maintenance of range, cut-over, overflow, marginal, and other grazing lands. Prerequisite: FC or AH 341. Assistant Professor Schudel.
- FC 401. **Research.** Terms and hours to be arranged.
- FC 403. **Thesis.** Terms and hours to be arranged.
- FC 405. **Reading and Conference.** Terms and hours to be arranged.
- FC 407. **Seminar.** 1 hour each term. 1 ①
- FC 411. **Crop Inspection.** (G) 4 hours winter. 2 ① 2 ②  
Commodity grading and standardization with special emphasis on inspection grading and evaluation of cereals, hay, forage, potatoes, beans, seeds, etc. Prerequisite: FC 211, 322, 323, Ch 251, or equivalent. Professor Hill, Assistant Professor Schudel.
- FC 414. **Seed Production.** (G) 3 hours fall. 3 ①  
Production, distribution, and use of seed crops; inspection, certification, and legislation. Prerequisite: FC 211, senior standing. Professor Hill.
- FC 415. **Plant Breeding.** (g) 3 hours spring. 2 ① 1 ②  
Practical application of genetics to improvement of field and horticultural plants. Prerequisite: Z 341, senior standing, and consent of instructor. Professor Fore.
- FC 416. **Field-Plot Technique.** (G) 3 hours spring. 2 ① 1 ②  
Experimental procedures, methods, and techniques of field plot experimentation; application of experimental designs to field crop research; interpretation of experimental results. Prerequisite: St 421, 422, or equivalent. Associate Professor Foote.
- FC or AH 441. **Range Methods.** (g) 4 hours spring. 3 ① 1 ③
- FC or AH 442. **Range Management Planning.** (G) 3 hours winter. 2 ① 1 ③
- FC or AH 443. **Range Management.** (G) 3 hours winter. 1 ① 1 ②  
Current technical developments in range management, both domestic and foreign. Prerequisite: AH or FC 314 or consent of instructor. Associate Professor Poulton.

For the 4-year curriculum in Range Management see pages 210-211.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- FC 501. **Research.** Terms and hours to be arranged.
- FC 503. **Thesis.** Terms and hours to be arranged.
- FC 505. **Reading and Conference.** Terms and hours to be arranged.
- FC 507. **Seminar.** 1 hour each term. 1 ①
- FC 515. **Plant Breeding.** 3 hours winter. 3 ①  
Underlying genetic and cytogenetic principles, methodologies, and theories in improvement of cereal and forage crops. Consideration is given to current literature. Prerequisite Z 341, FC 416, 517 or equivalent. Professor Cowan, Associate Professor Foote.

<sup>1</sup> For course description see Animal Husbandry, page 221.



- FC 517. **Plant Genetics.** 3 hours fall. 2 ① 1 ②  
Theories and principles of plant inheritance studies. Prerequisite: Z 341 and consent of instructor. Associate Professor Foote.
- FC 518. **Herbicides and Plant Growth Regulators.** 3 hours winter. 2 ① 1 ②  
Chemicals for weed control and other agronomic purposes; growth regulators, defoliants, and preharvest sprays and their physiological effects; research methods. Prerequisite: FC 317, Ch 252, Bot 331, senior standing. Offered alternate years. Offered 1957-58.
- FC 520. **Conservation Cropping.** 2 hours winter. 2 ①  
Crops and cropping systems which replenish and maintain soil organic matter and provide maximum protection against soil losses; plants for dike and stream bank protection, sodded waterways, and slope maintenance. Prerequisite: FC 211 and senior standing. Professor Hill.
- FC 521. **Crop Production.** 3 hours spring. 1 ③  
Reading, discussion, and lectures on current trends and advances in field crop research and production; emphasis on current literature in field and development of broad concepts of agronomy in relation to other fields. Prerequisite: FC 317, 322, 324. Staff.
- \*FC or AH 541. **Range Research Methods.** 3 hours spring.

## Fish and Game Management

Major students in this Department are prepared chiefly for professional careers in wildlife management and in fisheries as biologists, managers, and administrators with State and Federal agencies, land- and water-using industries, and public-health organizations. The curriculum in wildlife management emphasizes the ecological requirements of wild birds and mammals of recreational and economic importance in relation to multiple-use principles of land and water management. An additional curriculum is offered for students planning to enter the fields of commercial and game fisheries.

Strategically located for the study of fish and game management, Oregon State College has within easy access state fish hatcheries, a game farm, an experimental fur farm, refuges, the E. E. Wilson Game Management Area, a fish physiology and toxicity laboratory, and a marine fishery station. Most forms of Oregon's varied wildlife are within a few hours' travel from Corvallis. Research by the U.S. Fish and Wildlife Service and the Oregon State Game Commission conducted at the College in cooperation with the Agricultural Experiment Station is of basic value to the instructional programs. Cooperative water-pollution investigations with the Fish Toxicology and Physiology Unit of the U.S. Public Health Service are important aspects of the graduate studies program.

### Lower Division Courses

- FG 251, 252. **Wildlife Conservation.** 3 hours each term, fall and winter. 3 ①  
Wildlife as a valuable economic and social resource; the need of its conservation through scientific administration and manipulation; the general problems of wildlife management; an introduction to the important wild animal groups of birds, mammals, and fishes. Associate Professor Long.
- FG 261. **Wildlife Technique.** 3 hours each term, fall or spring. 3 ① 1 ②  
Techniques and equipment used by sportsmen in harvesting the game and fish crop; shotguns and elementary ballistics; bait and fly casting; hunting dogs; dressing and caring for flesh of game and fish. Associate Professor Long.
- FG 274, 275, 276. **Economic Ichthyology.** 3 hours each term. 3 ① 1 ②  
Classification and distribution of fishes; general consideration to orders and families of fishes with special attention to those of economic and recreational importance in North America and adjacent marine areas. Prerequisite: Z 202. Associate Professor Bond.

<sup>1</sup> For course description see Animal Husbandry, page 222.

- FG 281, 282, 283. **Wildlife Management.** 3 hours each term. 2 ① 1 ③  
 Management principles applied to wildlife species; measurements of animal populations and productivity; refuge management, hunting and predatory control, food and cover improvements, and other techniques used in controlling wild animal populations. Prerequisite: Z 202, FG 252. Associate Professor Kuhn.
- Upper Division Courses**
- FG 310, 311, 312. **Forest Wildlife Management.** 3 hours each term. 3 ①  
 Game and fish management in forest areas; measurement and diagnosis of productivity; control of factors inimical to wildlife species; environmental improvements. Fall term: big game and fur animals; winter term: game and forest birds; spring term: game fishes.
- FG 319. **History and Literature of Wildlife Management.** 3 hours  
 winter. 3 ①  
 Brief history of wildlife conservation; survey of literature of wildlife management; sources of wildlife management literature.
- FG 320. **Rodent Control Methods.** 3 hours spring. 2 ① 1 ③  
 Classifications, life histories, and control of rodents important in human disease transmission and in destruction of agricultural crops. Prerequisite: Z 372. Associate Professor Kuhn.
- FG 340. **Field Work.** 1 to 6 hours to be arranged.  
 Practical field work between sophomore and senior years carried on with public agencies and private concerns; written report based on an approved outline. Student registers in absentia. See page 94.
- FG 341. **Fish and Game Law Enforcement.** 2 hours winter. 1 ① 1 ②  
 National and State game laws; law enforcement and scientific methods of evidence collection, preservation, and presentation. Associate Professor Kuhn.
- FG 401. **Research.** Terms and hours to be arranged.
- FG 405. **Reading and Conference.** Terms and hours to be arranged.
- FG 407. **Seminar.** Terms and hours to be arranged.
- FG 440. **Field Studies.** (G) 1 to 6 hours to be arranged.  
 Advanced field problems assigned to meet specific needs of senior and graduate students assigned to field stations. Prerequisite: FG 283 or equivalent.
- FG 451, 452, 453. **Management of Game Birds.** 3 hours each term. 2 ① 1 ③  
 Identification, distribution, life histories, ecology, and management of important game bird species. Waterfowl and related forms, fall and winter terms; upland birds, spring term. Prerequisite: Z 371, FG 283. Associate Professor Long.
- FG 454, 455, 456. **Management of Game Fish.** (G) 3 hours each term. 3 ① 1 ②  
 Freshwater fishes of North America; trout, salmon, and spiny-rayed fishes; biologies of important species; limnology; dams, fishladders, diversion ditches; pollution; farm fish ponds; and hatchery methods and techniques. Prerequisite: FG 274. Associate Professor Bond.
- FG 457, 458. **Management of Big Game.** (G) 3 hours fall and spring. 2 ① 1 ③  
 Species of game mammals; habits, distribution, management under natural conditions; values; laws. Prerequisite: Z 372, FG 283. Associate Professor Kuhn.
- FG 460. **Management of Fur Bearers.** (G) 3 hours winter. 2 ① 1 ③  
 Species of wild fur-bearing mammals, identification, life histories, habits, distributions, economic importance and management. Prerequisite: Z 372, FG 283. Associate Professor Kuhn.
- FG 464, 465, 466. **Commercial Fisheries.** 3 hours each term. 2 ① 1 ③  
 Commercial fisheries; biologies of important vertebrate species; values; harvesting; regulating fisheries resources. Prerequisite: FG 276. Assistant Professor Warren.

**Graduate Courses**

Courses numbered 400-499 and designated (G) or (G) may be taken for graduate credit.

- FG 501. **Research.** Terms and hours to be arranged.
- FG 503. **Thesis.** Terms and hours to be arranged.
- FG 505. **Reading and Conference.** Terms and hours to be arranged.
- FG 507. **Seminar.** Terms and hours to be arranged.
- FG 561, 562. **Invertebrate Fisheries.** 3 hours winter and spring. 2 ① 1 ③  
 Life histories, distribution, identification, harvesting, and utilization of economic mollusca, crustaceans, and other important invertebrates fished and cultivated. Prerequisite: Z 452. Professor Dimick.
- FG 567, 568, 569. **Fisheries Research Methods.** 3 hours each term. 2 ① 1 ③  
 Scientific methods, techniques, and apparatus used in fishery investigations; growth, numbers, and availability of fishes; theories and application of sampling, experimental design, and interpretation of data. Prerequisite: one term of statistics and senior or graduate standing. Assistant Professor Warren.
- Z 571, 572, 573. **Ichthyology.** 3 hours each term. 2 ① 1 ③  
 For course description see Zoology.
- FG 570. **Pollution Problems in Fisheries.** 3 hours. 2 ① 1 ③  
 Biology of polluted waters; sources, measures, biological indices, and abatement of water pollution affecting fisheries; water requirement and toxicology of fishes and associated aquatic organisms. Prerequisite: FG 456 or equivalent. Professor Doudoroff.

## Food Technology

The curriculum in Food Technology provides a basic knowledge of the sciences which have application in food manufacture and a knowledge of practical food processing techniques such as canning, freezing, dehydration, and fermentation. Students who complete the curriculum are prepared for employment in the operation of food manufacturing plants, in companies related to the food industry, in government work related to foods, in technical sales and service, or in food research. Lectures, demonstrations, laboratory exercises, pilot-plant operations, and visits to commercial processing plants make up the instruction program.

Graduate programs leading to the Master of Science or the Doctor of Philosophy degree in food technology permit intensified study in the areas of students' special interests. The Food Technology Department in cooperation with other departments affords excellent facilities for solving both fundamental and applied research problems relating to foods.

**Food Processors Short Course.** Persons in the food industry who have not had a formal education in food technology have an opportunity to receive training during the Food Processors Short Course in February each year. Basic principles and the latest developments in food manufacturing are included. Instruction on the double-seam in canning is also available in conjunction with the Short Course.

**Equipment.** The Food Technology Building is designed to provide functional facilities for all types of food manufacturing. It is a modern, well-equipped, food-processing laboratory for teaching and research and contains a

pilot plant for food manufacturing, separate laboratories for research, classrooms, and an amphitheater for special lectures, movies, and demonstrations.

**Seafoods Laboratory.** The primary work of the Seafoods Laboratory at Astoria, Oregon, is research in marine products processing. In this branch laboratory of the Food Technology Department students have an opportunity to study fish preservation and to become acquainted with various phases of the fish industry.

#### Lower Division Courses

- FT 111. Introduction to Food Technology. 3 hours fall. 3 ①  
Food industry and role of food technology in its development; nature of foods and the relationship of science and engineering to food manufacture.
- FT 221, 222, 223. Food Manufacturing Methods. 3 hours each term. 2 ① 1 ③  
Unit operations and unit processes applied to food manufacture and preservation.
- FT 271. Inspection of Processed Foods. 2 hours fall or spring. 1 ① 2 ②  
Federal and State inspection and quality grading of processed foods; practical examination and quality grading of food products.

#### Upper Division Courses

- FT 311. Food Manufacturing Plants and Equipment. 3 hours fall. 2 ① 1 ③  
Designing plants and estimating costs; location, construction, equipment, operation; field trips to processing plants. Prerequisite: FT 223, AE 351, or consent of instructor.
- FT 340. Food Industries Survey. 3 hours winter. 3 ①  
Nature, extent, and economic significance of the food industry and its problems; manufactured food products. For students who will not have opportunity for any other food technology course.
- FT 342, 343. Food Science. 4 hours winter and spring. 3 ① 1 ③  
Scientific factors in food manufacture, preservation, and deterioration. Prerequisite: FT 223, Bac 204, elementary biochemistry.
- FT 350. Principles of Food Preservation. 4 hours fall. 3 ① 1 ③  
Physical, chemical, and microbiological principles governing manufacture, preservation, and deterioration of foods. For technical minors. Prerequisite: Ch 103, Bac 204.
- FT 372. Extraneous Materials in Foods. 3 hours winter. 1 ① 2 ②  
Principles of detection, extraction, and identification of extraneous materials in foods. Maximum of 7 students per laboratory section. Prerequisite: Bac 204.
- FT 401. Research. Terms and hours to be arranged.
- FT 403. Thesis. Terms and hours to be arranged.
- FT 405. Reading and Conference. Terms and hours to be arranged.
- FT 407. Seminar. Terms and hours to be arranged.
- FT 421. Federal and State Food Regulations. (g) 3 hours spring. 3 ①  
Laws and regulations dealing with the manufacture of foods; labeling, adulteration, and sanitary aspects of production and distribution. Prerequisite: senior standing.
- FT 423. Food Products Evaluation. (g) 4 hours fall or spring. 2 ① 2 ③  
Systematic examination of food products; practice in the physical, chemical, and organoleptic laboratory techniques of food analysis for quality control. Prerequisite: FT 343, Ch 234, elementary biochemistry.
- FT 424. Food Products Evaluation. (g) 3 hours winter. 1 ① 2 ③  
Continuation of FT 423. Prerequisite: FT 423.

- FT 431. Food Packaging. (G) 3 hours fall. 2 ① 1 ③  
Objectives, requirements, composition, characteristics, merits, selection, and adaptation of packaging materials and packages; chemical and physical properties; adhesives, lacquers, plasticizers, sizers, coatings, laminates, and closures. Prerequisite: FT 223, 343, Ch 227, 234.
- FT 433. Heat Transfer in Food Manufacturing. (G) 3 hours spring. 2 ① 1 ③  
Heat transfer in dehydration, evaporation, canning, and freezing. Prerequisite: FT 223; Ph 212; ME 335; AE 352.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- FT 501. Research. Terms and hours to be arranged.
- FT 503. Thesis. Terms and hours to be arranged.
- FT 505. Reading and Conference. Terms and hours to be arranged.
- FT 507. Seminar. Terms and hours to be arranged.
- FT 511. Food Industries Research Methods. 3 hours winter. 3 ①  
Acquaints students with the organization, scope, and scientific methods used by food industries in research and development. Offered alternate years. Offered 1957-58.
- FT 521. Color and Flavor Evaluation. 3 hours winter. 2 ① 1 ③  
Basic theory as foundation for actual practice in measurement of food qualities and consumer acceptance; advantages and limitations of various techniques. Prerequisite: elementary biochemistry; St 423 or equivalent. Offered alternate years. Not offered 1957-58.
- FT 523. Quality Control Methods and Systems. 3 hours fall. 2 ① 1 ③  
Scope, general principles, organization, and functioning of quality control systems; types of controls and points of application; sampling in specific food industries and food plants; field trips. Prerequisite: FT 271, 423. Offered alternate years. Not offered 1957-58.
- FT 532. Edible Oils. 3 hours spring. 2 ① 1 ③  
Production and processing of fats and oils which are used in food products; antioxidants. Prerequisite: elementary biochemistry. Offered alternate years. Not offered 1957-58.
- FT 542. Food Fermentation. 3 hours spring. 2 ① 1 ③  
Industrial utilization of fermentable foods and food wastes. Prerequisite: FT 343. Offered alternate years. Offered 1957-58.
- FT 551. Thermal Processing of Canned Foods. 3 hours fall. 2 ① 1 ③  
Thermal processes; graphical, mathematical, nomogram methods; time-temperature relationships; convection, conduction, and high-temperature short-time processes. Prerequisite: Bac 460, Mth 102, Ph 212. Offered alternate years. Offered 1957-58.

## Horticulture

The Department of Horticulture offers courses of study which represent the major phases of Oregon's extensive and highly diversified horticultural industry and afford students a wide choice as to vocations and careers.

The curricula in pomology and vegetable crops cover the broad and general fields of fruit, nut, and vegetable growing, distribution, and marketing. They prepare students for fruit and vegetable farming and for technical and executive positions. Adjustments of curricula are made to accommodate students preparing for research and technical work with State and Federal agencies, colleges and experiment stations, private laboratories, or research foundations.

Curricula in floriculture and nursery management provide intensive instruction in scientific and applied phases of these professions and offer a fairly wide range of subjects to provide a liberal or cultural background. They prepare students for participation in various branches of the florist and nursery business and for positions as teachers, research workers, and technicians. The 2-year terminal curriculum in Nursery Management provides instruction and training for those students interested in doing general nursery management work as nursery foremen, propagators, planting foremen, assistant nursery superintendents, and in related positions.

The curriculum in landscape construction and maintenance prepares for professional careers in the laying out, planting, care, and supervision of country and municipal homes, parks, playground areas, and highway landscape developments. Emphasis is laid on practical application of landscape knowledge and on fundamentals of ornamental plant culture.

#### Lower Division Courses

- Hrt 111. Elements of Horticulture. 3 hours fall, winter, or spring. 2 ① 1 ②  
Beginning course in horticulture; principles underlying the culture and utilization of fruits, nuts, vegetables, and ornamental plants. Prerequisite to all horticultural courses except Hrt 253.
- Hrt 151. General Floriculture. 3 hours winter. 2 ① 1 ②  
Acquaints student with the field, its development, its branches, and opportunities it offers as a vocation.
- Hrt 253. Flower Arrangement. 3 hours spring. 2 ① 1 ②  
Basic principles of flower arrangement as applied to florist work.

#### Upper Division Courses

- Hrt 311. Plant Propagation. 3 hours winter. 1 ① 2 ②  
Methods of propagating or perpetuating plants by means of seeds, cuttings, layers, tubers, bulbs, budding, and grafting. Practice in the greenhouse, nursery, field, and orchard.
- Hrt 313. Greenhouse Construction and Management. 3 hours winter. 2 ① 1 ②  
Details of planning, layout, construction, and heating of modern greenhouses; factors involved in the efficient operation of a greenhouse range.
- Hrt 315. Basic Horticulture. 3 hours fall. 2 ① 1 ②  
Continuation of Hrt 111. Consideration and application of principles underlying horticultural practices and techniques.
- Hrt 317. History and Literature of Horticulture. 3 hours winter. 2 ① 1 ②  
Brief history of horticulture; systematic survey of the literature of horticulture acquainting the student with the source of horticultural knowledge.
- Hrt 333. Fruit and Nut Production. 4 hours spring. 3 ① 1 ②  
Problems of fruit and nut production; economics and geography of fruit and nut growing; heat, water, and light requirements of fruit plants; winter hardiness and frost prevention; orchard soil management; pollination, thinning, pruning, and other practices.
- Hrt 341. Vegetable Production. 4 hours spring. 3 ① 1 ②  
Problems of vegetable production; economic aspects of vegetable industry; environmental effects; seed, plant production, irrigation, nutrition, and other aspects of major vegetable crop plants.
- Hrt 351, 352, 353. Commercial Floriculture. 3 hours each term. 2 ① 1 ②  
Culture of cut flowers, pot plants, and forced bulbous crops grown on a commercial scale; modern techniques and recent research findings.

- Hrt 355. **Herbaceous Plant Materials.** 3 hours spring. 2 ① 1 ②  
Annual, biennial, and perennial flowering plants; their use, arrangement, and culture in commercial and home-garden production.
- Hrt 361, 362. **Nursery Management.** 4 hours each term. 3 ① 1 ②  
Organization and management of nurseries; propagation techniques, planting, culture, digging, packing, and storing of nursery stock; inspection, quarantine regulations; transportation and marketing.
- Hrt 401. **Research.** Terms and hours to be arranged.
- Hrt 403. **Thesis.** Terms and hours to be arranged.
- Hrt 405. **Reading and Conference.** Terms and hours to be arranged.
- Hrt. 407. **Seminar.** Terms and hours to be arranged.
- Hrt 413. **Horticultural Plant Breeding.** 3 hours spring. 2 ① 1 ②  
Application of principles of genetics to improvement of horticultural plants; origin of horticultural strains and varieties; breeding techniques as applied to horticultural plants.
- Hrt 415. **Spraying, Dusting, and Fumigation.** (g) 3 hours spring. 2 ① 1 ②  
Insect and disease control; preparation and application of sprays, dusts, and fumigants; spray combinations and compatibility; equipment; spray calendars and programs.
- Hrt 431. **Fruit Handling and Distribution I.** (g) 4 hours winter. 3 ① 1 ②  
Problems of fruit handling; harvesting, grading, packing, inspection, storage, transportation, and marketing.
- Hrt 433. **Systematic Pomology.** (G) 4 hours fall. 2 ① 2 ②  
Fruit taxonomy; fruit groups and botanical relationships; variety description; nomenclature and classification; judging and displaying.
- Hrt 441. **Vegetable Handling and Distribution.** (G) 3 hours winter. 2 ① 1 ②  
Harvesting; grading; packing; inspection; transportation; storage and distribution.
- Hrt 443. **Systematic Vegetable Crops.** (G) 3 hours fall. 1 ① 2 ②  
Botanical relationships; variety descriptions and values; identification; classification; displaying and judging. Offered alternate years. Offered 1957-58.
- Hrt 451. **Flower Shop Operation.** 3 hours fall. 2 ① 1 ②  
Efficient operation of florist shops; advanced work in design of floral pieces. Restricted to students majoring in floriculture and nursery management.
- Hrt 453. **Handling and Distribution of Florist Crops.** 3 hours fall. 2 ① 1 ②  
Problems of precooling, packaging, storing, transporting, and distributing florist crops.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G)  
may be taken for graduate credit.

- Hrt 501. **Research.** Terms and hours to be arranged.
- Hrt 503. **Thesis.** Terms and hours to be arranged.
- Hrt 505. **Reading and Conference.** Terms and hours to be arranged.
- Hrt 507. **Seminar.** Terms and hours to be arranged.
- Hrt 511. **Horticultural Genetics Lectures.** 3 hours fall. 3 ①  
Special attention to application of genetic theories and fundamental principles in development of horticultural plants. Inheritance studies; mutation phenomena; polyploidy and interspecific hybridization. Prerequisite: FC 315, Hrt 413. Offered alternate years. Offered 1957-58. Associate Professor Zielinski.

- Hrt 512. Horticultural Genetics Laboratory. 2 hours. 2 ②  
Reports; field and laboratory problems involving hybridization, artificial induction of mutations, data analyses, readings, and genetics and cytological techniques. Prerequisite: FC 315, Hrt 413, 511. Offered alternate years. Offered 1957-58. Associate Professor Zielinski.
- Hrt 513. Horticultural Genetics Lectures. 3 hours winter. 3 ①  
Continuation of Hrt 511. Offered alternate years. Not offered 1957-58. Associate Professor Zielinski.
- Hrt 514. Horticultural Genetics Laboratory. 2 hours winter. 2 ②  
Continuation of Hrt 512. Offered alternate years. Not offered 1957-58. Associate Professor Zielinski.
- Hrt 515. Methods of Research. 3 hours winter. 3 ①  
Horticultural investigative work; research problems; experimental design; statistics in horticultural research; weighing of experimental evidence; briefs and outlines; research publications. Prerequisite: St 422 or equivalent. Offered alternate years. Not offered 1957-58.
- Hrt 516. Horticultural Plant Nutrition Problems. 4 hours. 4 ①  
Plant nutrition as applied to horticultural crop production. Prerequisite: Hrt 315, Bot 433, or equivalents. Offered alternate years. Not offered 1957-58. Associate Professor Compton.
- Hrt 531. Fruit Handling and Distribution. 4 hours. 4 ①  
Fundamentals of fresh fruit handling. Prerequisite: Hrt 431 or equivalent, consent of instructor. One period, other periods to be arranged. Offered alternate years. Offered 1957-58. Professor Hansen.
- Hrt 533. Fruit and Nut Production. 4 hours spring. 4 ①  
Fundamentals of fruit and nut production. Prerequisite: Hrt 315, Hrt 333, Bot 331, Ch 251, or equivalents. One period, other periods to be arranged. Offered alternate years. Not offered 1957-58.
- Hrt 541. Vegetable Crop Problems. 4 hours. 4 ①  
Response of vegetable crops to environment; nutrition and management in relation to growth, yields, and quality. Prerequisite: Hrt 315, 341, or their equivalent. Offered alternate years. Offered 1957-58. Professors Frazier, Apple.

## Poultry Husbandry

With the development of the chicken and turkey industries has come a demand for persons trained in poultry husbandry. Besides the actual production of eggs, broilers, and turkeys for market there are opportunities for efficient hatchery operators as well as chicken and turkey breeders. There is an increasing demand for Federal and State extension and experiment station workers, field service men and feed specialists with feed companies, and personnel for processing concerns and cooperative associations.

A well-trained staff and excellent physical facilities enable the department to offer unusual educational opportunities to both undergraduate and graduate students. The department has two chicken farms and one turkey farm, flocks of popular breeds of chickens and turkeys, and various types of buildings and equipment including modern mammoth incubators and mechanical feeders.

### Lower Division Course

- PH 121. Poultry Production. 3 hours any term. 2 ① 1 ②  
Various phases of poultry industry; kinds of poultry; physiology, reproduction, feeding, housing, brooding, and management practices. Professor Parker, Mr. McCluskey.

### Upper Division Courses

- PH 321. Incubation. 3 hours winter. 2 ① 1 ②  
The incubation requirements of chicken and turkey eggs. Students may work on a selected problem. Prerequisite: PH 121. Offered alternate years. Not offered 1957-58. Professor Bernier.



- PH 322. Brooding and Broiler Production. 3 hours spring. 3 ①  
Brooding requirements of chickens and turkey poult; types of brooding equipment; commercial broiler production. Prerequisite: PH 121. Mr. McCluskey.
- PH 341. Poultry Judging. 3 hours winter. 2 ① 1 ②  
Judging poultry for standard and production qualities. Prerequisite: PH 121. Offered alternate years. Offered 1957-58. Professor Parker.
- PH 351. Turkey Management. 3 hours fall. 2 ① 1 ②  
Practical details in the breeding, feeding, rearing, and marketing of turkeys. Prerequisite: PH 121. Offered alternate years. Not offered 1957-58. Associate Professor Harper.
- PH 403. Thesis. Terms and hours to be arranged.
- PH 405. Reading and Conference. Terms and hours to be arranged.
- PH 407. Seminar. 1 hour winter and spring terms. 1 ①
- PH 411. Poultry Feeding. (g) 3 hours fall. 3 ①  
Systems of feeding poultry, and nutritional requirements; formulation of rations; common nutritional deficiencies. Prerequisite: PH 121. Assistant Professor Arcscott.
- PH 412. Poultry Feeding Laboratory. (g) 1 hour. 1 ②  
Laboratory work to accompany PH 411.
- PH 413. Poultry Nutrition. (G) 3 hours spring. 3 ①  
Proteins, minerals, energy, vitamins, antibiotics, other feed additives in chicken and turkey nutrition. Digestion and metabolism of these substances. Prerequisite: nutrition and organic or biochemistry. Assistant Professor Arcscott.
- PH 421. Marketing Poultry Products. (g) 3 hours fall. 2 ① 1 ②  
Preparation of poultry and eggs for market. Commercial handling of poultry products. Prerequisite: PH 121, Professor Bernier.
- PH 431. Poultry Plant Management. (g) 3 hours spring. 3 ①  
Location, layout, and arrangement of buildings and equipment. Management practices. Visits to commercial poultry farms. Prerequisite: PH 121 and one other poultry course. Offered alternate years. Not offered 1957-58. Professor Parker.
- PH 441. Poultry Breeding. (g) 3 hours spring. 3 ①  
Inheritance of egg and meat production in domestic fowls. Prerequisite: PH 121. Offered alternate years. Offered 1957-58. Professor Bernier.
- PH 442. Population Genetics and Breeding Improvement. (G) 3 hours spring. 3 ①  
Population genetics and application to selection and mating for improvement of quantitative characters. Prerequisite: Z 341, St 421, 422 or equivalents. Professor Bernier.
- PH 451. Commercial Practices. (G) 3 hours fall. 3 ①  
Operations and practices in commercial poultry production. Prerequisite: senior standing. Professor Parker and staff.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G)  
may be taken for graduate credit.

- PH 501. Research. Terms and hours to be arranged.
- PH 503. Thesis. Terms and hours to be arranged.
- PH 505. Reading and Conference. Terms and hours to be arranged.
- PH 507. Seminar. Terms and hours to be arranged.

## Soils

The intelligent development, management, and conservation of Oregon soil and water resources are essential for the State's welfare. The objective of the curriculum in soils is to give students a scientific and practical understanding of soils and their management, with training in related fields of agriculture and science. A total of 39 elective hours in junior and senior years permits the student to adapt the program to his interests and needs.

Students in soils interested in farming or positions as county extension agents requiring a broad knowledge of agriculture may take work in closely related fields of agriculture, and in social science. Soils majors may prepare for work in soil conservation planning, soil survey, land appraisal, fertilizer sales, irrigation work, or as field men with vegetable and fruit processing or other commercial organizations. They may prepare for more technical soils positions, such as teaching or research in colleges or universities, research in other State or Federal agencies and industry, or other specialized soils positions requiring a strong background in the basic sciences. Such positions usually require graduate training.

Students interested in preparing for graduate studies in soils should consult with the head of the department as early in their college program as possible. A sequence of courses will be developed to meet the student's particular needs, including the following courses: Mth 101, 102, 103, 201, 202, 203; Ch 204, 205, 206, 232, 233; Ph 201, 202, 203. Where desirable, certain substitutions will be arranged. Students potentially capable of maintaining a high scholastic record in basic sciences and desiring intensive training in a specialized field will be encouraged to adopt this type of program. Graduate work is offered leading to the degrees of Master of Science and Doctor of Philosophy in soils. Students majoring in other departments may minor in soils. Soil fertility, soil physics, soil chemistry, irrigation, forest soils, or soil genesis, morphology, and classification may be emphasized in graduate programs.

### Lower Division Courses

Sls 211, 212. **Soils.** 3 hours each term. (Sls 211 fall, Sls 212 winter).

2 ① 1 ③

Soil origin, formation, classification; physical, chemical, and biological characteristics; effects of tillage, drainage, irrigation, and organic matter; plant nutrients and fertilizers; rotations. Prerequisite: Ch 103. Assistant Professor Dawson.

Sls 214. **Forest Soils.** 3 hours spring.

2 ① 1 ③

Origin, development, characteristics, and classification of forest soils, relation of soils to forest types, to rate of forest growth and methods of forest management, to vegetation, moisture reaction and fertility; soil management and conservation. Prerequisite: Ch 102. Associate Professor Youngberg.

### Upper Division Courses

Sls 311. **Irrigation Management.** 3 hours fall.

2 ① 1 ③

Fundamentals of supply, delivery, and application of water to the land; basic principles of water-soil relationships; quality of water, water rights; management of water, soil, and cropping practices for permanent irrigation agriculture. Prerequisite: Sls 212.

Sls 314. **Soil Management and Conservation.** 4 hours.

3 ① 1 ③

Identifying, analyzing, and solving soil management and conservation problems; maintaining and increasing soil productivity; conservation farming; climate, topography, vegetation, slope, soil; drainage, irrigation, erosion control, tillage, fertility, organic matter, crop rotation, salinity-alkalinity. Prerequisite: Sls 212. Assistant Professor Dawson.

Sls 401. **Research.** Terms and hours to be arranged.

- Sls 405. Reading and Conference. Terms and hours to be arranged.
- Sls 407. Seminar. 1 hour each term. 1 ①
- Sls 408. Workshop. (g) Terms and hours to be arranged.  
Soils information designed either for specific locality in Oregon or to cover selected topics in soils, such as soil management, soil survey, soil fertility, soil physics, irrigation.
- Sls 421. Soil Physics Lectures. (g) 3 hours fall. 3 ①  
Physical properties of soil including structure, moisture, temperature, and aeration, and their measurement. Prerequisite: Sls 212. Introductory courses in mathematics and physics recommended. Associate Professor Evans.
- Sls 422. Soil Physics Laboratory. (g) 2 hours winter. 2 ⑧  
Techniques for examining or evaluating various physical properties of soil. Prerequisite: Sls 421. Associate Professor Evans.
- Sls 424. Soil Fertility Lectures. (g) 3 hours winter. 3 ①  
Chemical, physical, and biological properties of soils in relation to the availability of nutrient elements; soil amendments, fertilizers, manure and crop rotations in a fertility management program. Prerequisite: Sls 212. Professor Cheney.
- Sls 425. Soil Fertility Laboratory. (g) 2 hours spring. 2 ⑧  
Laboratory and greenhouse methods used in soil fertility studies. Prerequisite: Sls 424 and Ch 234. Assistant Professor Alban.
- Bac 421. Soil Bacteriology. (G) 4 hours fall. 4 ①  
See BACTERIOLOGY AND HYGIENE for course description.
- Bac 422. Soil Bacteriology. (G) 3 hours winter. 3 ①  
See BACTERIOLOGY AND HYGIENE for course description.
- Sls 432. Soil Survey. (g) 4 hours spring. 3 ① 1 ⑧  
Description, identification, and classification of soils; soils of Oregon; techniques of making and using soil surveys; two all-day field trips required. Prerequisite: Sls 212, course in geology. Assistant Professor Knox.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G)  
may be taken for graduate credit.

- Sls 501. Research. Terms and hours to be arranged.
- Sls 503. Thesis. Terms and hours to be arranged.
- Sls 505. Reading and Conference. Terms and hours to be arranged.
- Sls 507. Seminar. 1 hour each term. 1 ①
- Sls 511. Soil Genesis, Morphology, and Classification. 3 hours winter. 3 ①  
Soil forming processes; morphology; classification; geographical distribution of soils. Two all-day field trips required. Prerequisite: consent of instructor; physical geology and rocks and minerals courses recommended. Offered alternate years. Not offered 1957-58. Assistant Professor Knox.
- Sls 512. Soil Colloids. 3 hours winter. 3 ①  
Physical and colloidal chemistry of soils; structure, identification, weathering, electrokinetic properties, and function of clay minerals; soil acidity, absorption, ion exchange, organic colloids. Prerequisite: Sls 424, 425, Ch 442 recommended. Offered alternate years. Offered 1957-58. Assistant Professor Harward.
- Sls 513. Soil Fertility. 3 hours fall. 3 ①  
Factors affecting nutrient availability and absorption; theory and practice in use of fertilizers. Prerequisite: Sls 425. Offered alternate years. Not offered 1957-58. Assistant Professor Harward.
- Sls 514. Forest Soils. 3 hours winter. 3 ①  
Forest growth; physical, chemical and biological properties in occurrence and growth of forests. Prerequisite: consent of instructor. Soil survey and forest ecology courses recommended as preparation. Offered alternate years. Offered 1957-58. Associate Professor Youngberg.

- Sls 515. Irrigation Problems. 3 hours winter. 2 ① 1 ③  
Irrigation literature and term paper; planning an irrigation experiment; planning and completing a problem in irrigation; projects and policies. Prerequisite: Sls 311, AE 321, Sls 422, and FC 416 recommended. Offered alternate years. Not offered 1957-58.
- Sls 521. Soil Physics. 3 hours spring. 3 ①  
Theoretical and applied soil physics with special attention to flow problems. Prerequisite: Sls 421, calculus. Offered alternate years. Offered 1957-58. Associate Professor Evans.

## Veterinary Medicine

The courses in veterinary medicine aim to fit the student for successful handling of livestock. Anatomy and physiology of domestic animals familiarize him with normal structures and functions of the animal body, thus laying a foundation for courses in judging, breeding, feeds and feeding, nutrition, and diseases of animals. The study of diseases is taken up from the standpoint of the livestock owner. The student learns to recognize disease, to care for sick animals, and to prevent disease through proper methods of sanitation and management. Importance of quarantine, different methods of control and eradication of disease, and role of stock owners in maintaining this work are considered. The department does not train men to enter the veterinary profession.

### Upper Division Courses

- VM 311. Anatomy and Physiology of the Fowl. 3 hours winter. 2 ① 1 ②  
Structure and physiology of body of fowl. Professor Dickinson.
- VM 320. Anatomy of Domestic Animals. 3 hours. 3 ②  
Anatomical systems of common domestic farm animals.
- VM 321, 322. Physiology of Domestic Animals. 3 hours each term. 2 ① 1 ②  
Physiological processes of common domestic farm animals. Prerequisite: VM 320.
- VM 341. Diseases of Livestock. 4 hours fall. 4 ①  
For students specializing in the plant group. The more common diseases, with methods of prevention and control. Professor Shaw.
- VM 351. Diseases of Poultry. 4 hours spring. 3 ① 1 ②  
Poultry hygiene and sanitation; nature and cause of common poultry diseases; relation of management to control of diseases. Prerequisite: VM 311. Professor Dickinson.
- VM 355. Diseases of Game Birds. 3 hours spring. 2 ① 1 ②  
Similar to VM 351, but concerned with game birds. Prerequisite: VM 311. Professor Dickinson.
- VM 361. Parasitic Diseases of Domestic and Game Animals. 4 hours winter. 2 ① 2 ②  
Intensive study of common parasitic diseases of domestic animals. Professor Shaw.
- VM 441, 442, 443. Diseases of Livestock. (g) 3 hours each term. 2 ① 1 ②  
Parasitic, infectious, and noninfectious diseases of domesticated animals. Prerequisite: VM 321, 322, or equivalent. Professor Shaw.

### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- VM 501. Research. Terms and hours to be arranged.
- VM 503. Thesis. Terms and hours to be arranged.
- VM 505. Reading and Conference. Terms and hours to be arranged.
- VM 507. Seminar. Terms and hours to be arranged.

# School of Business and Technology

## Faculty

CLIFFORD ELGES MASER, Ph.D., Dean of the School of Business and Technology.

JOHN A. PFANNER, JR., Ph.D., Head Counselor.

**Business Administration:** Associate Professor COOLIDGE (department chairman), Professors CAMPBELL, LEMASTER, MASER, NEWTON, PFANNER; Associate Professors CRAIG, SEATON; Assistant Professors BIGGS, CLAPP, DAVIDSON, EASTON (on detached duty, Kasetsart University, Thailand), GODDARD, NISSEN, STRICKLER; Instructors ALLEN, EDWARDS, WALTON.

**Business Education:** Professor YERIAN (department head); Associate Professors LARSE, WINGER.

**Secretarial Science:** Professor YERIAN (department head); Associate Professors LARSE, STUTZ (emeritus), WINGER; Assistant Professors BARBER, JONES, ORNER; Instructor MARKSHEFFEL.

## General Statement

**T**HE RAPID and widespread industrialization of the United States, and of the Pacific Coast in particular, has created an insistent demand for college-trained men and women not only versed in the techniques of administration and management but also adequately educated in the basic technology and terminology of specific industrial operations and materials.

As a land-grant institution, Oregon State College is concerned with industry and the production, manufacture, and distribution of materials derived from land, forest, mine, and sea. Located on its campus are some of the outstanding technical schools in the West. Unique preparation to enter a field of administration and management in industry is provided in the School of Business and Technology through the combination of major work in business with minors offered by these technical schools.

The School of Business and Technology at Oregon State College offers:

- (1) major work in business administration in combination with a technology;
- (2) major work in secretarial science;
- (3) in conjunction with the School of Education, major work in business education for the preparation of teachers.

A student contemplating transferring to the School of Business and Technology from another institution or from another school at Oregon State College should do so, if at all possible, prior to or during the sophomore year. Experience indicates that the fulfillment of course requirements within the normal four-year period becomes progressively more difficult to accomplish with each term that is completed prior to the transfer. Most transfers that take place as late as the third term of the sophomore year will almost unavoidably result in an added term or terms of work.

**Business Administration and Technology.** The major curricula in business administration consist of a core of required courses: Introduction to Business, Accounting, Finance, Production, Marketing, Statistics, Business Law, Human Relations in Business and Industry, Government Relations in Business and Industry, and Business and Industrial Policy. In addition, the student must complete, during his junior and senior years, 18 term hours of upper division business or related courses, selected in terms of his career objectives. These courses may be chosen with a view to gaining a broad general training in business, or may be selected from one of five areas of concentrated study: Industrial Accounting and Cost Control, Industrial Finance, Production Management, Industrial Marketing and Selling, Industrial Relations and Personnel Management.

Students majoring in Business Administration and Technology combine any one of the major business curricula with a technical minor of 27 term hours, over and above such prerequisite and related courses as mathematics, physics, and chemistry. Technical minors and their specific course requirements are listed on a later page.

No graduate work is offered for majors in business administration and technology. Graduate students majoring in other fields may apply toward their minor requirements courses designated (g).

The School of Business Administration at the University of Oregon offers major work, both undergraduate and graduate, in all fields of business where the interests of a student do not demand that technical training be taken in combination with business administration.

**Business Education.** The Department of Business Education offers a full four-year major curriculum designed to prepare high school business teachers. The fact that students completing this curriculum are prepared to enter both the teaching and the secretarial fields has made this program of study increasingly attractive. Both fields offer excellent opportunities to both men and women.

For requirements for a State Teacher's Certificate, a list of teaching minors, and further information in regard to both undergraduate and graduate work in this department see SCHOOL OF EDUCATION.

**Secretarial Science.** Responsible secretarial and allied positions such as office manager, administrative assistants, and research assistants are going more and more to the college-trained person. Such positions require, in addition to the secretarial skills, background training in business administration, English and business correspondence, economics, psychology, and liberal arts. Students who come with previous training in typing and stenography are permitted to register in advanced classes according to their abilities. Many high-school graduates begin with second-year stenography. See page 247.

## Curriculum in Business Administration and Technology

*B.S., B.A., Degrees\**

### LOWER DIVISION CURRICULUM

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Introduction to Business and Industry (BA 111) .....	3	---	---
Principles of Accounting (BA 211, 212, 213) .....	3	3	3
<sup>1</sup> Mathematics for Business and Industry (Mth 104, 105, 106) .....	3	3	3
English Composition (Wr 111, 112, 113) .....	3	3	3
Natural or Social Science electives .....	3	3	3
Social Science electives .....	---	3	3
<sup>2</sup> Air, Military, or Naval Science (men) or electives (women) .....	1-3	1-3	1-3
<sup>3</sup> Physical Education .....	1	1	1
	17-19	17-19	17-19
<b>Sophomore Year</b>			
Principles of Economics (Ec 201, 202, 203) .....	3	3	3
Production (BA 311) .....	4	(4)	(4)
Finance (BA 312) .....	(4)	4	(4)
Marketing (BA 313) .....	(4)	(4)	4
Social Science electives .....	3	3	3
Technical minor .....	3	3	3
Air, Military, or Naval Science (men) or electives (women) .....	1-3	1-3	1-3
Physical Education .....	1	1	1
	15-17	15-17	15-17

\* See DEGREES AND CERTIFICATES, page 88.

<sup>1</sup> Students who are exempted from Mth 104, or 104 and 105 must substitute an equivalent number of term hours in other mathematics or natural science courses.

<sup>2</sup> Naval Science students may defer social science sequence to the junior year.

<sup>3</sup> General Hygiene (PE 150, 1 term hour for men; PE 160, 2 term hours for women) is taken one term in place of physical education.

**UPPER DIVISION CURRICULUM**

In addition to core curriculum requirements, students in the Department of Business Administration must complete 18 term hours of upper division business administration or related courses. This requirement may be satisfied in either of two ways:

- I. In General Business and Industry
- II. In one of the five areas of concentration

**I. General Business and Industry**

The student in the General Business and Industry curriculum will be expected to program his 18 hours of upper division business administration or related courses at the beginning of his junior year, in consultation with his adviser and in terms of his career objectives.

	Term hours		
	F	W	S
<b>Junior Year</b>			
Business Administration electives .....	3	3	3
Business Law (BA 411, 412, 413) .....	3	3	3
Business and Industrial Statistics (BA 431, 432) .....	3	3	.....
Social Science elective .....	3	.....	.....
Technical minor .....	3	3	3
Electives .....	3	6	6
	18	18	15
<b>Senior Year</b>			
Business Administration electives .....	3	3	3
Human Relations in Business and Industry (BA 457) .....	3	(3)	(3)
Government Relations in Business and Industry (BA 498) .....	(3)	3	(3)
Business and Industrial Policy (BA 499) .....	(3)	(3)	3
Technical minor .....	3	3	3
*Electives .....	6	6	6
	15	15	15

**II. Areas of Concentration**

The student may select, as an area of concentration, any one of the following fields: Accounting, Industrial Finance, Industrial Marketing and Selling, Industrial Relations and Personnel Management, Production Management. He will be expected to select his field of concentration at the beginning of his junior year, after consultation with an instructor teaching in the field in which he proposes to concentrate and with the approval of his adviser. Some substitution of courses may be permitted for exceptionally well-qualified students or students with unusual objectives.

**Industrial Accounting and Cost Control**

	Term hours		
	F	W	S
<b>Junior Year</b>			
Advanced Accounting (BA 321, 322, 323) .....	3	3	3
Business Law (BA 411, 412, 413) .....	3	3	3
Business and Industrial Statistics (BA 431, 432) .....	3	3	.....
Social Science elective .....	3	.....	.....
Technical minor .....	3	3	3
Electives .....	3	6	6
	18	18	15
<b>Senior Year</b>			
Industrial Cost Accounting (BA 421, 422) .....	3	3	.....
Industrial Auditing (BA 427, 428) .....	.....	3	3
*Human Relations in Business and Industry (BA 497) .....	3	(3)	(3)
*Government Relations in Business and Industry (BA 498) .....	(3)	3	(3)
*Business and Industrial Policy (BA 499) .....	(3)	(3)	3
Technical minor .....	3	3	3
*Electives .....	6	6	6
	15	18	15
Related courses: Industrial Cost Accounting (BA 423) .....			
Accounting Theory (BA 424) .....			
Analysis of Financial Statements (BA 425) .....			
Accounting Systems (BA 426) .....			
Controllership (BA 429) .....			
Income Tax Procedure (BA 434) .....			
Typing (SS 121, 122, 123) .....			
Business Machines (SS 215, 216) .....			

\* Students concentrating in Accounting are required to select any 2 of the 3 courses marked with an asterisk.

<sup>1</sup> In certain technical minors 1 to 9 of the elective credit hours may be required in the technical minor field.

**Industrial Finance**

	Term hours		
	F	W	S
<b>Junior Year</b>			
General Insurance (BA 435) .....		3	---
Investments (BA 436) .....		---	3
Related course .....	3		
Business Law (BA 411, 412, 413) .....	3	3	3
Business and Industrial Statistics (BA 431, 432) .....	3	3	---
Social Science elective .....	3	---	---
Technical minor .....	3	3	3
Electives .....	3	6	6
	18	18	15
<b>Senior Year</b>			
Industrial Finance (BA 437, 438) .....	3	3	---
Case Problems in Industrial Finance (BA 439) .....			3
Human Relations in Business and Industry (BA 497) .....	3	(3)	(3)
Government Relations in Business and Industry (BA 498) .....	(3)	3	(3)
Business and Industrial Policy (BA 499) .....	(3)	(3)	3
Technical minor .....	3	3	3
Electives .....	6	6	6
	15	15	15
Related Courses: Analysis of Financial Statements (BA 425)			
Credits and Collections (BA 433)			
Income Tax Procedure (BA 434)			
Reading and Conference (BA 405) (3 term hours)			

**Production Management**

	Term hours		
	F	W	S
<b>Junior Year</b>			
Industrial Cost Accounting (BA 421) .....	3	---	---
Labor Problems (Ec 425) .....		4	---
Business Law (BA 411, 412, 413) .....	3	3	3
Business and Industrial Statistics (BA 431, 432) .....	3	3	---
Social Science elective .....		---	3
Technical minor .....	3	3	3
Electives .....	6	3	6
	18	16	15
<b>Senior Year</b>			
Production Management (BA 441, 442) .....	3	3	---
Case Problems in Production Management (BA 449) .....			3
Human Relations in Business and Industry (BA 497) .....	3	(3)	(3)
Government Relations in Business and Industry (BA 498) .....	(3)	3	(3)
Business and Industrial Policy (BA 499) .....	(3)	(3)	3
Related course .....	3		---
Technical minor .....	3	3	3
Electives .....	6	6	6
	18	15	15
Related Courses: Industrial Purchasing (BA 461)			
Collective Bargaining and Labor Legislation (Ec 426)			
Safety in Industry (IE 390)			
Methods and Motion Study (IE 391)			
Time Study (IE 392)			
Materials Handling (IE 394)			

**Industrial Marketing and Selling**

Students emphasizing **MARKETING MANAGEMENT** will pursue the following program:

	Term hours		
	F	W	S
<b>Junior Year</b>			
Related courses .....	3	3	3
Business Law (BA 411, 412, 413) .....	3	3	3
Business and Industrial Statistics (BA 431, 432) .....	3	3	---
Social Science elective .....	3	---	---
Technical minor .....	3	3	3
Electives .....	3	6	6
	18	18	15

<sup>1</sup> In certain technical minors 1 to 9 of the elective credit hours may be required in the technical minor field.



	Term hours		
	F	W	S
<b>Senior Year</b>			
Industrial Marketing (BA 467, 468)	3	3	---
Case Problems in Marketing (BA 469)	---	---	3
Human Relations in Business and Industry (BA 497)	3	(3)	(3)
Government Relations in Business and Industry (BA 498)	(3)	3	(3)
Business and Industrial Policy (BA 499)	(3)	(3)	3
Technical minor	3	3	3
*Electives	6	6	6
	15	15	15
Related Courses: Industrial Purchasing (BA 461)			
	Retail Merchandising (BA 463)		
	Advertising (BA 464)		
	Salesmanship (BA 465)		
	Sales Management (BA 466)		
	Export and Import Management (BA 473)		
	Office Organization and Management (SS 422)		

Students emphasizing SELLING will pursue the following program:

<b>Junior Year</b>			
	F	W	S
Advertising (BA 464)	3	---	---
Salesmanship (BA 465)	---	3	---
Sales Management (BA 466)	---	---	3
Business Law (BA 411, 412, 413)	3	3	3
Business and Industrial Statistics (BA 431, 432)	3	3	---
Social Science elective	3	---	---
Technical minor	3	3	3
Electives	3	6	6
	18	18	15
<b>Senior Year</b>			
Related courses	3	3	---
Case Problems in Industrial Marketing (PA 469)	---	---	3
Human Relations in Business and Industry (BA 497)	3	(3)	(3)
Government Relations in Business and Industry (BA 498)	(3)	3	(3)
Business and Industrial Policy (BA 499)	(3)	(3)	3
Technical minor	3	3	3
*Electives	6	6	6
	15	15	15
Related Courses: Credits and Collections (BA 433)			
	Investments (BA 436)		
	Retail Merchandising (BA 463)		
	Export and Import Management (BA 473)		
	Industrial Marketing (BA 467)		
	Office Organization and Management (SS 422)		

**Industrial Relations and Personnel Management**

	Term hours		
	F	W	S
<b>Junior Year</b>			
Labor Problems (Ec 425)	---	4	---
Collective Bargaining and Labor Legislation (Ec 425)	---	---	4
Business Law (BA 411, 412, 413)	3	3	3
Business and Industrial Statistics (BA 431, 432)	3	3	---
Social Science elective	3	---	---
Technical minor	3	3	3
Electives	6	6	6
	18	19	16
<b>Senior Year</b>			
Personnel Management (BA 451, 452)	3	3	---
Case Problems in Personnel Management (BA 459)	---	---	3
Human Relations in Business and Industry (BA 497)	3	(3)	(3)
Government Relations in Business and Industry (BA 498)	(3)	3	(3)
Business and Industrial Policy (BA 499)	(3)	(3)	3
Technical minor	3	3	3
*Electives	6	6	6
	15	15	15
Related Courses: Courses in Psychology			
	Courses in Sociology		
	Family Relationships (FL 422)		
	Marriage (FL 222)		
	Courses in Industrial Engineering		
	Office Organization and Management (SS 422)		

<sup>1</sup> In certain technical minors 1 to 9 of the elective credit hours may be required in the technical minor field.

## Curriculum in Business Education

*B.A., B.S., Ed.B. Degrees*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
<sup>1</sup> Typing (SS 121, 122, 123) .....	2	2	2
<sup>1</sup> Stenography (SS 111, 112, 113) .....	3	3	3
English Composition (Wr 111, 112, 113) .....	3	3	3
Introduction to Business and Industry (BA 111) .....	3	(3)	(3)
Pupil, Teacher and Society (Ed 112) .....	(3)	3	(3)
<sup>2</sup> Group requirement in literature or science .....	3	3	3
Air, Military or Naval Science (men) or electives .....	1-3	1-3	1-3
Physical Education .....	1	1	1
<sup>3</sup> Electives .....	---	---	3
	16-17	16-18	16-18
<b>Sophomore Year</b>			
Applied Stenography (SS 211, 212, 213) .....	3	3	3
Principles of Accounting (BA 211, 212, 213) .....	3	3	3
Principles of Economics (Ec 201, 202, 203) .....	3	3	3
General Psychology (Psy 201, 202) .....	---	3	3
Business English (Wr 217) .....	3	---	---
Air, Military or Naval Science (men) or electives .....	1-3	1-3	1-3
<sup>4</sup> Physical Education .....	2	1	1
Extempore Speaking (Sp 111) .....	---	---	3
	15-17	14-16	17-19
<b>Junior Year</b>			
Office Procedure (SS 311, 312, 313) .....	4	4	4
School in American Life (Ed 310) .....	3	(3)	(3)
Educational Psychology (Ed 312) .....	3	(3)	(3)
Methods in Reading (Ed 350) .....	(3)	3	(3)
Special Secondary Methods (Ed 408) (Typewriting) .....	---	3	(3)
Special Secondary Methods (Ed 408) (Shorthand) .....	---	(3)	3
History of Pacific Northwest (Hst 478) .....	(3)	(3)	3
Business Law (BA 411, 412, 413) .....	3	3	3
<sup>5</sup> Electives .....	3	3	3
	16	16	16
<b>Senior Year</b>			
Retail Merchandising (BA 463) .....	(3)	3	(3)
Office Organization and Management (SS 421, 422) .....	(3)	3	3
Special Secondary Methods (Ed 408) (Nonskill) .....	(3)	---	3
Seminar (SS 407) .....	1	(1)	---
Secretarial Problems (SS 411) .....	---	3	---
Secretarial Practice (SS 412) .....	(3)	(3)	3
Student Teaching (Ed 416) .....	9	(9)	(9)
Seminar (BEd 407) (Student Teachers) .....	(1)	1	(1)
Electives in Science or Social Science .....	3	3	3
<sup>5</sup> Electives .....	3	3	3
	16	16	15

<sup>1</sup> Students who have had previous training in stenography and typing will be placed in classes commensurate with their abilities.

<sup>2</sup> For a bachelor's degree, 9 term hours are required in each of two of three fields: Arts and Letters, Science, and Social Science. Since Social Science (Principles of Economics) must be taken in sophomore year, student must choose between literature and science for the remaining 9 hours.

<sup>3</sup> The student should decide during the first year whether he desires the Bachelor of Science or the Bachelor of Arts degree. This decision may influence his choice of electives.

<sup>4</sup> General Hygiene (PE 150, 1 term hour for men; PE 160, 2 term hours for women) is taken one term in place of physical education.

<sup>5</sup> The student should select before end of sophomore year one of the minors (excluding Business Administration) listed in SCHOOL OF EDUCATION section under "Additional Teaching Minors." A minor must be completed before student is eligible for Student Teaching during senior year. A liberal number of elective hours, sufficient for selection of a teaching minor, are available in junior and senior years.

# Curriculum in Secretarial Science

*B.A., B.S. Degrees*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Stenography (SS 111, 112, 113) .....	3	3	3
Typing (SS 121, 122, 123) .....	2	2	2
Introduction to Business and Industry (BA 111) .....	3	(3)	3
*Group requirement: in literature or science (men and women) .....	3	3	3
English Composition (Wr 111, 112, 113) .....	3	3	3
Air, Military, or Naval Science (men) or electives (women) .....	1-3	1-3	1-3
Physical Education .....	1	1	1
Electives .....	3	3	3
	16-18	16-18	16-18

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Applied Stenography (SS 211, 212, 213) .....	3	3	3
Principles of Economics (Ec 201, 202, 203) .....	3	3	3
Principles of Accounting (BA 211, 212, 213) .....	3	3	3
American Governments (PS 201) .....	3	---	---
History of American Civilization (Hst 225) .....	---	3	---
Business English (Wr 214) .....	---	---	3
Air, Military, or Naval Science (men) or electives (women) .....	1-3	1-3	1-3
*Physical Education .....	2	1	1
	15-17	14-16	14-16

	Term hours		
	F	W	S
<b>Junior Year</b>			
Office Procedure (SS 311, 312, 313) .....	4	4	4
Business Law (BA 411, 412, 413) .....	3	3	3
General Psychology (Psy 201, 202) .....	3	3	---
Applied Psychology (Psy 205) .....	---	---	3
*Science or Social Science electives .....	3	3	3
Electives .....	3	3	3
	16	16	16

	Term hours		
	F	W	S
<b>Senior Year</b>			
Technical Reporting (SS 321) .....	---	3	---
Seminar (SS 407) .....	1	(1)	---
Secretarial Problems (SS 411) .....	---	3	---
Secretarial Practice (SS 412) .....	(3)	(3)	3
Office Organization and Management (SS 421, 422) .....	3	3	3
Retail Merchandising (BA 463) .....	3	(3)	(3)
Production (BA 311) .....	4	(4)	(4)
Finance (BA 312) .....	---	(4)	(4)
Marketing (BA 313) .....	(4)	(4)	(4)
Science or Social Science electives .....	---	3	3
Electives .....	4	3	3
	15	16	16

<sup>1</sup> See note 2 on previous page.

<sup>2</sup> General Hygiene (PE 150, 1 term hour for men; PE 160, 2 term hours for women) will be taken any term in place of physical education.

<sup>3</sup> The student will need to accumulate 36 term hours in Social Science or Science, or a combination of the two fields totaling 45 term hours, to earn the Bachelor of Science degree at end of senior year. If a Bachelor of Arts degree is desired, 36 term hours in Arts and Letters (including 2 years of college language, or one year of college language at the second-year or higher level) is required.

## Technical Minors

Technical fields in which minors are authorized are: Agriculture, Applied Physics, Engineering, Forestry, Home Economics, Industrial Chemistry, Mining or Petroleum Geology. In addition to the technical minors in these fields outlined below, similar technical minors within these authorized fields may be arranged where necessary to meet the objectives of individual students. A special technical minor in Naval Science can be arranged.

### SCIENCE:

*Applied Physics*  
*Industrial Chemistry*  
*Mining or Petroleum Geology*

### AGRICULTURE:

*Animal Husbandry and Farm Crops*  
*Dairy Products Industries*  
*Farm Crops*  
*Floriculture*  
*Food Technology*  
*Horticulture*  
*Mechanical Technology in Agriculture*

### ENGINEERING AND INDUSTRIAL ARTS:

*Industrial Arts—Building Construction*  
*Industrial Arts—Metal Option*  
*Industrial Arts—Woodworking*

### FORESTRY

### HOME ECONOMICS:

*Clothing, Textiles, and Related Arts*  
*Institution Management*

## Animal Husbandry and Farm Crops

Professor D. W. HEDRICK, Adviser

	Term hours		
	F	W	S
<b>Sophomore year:</b>			
General Botany (Bot 201) .....	3	(3)	---
General Chemistry (Ch 101, 102) .....	(3)	3	---
<b>Junior year:</b>			
Elements of Agronomy I (FC 111) .....	3	---	---
Elements of Agronomy II (FC 211) .....	---	3	---
Soils (Sls 211, 212) .....	3	3	---
Introduction to Animal Husbandry (AH 121) .....	(3)	(3)	3
<b>Senior year:</b>			
Animal Nutrition I (AI 311) .....	4	---	---
Range and Pasture Management (AH-FC 341) .....	3	(3)	---
Related course .....	(3)	3	3
<b>Related Courses:</b>			
Weed Control (FC 317)			
Forage Crops (FC 324)			
Genetics (Z 341)			
Range Improvement (AH-FC 342)			
Meat Identification and Selection (AH 352)			
Livestock Feeding (AH 412)			
Seed Production (FC 414)			
Sheep Husbandry (AH 422)			
Beef Cattle Husbandry (AH 426)			

## Applied Physics

Professor E. A. YUNKER, Adviser

<b>Sophomore year:</b>			
Mathematics (Mth 101, 102, 103) .....	4	4	4
General Physics (Ph 201, 202, 203) or Engineering Physics (Ph 207, 208, 209) .....	4	4	4
<b>Junior year:</b>			
Introduction to Modern Physics (Ph 311, 312, 313) .....	3	3	3
<b>Senior year:</b>			
Electricity and Magnetism (Ph 331, 332, 333) or Electronics and Radio (Ph 337, 338, 339) or Fundamentals of Radio (Ph 334), Geometrical and Physical Optics (Ph 365, 366), Reading and Conference (Acoustics) (Ph 405) or Commercial Photography (Ph 362, 363) .....	3	3	3

**Clothing and Textiles**

(For men and women)

Professor DOROTHY GATTON, Adviser

	Term hours		
	F	W	S
<b>Sophomore year:</b>			
Color and Composition (AA 160) .....	3	(3)	(3)
<i>Mens</i> Elements of Clothing Construction (CT 112)			
<i>Women:</i> Elementary Clothing (CT 111) or Clothing Construction (CT 218) .....	(3)	3	...
Textiles (CT 250) .....	(3)	(3)	3
<b>Junior year:</b>			
Clothing Selection (CT 211) .....	3	(3)	(3)
Consumer Buying in Clothing and Textiles (CT 350) .....	(3)	3	(3)
Related course .....	(3)	(3)	3
<b>Senior year:</b>			
The Clothing Buyer (CT 470) .....	...	...	3
Related courses .....	3	3	(3)
<b>Related Courses:</b> Color and Composition (AA 161)			
Other Clothing and Textiles courses			

**Dairy Products Industries**

Professor G. H. WILSTER, Adviser

<b>Sophomore year:</b>			
General Chemistry (Ch 101, 102, 103) .....	3	3	3
<b>Junior year:</b>			
Introduction to Dairying (D 121) .....	3	(3)	(3)
Testing Milk and Cream (D 122) .....	...	1	...
Dairy Products Standards (D 118) .....	...	...	1
General Bacteriology (Bac 204) .....	3	...	...
Marketing Dairy Products (AEC 444) .....	...	3	...
Market Milk (D 310) .....	...	...	3
<b>Senior year:</b>			
Dairy Foods (D 417) .....	3	...	...
Butter, Cheese, and Ice Cream Laboratory (D 315) .....	3	...	...
Related courses .....	...	3	3
<b>Related Courses:</b> Butter, Cheese, and Ice Cream Laboratory (D 316, 317)			
Food Sanitation (Bac 411)			
Dairy Bacteriology (Bac 412)			
Refrigeration and Cold Storage (ME 335)			

**Farm Crops**

Professor D. D. HILL, Adviser

<b>Sophomore year:</b>			
General Chemistry (Ch 101, 102, 103) .....	3	3	3
<b>Junior year:</b>			
Elements of Agronomy I (FC 111) .....	3	...	...
Elements of Agronomy II (FC 211) .....	...	3	...
Soils (SIs 211, 212) .....	3	3	...
Related course in farm crops or soils .....	...	...	3
<b>Senior year:</b>			
Seed Production (FC 414) .....	3	...	...
Cereal Production Lectures (FC 322) .....	...	3	...
Crop Inspection (FC 411) .....	...	4	...
Related course .....	...	...	3
<b>Related Courses:</b> Animal Nutrition I (AI 311)			
Weed Control (FC 317)			
Forage Crops (FC 324)			
Soil Fertility Lectures (SIs 424)			
Reading and Conference (FC 405)			

### Floriculture

Professor STANLEY E. WADSWORTH, Adviser

	Term hours		
	F	W	S
<b>Sophomore year:</b>			
Elements of Horticulture (Hrt 111) .....	3	---	---
General Floriculture (Hrt 151) .....	---	3	---
Flower Arrangement (Hrt 253) .....	---	---	3
<b>Junior year:</b>			
Commercial Floriculture (Hrt 351, 352, 353,) <sup>∞</sup>	---	---	---
Flower Shop Operation (Hrt 451)	---	---	---
Plant Propagation (Hrt 352)	---	---	---
Herbaceous Plant Materials (Hrt 355) .....	3	3	3
<b>Senior year:</b>			
Handling and Distribution of Florist Crops (Hrt 452) .....	3	---	---
Greenhouse Construction and Management (Hrt 313) or	---	---	---
Basic Design (AA 195) .....	---	3	---
Reading and Conference (Hrt 405) .....	---	---	3

### Food Technology

Professor EARL M. LITWILLER, Adviser

	Term hours		
	F	W	S
<b>Sophomore year:</b>			
Introduction to Food Technology (FT 111) .....	3	---	---
General Chemistry (Ch 101, 102, 103) .....	3	3	3
<b>Junior year:</b>			
Inspection of Processed Foods (FT 271) .....	2	---	---
General Bacteriology (Bac 204) .....	---	3	---
Federal and State Food Regulations (FT 421) .....	---	---	3
<b>Senior year:</b>			
Food Manufacturing Methods (FT 221, 222, 223) .....	3	3	3
Principles of Food Preservation (FT 350) .....	4	---	---
Related course .....	(3)	3	(3)
<b>Related Courses:</b>			
Elements of Horticulture (Hrt 111)	---	---	---
Introduction to Dairying (D 1 <sup>1</sup> )	---	---	---
Nutrition (FN 225)	---	---	---
Organic Chemistry (Ch 251)	---	---	---
Food Manufacturing Plants and Equipment (FT 311)	---	---	---
Meats (AH 351)	---	---	---
Dairy Foods (D 417)	---	---	---

### Forestry

Professor W. I. WEST, Adviser

The 30 term hours of selected forestry courses provide contact with each of the recognized phases of forestry practice: logging, management, and utilization but give particular emphasis to the business of utilizing the forest resource in the Pacific Northwest. Certain background courses cover elementary forestry skills such as tree identification and cruising, while others cover the technology of harvesting and manufacturing wood products. The introductory sequence of courses normally is completed during the sophomore year but may be taken during the freshman year at the student's option. Students who cannot pursue the normal program illustrated below should confer with the forestry adviser.

	Term hours		
	F	W	S
<b>Sophomore year:</b>			
Conservation of Natural Resources (F 260) .....	3	---	---
Mathematics (Mth 102) .....	(4)	4	(4)
<sup>1</sup> Tree Identification (F 153) .....	---	---	3
<b>Junior year:</b>			
Forest Engineering (FE 123) .....	3	---	---
Forest Mensuration (F 224) .....	---	5	---
Wood Technology (FP 210) .....	---	---	3
<b>Senior year:</b>			
Forest Economics (F 412) .....	3	---	---
Wood Utilization (FP 310) .....	---	3	---
Logging Methods (FE 392) .....	---	---	3

<sup>1</sup> Must precede all forestry courses except F 260; may be interchanged in sequence. All other forestry subjects should be taken in order indicated; deviation may be permitted if prerequisites are met and upon consulting adviser.

**Horticulture**

Professor HENRY HARTMAN, Adviser

	Term hours		
	F	W	S
<b>Sophomore year:</b>			
General Chemistry (Ch 101, 102) .....	3	3	.....
Elements of Horticulture (Hrt 111) .....	.....	.....	3
<b>Junior year:</b>			
Basic Horticulture (Hrt 315) .....	3	.....	.....
Plant Propagation (Hrt 311) .....	.....	3	.....
Soils (Sis 211) .....	3	.....	.....
<b>Senior year:</b>			
Systematic Pomology (Hrt 433) or Systematic Vegetable Crops (Hrt 443) .....	4-3	.....	.....
Fruit Handling and Distribution I (Hrt 431) .....	.....	4	.....
Fruit and Nut Production (Hrt 333) .....	.....	.....	4
Vegetable Production (Hrt 341) .....	.....	.....	4

**Industrial Arts—Building Construction**

Professor G. B. Cox, Adviser

<b>Sophomore year:</b>			
House Planning and Architectural Drawing (AA 178, 179, 180) .....	3	3	3
<b>Junior year:</b>			
Methods in Woodworking (IE 112, 113) .....	.....	3	3
Construction (AA 219, 220) .....	.....	2	2
<b>Senior year:</b>			
Mill Work—Machine Woodwork (IE 311) .....	3	.....	.....
Carpentry and Building Construction (IE 333) .....	.....	3	.....
Building Cost Estimating (AE 465) .....	.....	.....	3
<b>Related Courses:</b>			
Home Furnishing (CT 231)			
Home-Ground Planning (LA 279)			
Farm Buildings (AE 361)			
Rural House Planning (AE 451)			
Elements of Interiors (AA 223)			

**Industrial Arts—Metal Option**

Professor MILTON C. SHEELY, Adviser

<b>Sophomore year:</b>			
Engineering Drawing (GE 121, 122) .....	3	3	.....
Pattern Making (IE 111) .....	.....	.....	3
<b>Junior year:</b>			
Foundry Practices (IE 141) .....	3	.....	.....
Forging and Welding (IE 152) .....	.....	3	.....
Machine Tool Practices (IE 163) .....	.....	.....	3
<b>Senior year:</b>			
Methods and Motion Study (IE 391) .....	3	.....	.....
Time Study (IE 392) .....	.....	3	.....
Materials Handling (IE 394) or Safety in Industry (IE 390) .....	.....	.....	3-2
<b>Related Courses:</b>			
Engineering Physics (Ph 207, 209) or General Physics (Ph 201, 203)			
Automobile Mechanics (AE 312, 313, 314)			
Casting Processes: Nonferrous (IE 344)			
Sheet-Metal Work (IE 380)			

**Industrial Arts—Woodworking**

(Including Furniture Construction)

Professor G. B. Cox, Adviser

	Term hours		
	F	W	S
<b>Sophomore year:</b>			
Engineering Drawing (GE 121, 122) .....	3	3	.....
Industrial Arts Drawing and Design (AA 281) .....	.....	.....	3
<b>Junior year:</b>			
Pattern Making (IE 111) .....	3	.....	.....
Methods in Woodworking (IE 112, 113) .....	.....	3	3
<b>Senior year:</b>			
Mill Work—Machine Woodwork (IE 311) .....	3	.....	.....
Furniture Design (IE 213) .....	2	.....	.....
Furniture Construction (IE 313, 314) .....	.....	2	2
<b>Related Courses:</b>			
Elements of Interiors (AA 223)			
Home Furnishing (CT 231)			
Textiles (CT 250)			

**Industrial Chemistry**

Professor J. S. WALTON, Adviser

	Term hours		
	F	W	S
Sophomore year:			
General Chemistry (Ch 101, 102, 103) .....	3	3	3
Junior year:			
Organic and Agricultural Biochemistry (Ch 251, 252) .....	5	3	---
Elementary Physical Chemistry (Ch 340) .....	---	---	3
Mathematics (Mth 101) .....	4	---	---
Senior year:			
Industrial Chemistry (ChE 321, 322, 323) .....	3	3	3

**Institution Management**

Professor HELEN MULHERN, Adviser

Sophomore year:			
General Chemistry (Ch 101) .....	3	---	---
Food Preparation (FN 218, 219) .....	---	3	3
Junior year:			
Quantity Cookery (IM 311) .....	3	---	---
General Bacteriology (Bac 204) .....	---	3	---
Nutrition (FN 225) .....	---	---	3
Senior year:			
Institution Organization and Administration (IM 430) .....	2	---	---
Purchasing for Institutions (IM 440) .....	---	3	---
Institution Experience (IM 450) .....	---	---	4
Related Course .....	3	(3)	(3)
Related Courses:	General Chemistry (Ch 102, Ch 103) Principles of Food Preservation (FT 350) Meats (AH 351) Meat Identification and Selection (AH 352) Inspection of Processed Food (FT 271) Food Sanitation (Bac 411) Quantity Textile Purchasing (CT 351)		

**Mechanical Technology in Agriculture**

Professor J. B. RODGERS, Adviser

Sophomore year:			
<sup>1</sup> Engineering Drawing (GE 121) .....	3	---	---
Farm Mechanics (AE 221) .....	---	3	---
Agricultural Engineering Survey (AE 211) .....	---	---	3
Junior year:			
Farm Implements (AE 231) .....	3	---	---
<sup>1</sup> Abridged General Physics (Ph 211) .....	---	3	---
Mechanical Applications in Agriculture (AE 213) .....	---	---	3
Senior year:			
Farm Motors and Tractors (AE 311) or Automobile Mechanics (AE 312) .....	3	---	---
Farm Electricity (AE 331) or Automobile Mechanics (AE 313) .....	---	3	---
Related Course .....	3	---	3
Related Courses:	Automobile Mechanics (AE 314) Drainage and Irrigation (AE 319) Pumps and Irrigation Equipment (AE 321) Farm Buildings (AE 361) Household Utilities (g) (AE 435) Rural House Planning (g) (AE 451)		

<sup>1</sup>With consent of the adviser, course may be waived and related course substituted, if student's background in the area is deemed adequate.



**Mining or Petroleum Geology**

Professor W. D. WILKINSON, Adviser

	Term hours		
	F	W	S
Sophomore year:			
Geology (G 201, 202, 203) .....	3	3	3
Geology Laboratory (G 204, 205, 206) .....	1	1	1
Junior year:			
Mineralogy and Rock Study (G 315, 316, 317) .....	4	4	4
Senior year:			
Mining Geology and Industrial Minerals (G 421, 422) .....	4	4	---
Oil Geology (G 423) .....	---	---	4

**Business Administration**

Courses in business and industrial administration are offered in the Department of Business Administration. The courses aim in the first two years to orient the student in the field and in the last two years to provide professional preparation. Courses offered in the Department of Economics supplement the work of the Department of Business Administration.

**Lower Division Courses**

- BA 111. Introduction to Business and Industry. 3 hours each term. 3 ①  
Survey of business organization, operation, and management intended to orient the student in the field of business and to help him determine a field of major concentration.
- BA 211, 212, 213. Principles of Accounting. 3 hours each term. 3 ①  
FIRST TERM: Introduction to terminology, content, and form of financial statements for single proprietorships, partnerships, and corporations; recording of data for use in preparing profit and loss statements and balance sheets.  
SECOND TERM: Detailed record-keeping procedures; internal control methods to protect cash resources; introduction to analysis and interpretation of financial statements.  
THIRD TERM: Methods of recording and reporting incomes and expenses; introduction to functions and procedures of cost accounting for managerial use in controlling business operations; introduction to financial control through use of budgets. Must be taken in sequence.
- BA 214, 215. Fundamentals of Accounting. 3 hours each term. 3 ①  
Similar to BA 211, 212, 213, but with increased attention to managerial uses of accounting data and less on detailed record keeping procedures. Primarily for engineering and forestry students.
- BA 217. Basic Accounting and Financial Analysis. 3 hours 3 ①  
For students who take only one term of accounting. Methods of recording, summarizing, and presenting accounting data. Emphasis on basic principles and terminology; significance, analysis, and interpretation of accounting data; accounting as tool of management.

**Upper Division Courses**

- BA 311. Production. 4 hours. 4 ①  
Operating techniques used in administration of manufacturing plants together with application to other areas of business management; organization, supervision problems, employee relations, wage payment, output standards, plant location, equipment layout, scientific management.
- BA 312. Finance. 4 hours. 4 ①  
Financial problems encountered in establishment and operation of business firms; forms of ownership organization, acquisition of capital, management of income; related financial institutions; financial adjustment to changing business conditions. Prerequisite: BA 211, 212.
- BA 313. Marketing. 4 hours. 4 ①  
Survey of industrial and consumer markets and of activities and enterprises involved in distributing goods to those markets. Objective is to develop understanding of distribution processes, marketing problems and principles.

- BA 321, 322, 323. **Advanced Accounting.** 3 hours each term. 3 ①  
 Comprehensive review of basic accounting theory and critical study of conventional accounting procedures. Survey of more difficult problems encountered in accumulation and presentation of financial data; presentation and interpretation of balance sheets and other financial reports, measuring costs and revenues, problems in partnership accounting, installments, consignments, agency and branch accounting, consolidations and fiduciary accounting. Prerequisite: BA 211, 212, 213.
- BA 405. **Reading and Conference.** (g) Terms and hours to be arranged.  
 Supervised individual work in some field of special application and interest. Subjects chosen must be approved by professor in charge. Prerequisite: senior or graduate standing.
- BA 407. **Seminar.** Terms and hours to be arranged.
- BA 410. **Business Internship.** 1 to 6 hours.  
 Planned and supervised work experience at selected cooperating business firms. Supplementary training conferences, reports, and appraisals. Prerequisite: upper division standing.
- BA 411. **Business Law.** 3 hours. 3 ①  
 Basic rules of law for conduct of business generally. Creates an awareness of proper legal practices, including the desirability of professional supervision. Primary emphasis on requirements of formation, performance, and methods of discharge of contracts. Related treatment of quasi contracts and torts.
- BA 412. **Business Law.** 3 hours. 3 ①  
 Nature of personal property including sales, bailments, chattel mortgages and conditional sales; law of negotiable instruments including promissory notes, bills of exchange, and checks. Prerequisite: BA 411.
- BA 413. **Business Law.** 3 hours. 3 ①  
 Law of business ownership and organization including individual proprietorship, agency, partnership, corporations, cooperative associations, and business trusts.
- BA 414. **Real Estate Law.** 3 hours. 3 ①  
 Primary features of legal ownership of land including creation and rights of ownership under various estates, title protection, deeds, wills and inheritance; property transactions related thereto, including contracts, mortgages, leases, and brokerage. Prerequisite: junior standing.
- BA 421, 422, 423. **Industrial Cost Accounting.** (g) 3 hours each term. 3 ①  
**FIRST TERM:** Materials, labor, and overhead costs; job order and process cost accounting systems.  
**SECOND TERM:** Estimated and standard costs; standard cost accounting systems; variances and their disposition.  
**THIRD TERM:** Distribution costs; analysis and use of break-even points, differential costs, and other cost data. Prerequisite: BA 211, 212, 213 or BA 214, 215.
- BA 424. **Accounting Theory.** (g) 3 hours. 3 ①  
 Development of accounting theory under influence of economic factors, law, and administrative ruling; evolution of concepts and procedures for measuring income, cost, value, and results of price level change; accounting ethics. Prerequisite: BA 321, 322, 323.
- BA 425. **Analysis of Financial Statements.** 3 hours. 3 ①  
 The preparation, analysis, and interpretation of balance sheets and operating reports for effective management and control of industrial and trading concerns. Prerequisite: BA 211, 212, 213.
- BA 426. **Accounting Systems.** (g) 3 hours. 1 ① 1 ②  
 Systems for accumulating, recording, and summarizing financial data; use of machines in these processes. Demonstrations and field trips. Prerequisite: BA 321, 322, 323.
- BA 427, 428. **Industrial Auditing.** (g) 3 hours. 3 ①  
 Personal standards and verification procedures for auditors of business enterprises; methods of surveying adequacy and effectiveness of accounting system and internal control; practice in application of auditing procedures and in preparation of working papers; certification of financial statement information. Prerequisite: BA 421, 422, 423.

- BA 429. **Controllership.** (g) 3 hours. 3 ①  
Functions of the controller and his organization; techniques employed in the coordination and control of accounting, budgeting and planning; controllership's contributions to management and responsibilities for office organization and procedures. Prerequisite: BA 323.
- BA 431, 432. **Business and Industrial Statistics.** (g) 3 hours. 2 ① 1 ②  
Statistical techniques for collecting and analyzing business data; statistical source materials; methods for dealing statistically with problems of inspection, quality control, personnel testing, financial analysis, and market research; development of facility in use of business data in reports; sharpening of critical faculties for appraisal of statistical "facts" and "proofs." Prerequisite: Mth 104, 105, or Mth 100.
- BA 433. **Credits and Collections.** 3 hours. 3 ①  
Management functions performed by a credit department; relation to other functions of the business enterprise; nature of consumer credit and mercantile credit, sources of credit information, evaluation of credit risks, and credit controls useful to business firms; credit policy determination.
- BA 434. **Income Tax Procedure.** 3 hours. 3 ①  
Federal and State income tax regulations, and court decisions applicable to individuals, partnerships, and corporations; differences between managerial and tax accounting and between Federal and State tax requirements; computing taxable income and preparing official returns.
- BA 435. **General Insurance.** 3 hours. 3 ①  
Aims to familiarize students with the various insurance means at disposal of management for use in shifting, reducing, or eliminating risk; fire, casualty, workmen's compensation, fidelity and surety, marine, life, and other types of insurance.
- BA 436. **Investments.** (g) 3 hours. 3 ①  
Investment objectives and risks; investment program planning; corporate securities and securities markets; government bonds, real estate, savings institutions; interest income and stock yields; security analysis. Prerequisite: BA 312.
- BA 437, 438. **Industrial Finance.** (g) 3 hours each term. 3 ①  
Financial administration of an industrial enterprise; financial coordination of purchases, inventories, production, and sales; managing cash, receivables, inventories, investments, and working capital position; financial control of plant, equipment, leases, and industrial property. Prerequisite: BA 312. Either BA 437 or BA 438 may be taken separately.
- BA 439. **Case Problems in Industrial Finance.** (g) 3 hours. 3 ①  
Problems of financial management are studied, using actual situations drawn from the current business scene. Written reports are prepared by the student for each case problem; emphasis on the analysis of the pertinent facts, weighing of alternate solutions. Prerequisite: BA 312.
- BA 441, 442. **Production Management.** (g) 3 hours each term. 3 ①  
Problems of production, factory organization, and factory management, from point of view of production manager. Prerequisite: BA 311. Either BA 441 or BA 442 may be taken separately.
- BA 449. **Case Problems in Production Management.** (g) 3 hours. 3 ①  
Designed primarily to enable student to formulate an over-all picture of interrelationship of major aspects of production. Intensive case study of actual cases drawn from industry. Prerequisite: BA 441, 442.
- BA 451, 452. **Personnel Management.** (g) 3 hours each term. 3 ①  
**FIRST TERM:** Survey of objectives, functions, and practices of personnel administration which contribute to effective achievement of aims of organization.  
**SECOND TERM:** Detailed consideration of techniques, uses, and limitations of such personnel activities as job analysis, job evaluation, evaluation of employees, employee services, employee publications, and suggestion system. Prerequisite: BA 451.
- BA 459. **Case Problems in Personnel Management.** (g) 3 hours. 3 ①  
Case studies to help develop facility in using facts to diagnose causes of personnel problems and in working out plans for improving productivity of personnel. Opportunity is given to use knowledge and experience in situational thinking. Prerequisite: BA 451, 452.
- BA 461. **Industrial Purchasing.** 3 hours. 3 ①  
Significant managerial problems raised by purchase and control of materials for industrial use as they affect control of quality of product., maintenance of operating efficiency, and quotation of competitive prices.

- BA 463. **Retail Merchandising.** (g) 3 hours. 3 ①  
Principles of organizing and operating retail institutions; store location, store layout, buying and selling, operating activities, personnel and control.
- BA 464. **Advertising.** 3 hours. 3 ①  
Advertising as a tool of marketing management; preparation of advertisements; copy, illustration, and layout; use of media: newspapers, magazines, direct mail, radio, and television.
- BA 465. **Salesmanship.** 3 hours. 3 ①  
Principles and practice of salesmanship: preapproach, gaining the interview, approach, demonstration, meeting objections, and the close; class work correlated with student's major interests in selling.
- BA 466. **Sales Management.** 3 hours. 3 ①  
Function of sales manager in marketing process; his administrative and executive duties; analysis of market, policy formulation, recruiting, selecting, contracting, training, equipping, compensating, supervising, and evaluating salesmen.
- BA 467, 468. **Industrial Marketing.** (g) 3 hours each term. 3 ①  
Management of marketing activities among enterprises serving industrial market; planning, organization, and control of various elements of marketing program; product planning and policies; market research; use of middlemen and agencies; selling methods; pricing and terms of sale. Prerequisite: BA 313. Consent of instructor is required for admission to BA 468.
- BA 469. **Case Problems in Marketing.** (g) 3 hours. 3 ①  
With the purpose of developing proficiency in solution of marketing problems representative cases are studied involving: choice of distribution channels, product and price policies, distribution cost analysis, and sales programs. Prerequisite: BA 313 and consent of instructor.
- BA 471. **Industrial Traffic Management.** (g) 3 hours. 3 ①  
Functions and procedures of traffic departments in industrial enterprises; use of tariffs; choice of agencies; control of transportation costs; government rate regulation procedures.
- BA 473. **Export and Import Management.** (g) 3 hours. 3 ①  
Activities and procedures peculiar to exporting and importing; obtaining transportation services; packing requirements; custom requirements; financing methods; insurance.
- BA 497. **Human Relations in Business and Industry.** (g) 3 hours. 3 ①  
Relationships among managerial, supervisory, and other workers; actual cases used to help develop attitudes, frames of reference, and approaches which will be useful in solving human relations problems in business. Prerequisite: senior standing.
- BA 498. **Government Relations in Business and Industry.** (g) 3 hours. 3 ①  
Statutory, administrative, and common law controls affecting modern business and their influence on budgetary considerations, business structure, and administrative policies; importance of constructive attitude and proper recognition of government aids and services to the business community. Prerequisite: senior standing.
- BA 499. **Business and Industrial Policy.** (g) 3 hours. 3 ①  
Advanced integrative course in analysis of top-management decisions, executive responsibilities, and company objectives. Policy-making is studied through business case histories, current business news, and field investigations of region. Prerequisite: senior standing.

#### Graduate Service Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

## Business Education

Professional preparation for teachers of business subjects is provided in the Department of Business Education, which is a joint department in the School of Business and Technology and the School of Education. A student may major in either school, but before registering he must confer with the head of the Department of Business Education.

**Baccalaureate Degrees.** The program for undergraduates for a baccalaureate degree is outlined in the curriculum on a previous page. Courses from business administration, business education, education, and secretarial science form the major background. A liberal number of elective hours permits the selection of a teaching minor. The requirements for a State High School Teacher's Certificate are listed under SCHOOL OF EDUCATION.

**Advanced Degrees.** Graduate study with a major in business education is available through the School of Education for all those who complete the undergraduate curriculum or its equivalent. Thirty of the required 45 term hours for the Master of Science or the Master of Arts degree are taken in business education (including the thesis). Other master degree options are described under GRADUATE SCHOOL. A choice of graduate program can be made following a conference with the head of the Department of Business Education.

#### Upper Division Courses

- BE401. Research. Terms and hours to be arranged.  
 BE403. Thesis. Terms and hours to be arranged.  
 BE405. Reading and Conference. Terms and hours to be arranged.  
 BE407. Seminar. Terms and hours to be arranged.  
 Ed 408. Special Secondary Methods. 3 hours. (See page 272.)

#### Graduate Courses

- BE451. Research. Terms and hours to be arranged.  
 BE453. Thesis. Terms and hours to be arranged.  
 BE455. Reading and Conference. Terms and hours to be arranged.  
 BE457. Seminar. Terms and hours to be arranged.

MEASUREMENTS IN BUSINESS EDUCATION.

CURRENT TRENDS IN OFFICE PROCEDURE.

SUPERVISION AND ADMINISTRATION OF BUSINESS EDUCATION.

TEACHING SOCIO-BUSINESS SUBJECTS IN THE SECONDARY SCHOOL.

PRACTICUM IN BUSINESS EDUCATION—The planning and development of practical and creative projects, group or individual, in the field of business education. Students will be urged to use actual school situations as nucleus for the term's work and to arrive at the best possible solutions.

- BE456. Problems and Research Techniques in Business Education. 3 hours. 3 ①  
 Trends in high school commercial curriculum; evaluation of methods and available research studies. Prerequisite: Ed 408 or teaching experience in business subjects.
- BE457. Measurements in Business Education. 3 hours 3 ①  
 Objectives and principles of measurement in business education; testing in specific areas; construction of sample tests; evaluation of available testing materials; use of tests in diagnostic and remedial teaching. Prerequisite: Ed 408 or teaching experience in business subjects; BE 456.
- BE458. Current Trends in Office Procedure. 3 hours. 3 ①  
 Types of clerical and secretarial procedure programs used in secondary and collegiate schools; course content, teaching methods and materials; organization of laboratories; development of objectives, standards, instruction sheets, courses of study, and miscellaneous teaching aids. Prerequisite: Ed 408 or teaching experience in business subjects; BE 456.
- BE451. Current Practices in Typewriting. 3 hours fall. 3 ①  
 Principles underlying development of typing skills; motivation, supplementary materials, and special devices. Prerequisite: Ed 408 or teaching experience in typing.

- BEd 542. **Current Practices in Shorthand.** 3 hours winter. 3 ①  
 Correct writing habits; correlation of sound and symbol response; word and sentence building and transcription technique. Prerequisite: Ed 408 or teaching experience in stenography.

## Secretarial Science

The major in secretarial science prepares young men and women for secretarial positions. It is often advantageous for the student to elect a minor in an industrial field in which he plans to work. The department gives service work for students majoring in business and technology and in other major curricula of Oregon State College.

### Lower Division Courses

- SS 111, 112, 113. **Stenography.** 3 hours each term. 4 ①  
 Theory of shorthand; practical applications in sentence; dictation. SS 121, 122, 123 must be taken concurrently unless the student has had the equivalent. Students with one year of high school shorthand may receive credit for SS 111 only upon recommendation of instructor.
- SS 121, 122, 123. **Typing.** 2 hours each term. 5 ①  
 Theory and practice of touch typing; drills of all kinds; punctuation and mechanical arrangement of business correspondence, legal forms, tabulating, manuscripts, modern business forms; straight copy timings; training on both manual and electric typewriters. Students who have had one year of typing may receive credit for SS 121 only upon the recommendation of instructor.
- SS 131. **Typing.** 2 hours. 5 ①  
 Intensive skill building in speed, accuracy, figures, and techniques. Use is made of wide variety of special drills, electric typewriters, and tachistoscope. Prerequisite: consent of instructor.
- SS 211, 212, 213. **Applied Stenography.** 3 hours each term. 3 ②  
 Advanced principles and phrases; dictation and transcripts covering vocabularies of representative businesses; legal forms; newspapers and magazine articles. Prerequisite: SS 113, 123 or equivalent.
- SS 215, 216. **Business Machines.** 2 hours, 1 hour, respectively. 5 ① or 3 ①  
 Operation of rotary and key-driven calculators, bookkeeping machines, adding machines, addressing machines, voice-writing machines, stencil and fluid-process duplicators, and electric typewriters. SS 215, 3 periods; SS 216, 3 periods.

### Upper Division Courses

- SS 311, 312, 313. **Office Procedure.** 4 hours each term. 2 ① 3 ②  
 The most efficient stenographic methods and office practice; filing; advanced dictation; transcripts; reports; modern office appliances. Prerequisite: SS 213 or equivalent.
- SS 321, 322. **Technical Reporting.** 3 hours each term winter and spring. 3 ②  
 Advanced stenographic training in specialized business fields.
- SS 407. **Seminar.** 1 hour fall and winter. 1 ①
- SS 411. **Secretarial Problems.** 3 hours winter. 3 ①  
 Duties and problems of the secretary in business and professions; relation to employer and fellow employees; office supervision. Prerequisite: SS 421 or equivalent.
- SS 412. **Secretarial Practice.** 3 hours any term. 3 ①  
 Practical office experience. Ninety hours laboratory work in campus offices. Prerequisite: senior standing.
- SS 421, 422. **Office Organization and Management.** 3 hours each term. 3 ①  
 SS 421, fall and winter, SS 422, spring. Scientific office management; organization; arrangement; operation; employment and training of office workers; efficiency problems; business ethics. Prerequisite: SS 313 or consent of instructor.

### Graduate Courses

Courses numbered 400-499 and designated (g) may be taken for graduate credit.  
 For graduate courses in business education, see SCHOOL OF EDUCATION.

# School of Education

## Faculty

FRANKLIN ROYALTON ZERAN, Ph.D., Dean of the School of Education.

KATHRYN SMITH, Teacher Placement Secretary.

**Education:** Professors ZERAN (department head), ANDERSON, BAKKUM, BERGSTROM, CLINTON, GOODE, JEWELL (emeritus), LANGTON, MUNFORD, REICHART, SALSER (emeritus), SEEN, WILLIAMSON; Associate Professors BARON, DIXON, GILL, MILLIKEN, PARKS, WEIR; Assistant Professors CANNON, CANTRELL, FOX, GAYNOR, HAHN, HALL, LEELAND, MARKSHEFFEL, MORRIS, REES, SMITH; Instructor LUMPKIN.

**Agricultural Education:** Associate Professor TEN PAS (department head); State Supervisor and Teacher Trainer MORGAN; Assistant Professor AGAN.

**Business Education:** Professor YERIAN (department head); Associate Professors LARSE, WINGER; Assistant Professor BARBER.

**Home Economics Education:** Professor DuBois (department head); State Supervisor and Teacher Trainer KOHLHAGEN; Associate Professor McQUESTEN; Instructor WOHLGENTANT.

**Industrial Education:** Professor COX (department head); Associate Professor PAULSON; Assistant Professors CANNON, HAHN.

**Science Education:** Professor WILLIAMSON (department head); Associate Professor MORRIS; Assistant Professor FOX.

## General Statement

**T**HE TEACHING PROFESSION offers attractive careers to men and women who like to work with young people. Oregon and other western states will have a constant and continuing demand for more and more new teachers in the coming years as the school-age population continues to increase.

The School of Education at Oregon State College offers undergraduate work in elementary education, undergraduate and graduate work in secondary education, graduate work in higher education, and instruction, principally at the graduate level, in guidance and personnel work. Distinctive elements in the School of Education are its Department of Trade and Industrial Education and the departments of Science Education, Agricultural, Business, and Home Economics Education, which also are departments in their respective schools of subject specialization. The School of Education does not offer major work in school administration. It does, however, offer the courses required for an elementary or secondary school principalship in the State of Oregon.

**Psychology requirement.** General Psychology (Psy 201, 202) is prerequisite to all upper division education courses. Psychology courses Psy 201, 202, 205, 311 are the only psychology courses which may be counted as a part of the education major of 36 term hours.

**Elementary Education.** To qualify for an elementary teacher's certificate in Oregon a person must have graduated from a four-year program of elementary teacher education in a college or university approved by the State Board of Education for the preparation of elementary teachers. The curriculum must include at least 6 term hours of supervised teaching at elementary level, Oregon History, or History of the Pacific Northwest (2 hours), and Oregon School Law and Organization (2 hours).

The curriculum (see page 262) includes both the courses required for graduation by Oregon State College and those required for an elementary teacher's certificate.

**Secondary Education.** The State Board of Education issues the following types of Secondary Teachers Certificates:

*Provisional Certificates.* Until such time as secondary teachers have completed the five-year secondary teacher education program they are issued a provisional certificate or A, B, C, D, or E; each is issued for one year only, and *it is not renewable.* Applicants should apply for the provisional certificates in turn as they go through the schedule outlined below. When they are eligible for the regular five-year secondary certificate, they should make application for this credential. It is not mandatory that a teacher hold all five provisional certificates to qualify for the five-year certificate. Persons who have had issued to them the five-year secondary certificate are not eligible for further provisional certification.

*Provisional Certificate A* may be issued to those otherwise qualified applicants who present official evidence of the following:

1. A baccalaureate degree from a standard college, university, or teachers college.
2. Twenty-one quarter hours (21) in secondary school education, at least nine (9) quarter hours of which shall be high school supervised teaching—grades 9 through 12 in high school, or grades 7, 8, or 9 in a regularly organized junior high school.
3. Oregon School Law and Organization, 2 quarter hours. The unit in Oregon School Law taken in conjunction with the course School in American Life will also clear this requirement.
4. Oregon History, or History of the Pacific Northwest, 2 quarter hours.

The Oregon courses may be waived for one year to permit an otherwise fully qualified teacher who has completed all required preparation outside Oregon, to receive Provisional Certificate A. Oregon History, or History of the Pacific Northwest, and Oregon School Law must be completed before further provisional certificates may be issued.

*Provisional Certificates B, C, D, and E* may be issued to those persons who have met all requirements for and held the preceding provisional certificate and who have completed 9 quarter hours of upper division or graduate work in secondary teacher preparation applicable to the 5th year program and over and beyond requirements for preceding provisional certificate.

*The regular five-year State secondary certificate* may be issued to those persons who have completed a five-year secondary teacher education program in a standard college, university, or teachers college approved by the State Board of Education for preparation of secondary teachers, provided the five-year program includes:

1. A baccalaureate degree from a standard college, university, or teachers college.
2. A master's degree in secondary teacher preparation, or 45 quarter hours of secondary teacher preparation completed subsequent to baccalaureate degree. (Upper division or graduate credit in secondary teacher preparation in excess of that required for completion of requirements for the baccalaureate degree may be applied on the 5th year when marked on the official transcript or indicated by course number and title on an official report from the degree-granting institution as reserved for Oregon certification. The number of hours so applied may in no case exceed 12 quarter hours.)
3. Preparation subsequent to the baccalaureate degree distributed as follows: (a) 21 quarter hours in subjects taught in high school, at least 15 quarter hours of which shall be upper division or graduate. (b) 9 quarter hours in secondary education earned subsequent to baccalaureate degree and of upper division or graduate level. (c) 15 quarter hours of upper division or graduate study as electives.
4. 36 quarter hours of secondary education of upper division or graduate level, at least 9 quarter hours of which shall be completed subsequent to baccalaureate degree as indicated in 3-b, and which shall include: (a) Educational Psychology. (b) Human Growth and Development. (c) School in American Life. (d) Special methods in a subject taught in high school. (e) General high school methods or special methods in a second subject taught in high school. (f) High school supervised teaching, 9 quarter hours. (To be done in grades 9 through 12 in the high school, or in grades 7, 8, or 9 of a regularly organized junior high school.) (g) Preparation in any two of the following areas: curriculum and instruction, guidance and counseling, measurement and evaluation, social foundations of education, improvement of reading in high school. (h) Oregon School Law and Organization, 2 quarter hours (unless unit in school law has been completed in conjunction with School in American Life).
5. Oregon History, or History of the Pacific Northwest, 2 quarter hours.



The State Department of Public Instruction charges a fee of \$2.00 for each of the types of certificates or for renewal of a five-year certificate.

More detailed information concerning regulations governing certification and progression from provisional to regular certification may be obtained from the School of Education. Completion of either of the curricula listed on pages 262-264 will fulfill requirements for a provisional certificate.

**Higher Education.** The School of Education cooperates with the major departments on the campus through the Graduate School in a graduate minor in college teaching which may be elected by candidates for advanced degrees, especially the doctorate. In addition, graduate students may elect courses in higher education and utilize special courses in preparation for positions in junior colleges, colleges, and universities.

**Guidance and Personnel Work.** Oregon State College offers a comprehensive program at the graduate level in Guidance and Personnel Work. This program prepares students for work as counselors in schools and colleges, as deans of boys or girls or of men or women, and as directors of student personnel, counselor trainers, and state supervisors of guidance.

An individual desiring to major at the master's level in Guidance must elect Option B. The minor (15 hours) must be in psychology, at least 6 hours of which must be in psychological tests and testing. The candidate completes 45 term hours of graduate work but does not present a thesis nor field studies. He takes written comprehensive examinations upon completion of the 45 hours and an oral examination after passing the written examination.

The required courses in Option B (Guidance) are as follows: Research Procedures in Education; Principles and Practices of Guidance Services; Occupational and Educational Information; Counseling Techniques; Counselor Training; Group Procedures; Organization and Administration of Guidance Services; Diagnostic and Remedial Techniques in Reading; The Maladjusted Child or Psychology of the Exceptional Child (not offered at O.S.C.) or The Mentally Handicapped Child (not offered at O.S.C.) or Play Therapy (not offered at O.S.C.); Supervised Counseling Techniques or Measurements in Education or Statistical Methods in Education or Advanced Educational Psychology; and Psychology of Adolescence or Psychology of Childhood.

Before a person may be admitted to candidacy for the Doctor of Education degree in Guidance and Personnel Work he must have had at least two years of paid teaching experience at the elementary or secondary level and in addition two years of paid counseling experience in a school or college. Since the doctoral candidate works closely with his adviser and committee and since the staff approved to advise doctoral candidates is small, the School of Education limits the number of students admitted to the Graduate School with a view to working on the doctorate in Guidance and Personnel Work. Transcript, four letters of recommendation, Graduate Record Examination results, completed doctoral applicant questionnaire, and application for admission to the Graduate School must be on file by March 14 of the year preceding the September in which the student desires to begin his doctoral program.

**Enrollment as Freshman.** High school graduates who plan to teach should enroll in the School of Education as freshmen. In this way requirements will be most easily and certainly met, an adviser will be available at all times, appropriate teaching fields will be chosen, and the most valuable supporting courses will be selected and worked into the student's program.

**Supervised Teaching.** In their senior year, student teachers observe teaching by experienced instructors, work out lesson plans under the direction of the supervisors, and teach kindergarten, elementary, or high school classes under supervision. *In addition to other requirements, a student must be in full-time residence at Oregon State College and taking courses in his teaching field, normally in the term immediately preceding the one in which he plans to do supervised teaching.*

**Placement Bureau.** The School of Education maintains a placement service to assist graduates of Oregon State College in obtaining teaching positions suited to their preparation and qualifications. Credentials are handled for kindergarten, elementary, junior high school, senior high school, and college placement. The fee for this service is \$5.00 for registration the first year and \$2.50 for re-registration thereafter. The \$5.00 fee is payable at registration. Students in attendance fall term should pay fee no later than January 15. Fee payment entitles registrant to services for a 12-month period. The \$2.50 reregistration fee is also for a 12-month period. The placement secretary compiles and makes available to school officials full information concerning preparation and experience of graduates.

**Graduate Study.** Graduate work in education is offered through the Graduate School. Students may pursue graduate study for a master's or doctor's degree as preparation for junior or senior high school, junior college, or college teaching in fields allocated as majors at Oregon State College, or for counseling, guidance, and personnel work in secondary schools or in colleges. Programs of graduate students are worked out for individuals according to their needs and objectives and regulations of the Graduate School.

For an M.A. or M.S. degree, the student must complete a graduate major in education and a graduate minor in a subject-matter field; for the M.A. degree a reading knowledge of a relevant foreign language is required. For the Ed.M. the candidate must complete a graduate major and one graduate minor. For the Ed.D. degree the student must complete a graduate major and two graduate minors one of which must be in a field outside of education. For both the Ed.M. and Ed.D. degrees the candidate must submit a record of successful teaching experience. Reading knowledge of French, German, or other language may be required if it is regarded as essential to the student's program.

## Curricula for Undergraduates

### CURRICULUM IN ELEMENTARY EDUCATION

#### B.S. Degree

#### General Note

General Hygiene (PE 150, 1 term hour for men; PE 160, 2 term hours for women) is taken one term in place of physical education.

Freshman Year	Term hours		
	F	W	S
English Composition (Wr 111, 112, 113) .....	3	3	3
History of American Civilization (Hst 224, 225, 226) .....	3	3	3
Pupil, Teacher, and Society (Ed 112) .....	2	.....	.....
Mathematics for Elementary Teachers (Mth 211, 212) .....	.....	3	3
Introductory Geography (Geog 105, 106) .....	.....	3	3
Extempore Speaking (Sp 111) .....	3	.....	.....
Physical Education .....	1	1	1
Air, Military, or Naval Science (men) or electives .....	1-3	1-3	1-3
Electives .....	3-4	2-3	2-3
	16	16	16

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Literature .....		3	3
Field Experience (Ed 200) .....			2
General Psychology (Psy 201, 202) .....	3	3	3
Human Development (Psy 311) .....			3
Fundamentals of Body Movement and Conditioning Exercise (PE 341) .....	4	4	1
Physical Science Survey (GS 104, 105) .....	4	3	3
Music for Elementary Teachers (Mus 381, 382, 383) .....	1		
Rhythms and Dance (PE 342) .....	1	1	1
Physical Education .....	1-3	1-3	1-3
Air, Military, or Naval Science (men) or electives .....	2-4	0-2	0-2
Electives .....			
	16	16-17	16

<b>Junior Year</b>			
School in American Life (Ed 310) .....	3		
Educational Psychology: Learning (Ed 312) .....			3
Methods and Materials: Social Science (Ed 369) .....			2
Methods and Materials: Science and Mathematics (Ed 368) .....		3	
Games, Relays, and Team Activities (PE 343) .....			1
Creative Arts and Crafts for Elementary Teachers (AA 311, 312, 313) .....	3	3	3
Biological Science Survey (GS 101, 102) .....	4	4	
School Health Education (SEd 321) .....	3		
School Health Services (SEd 322) .....			3
Methods and Materials: Language Arts (Ed 367) .....		3	
Electives .....	3	3	4
	16	16	16

<b>Senior Year</b>			
Student Teaching: Elementary (Ed 415) .....	12	any term	
Methods in Reading (Ed 350) .....	3	any term	
School Programs in Elementary Physical Education (PE 340) .....	3	any term	
Children's Literature (Eng 388) .....	3	any term	
Principles and Techniques of Speech Correction (Sp 492) .....	3	any term	
History of the Pacific Northwest (Hst 478) .....	3	any term	
Electives .....	1-3	any term	
	16	16	16

## CURRICULUM IN SECONDARY EDUCATION

*B.A., B.S., Ed.B., M.A., M.S., Ed.M., Ed.D. Degrees*

### General Notes

a. The recommended electives for freshmen and sophomores are designed to broaden the experience and preparation of students. Early attention should be given to the fullest preparation in a teaching major and to one or two teaching minors. Some preparation in an additional field should be included, if possible, and also one or more extracurricular activities. The School of Education provides a large number of electives in each term of the four-year program for the bachelor's degree.

b. In the freshman year General Hygiene (PE 150, 1 term hour for men; PE 160, 2 term hours for women) is taken one term in place of physical education.

c. Students who decide to take a B.S. or B.A. degree without High School Teacher's Certificate may complete the requirements for graduation in four years, omitting Student Teaching and all special methods courses. Summer session attendance may be used to reduce the time or the term load.

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Pupil, Teacher, and Society (Ed 112) .....	2	(2)	(2)
English Composition (Wr 111, 112, 113) .....	3	3	3
<sup>1</sup> Laboratory Science or Mathematics .....	3-5	3-5	3-5
Air, Military, or Naval Science (men) .....	1-3	1-3	1-3
Physical Education .....	1	1	1
Electives in teaching fields .....	3-5	3-5	3-5
Other electives .....	3-1	3-1	3-1
	16	16	16

<sup>1</sup> Psychology plus laboratory is not acceptable as a substitute for a laboratory science.

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
General Psychology (Psy 201, 202) .....	3	3	.....
Literature .....	3	3	3
Speech .....		3	.....
History of American Civilization (Hst 224, 225, 226) .....	3	3	3
Air, Military, or Naval Science (men) .....	1-3	1-3	1-3
Physical Education .....	1	1	1
Electives in teaching fields .....	4-6	4-6	7-8
	16	16	16
<b>Junior Year</b>			
School in American Life (Ed 310) .....	3	.....	.....
Educational Psychology: Learning (Ed 312) .....		3	.....
Principles of Economics (Ec 201) or Outlines of Economics (Ec 212) .....	3	.....	.....
American Governments (PS 201) .....		.....	3
General Sociology (Soc 212) .....		3	.....
Electives in teaching fields .....	6	6	6
Other electives .....	4	3-4	7
	16	15-16	16
<b>Senior Year</b>			
Methods in Reading (Ed 350) .....	3	any term	
Special Secondary Methods (Ed 408) .....	3	any term	
Student Teaching: Secondary (Ed 416) .....	3-15	any term	
History of Pacific Northwest (Hst 478) .....	3	any term	
Electives .....	1-13	any term	
	16	16	16
<b>Fifth Year</b>			

Fifth-year students desiring to meet certification requirements are not required to work for a master's degree. For most high school positions, however, a master's degree is desirable. Students preparing to enter counseling, guidance, and personnel work must qualify for a master's degree.

## TEACHING MAJORS AND MINORS IN HIGH SCHOOL FIELDS

Under current regulations, new teachers employed in a standard secondary school and teachers reassigned must be assigned to teach only in those subject-matter fields in which they have completed adequate preparation in a standard college or university.

The courses which Oregon State College requires for minimum subject preparation in the several teaching fields satisfy the subject-preparation standards of the State Board of Education. In planning his program of study, however, a student should note that they satisfy *minimum* requirements only. Students must consult members of the faculty of the schools or departments in which they are taking subject-preparation courses concerning additional courses they should elect to strengthen their preparation. Certain courses not listed in either the major or minor requirements can be of great help to teachers.

*A student preparing to teach in secondary schools must have a teaching major and at least one teaching minor.* If he can supervise at least one co-curricular activity and has more than one teaching minor, he will find job opportunities better when he graduates. His teaching major must be in one of the fields in which Oregon State College offers student teaching: biology, health education, general science, mathematics, physical science, agriculture, business, home economics, industrial arts, trade and industrial education, or physical education. The teaching minor may be in one of these same fields or may be in one of the following: architecture, art, business administration, camp education, English, French, German, journalism, music, recreation, social science, Spanish, or speech. Co-curricular activities which provide excellent training and experience

for prospective teachers include intercollegiate and intramural sports, journalism, art, dramatics, debating, oratory, orchestra, band, glee club, writing and producing radio programs, and participating in student self-government.

### Science Education

#### Biological Science: General Biology

	<i>Term Hours</i>
Requirements for MINOR: General Zoology (Z 201, 202, 203), General Botany (Bot 201, 202), Field Botany (Bot 203), Natural History of Oregon I, II, III (Z 374, 375, 376), Principles of Bacteriology (Bac 230), Introduction to Economic Entomology (Ent 314) .....	35
Additional requirements for MAJOR: Upper division electives in biology .....	9
Total requirements for teaching major .....	44
Recommended electives: biocology, biogeography, animal ecology, plant ecology, plant physiology, evolution, genetics, systematic botany, physiology.	
Recommended to accompany major: Physical Science Survey.	

#### Biological Science: Health Education

Must be accompanied by adequate science preparation.

Requirements for MINOR: Introduction to Health Education (SEd 123); Advanced Hygiene (PE 250), Nutrition (FN 225), School Health Education (SEd 321), School Health Services (SEd 322), First Aid (PE 358), Safety Education (Ed 360), Community Health Problems (Bac 424), Special Secondary Methods in Health Education (Ed 408i) .....	27
Additional requirements for MAJOR: Seminar (SEd 407), and nine hours from following approved electives: Community Health Problems (Bac 424, 425, 426), School Health Problems (SEd 431, 432, 433), Health Education (SEd 441, 442, 443) .....	12
Total requirements for teaching major .....	39

#### General Science

Requirements for MINOR: Biological Science Survey (GS 101, 102, 103), Physical Science Survey (GS 104, 105, 106), nine hours electives in biological or physical science .....	33
Additional requirements for MAJOR: Natural History of Oregon I, II, III (Z 374, 375, 376) .....	10
Total requirements for teaching major .....	43
Recommended electives: general entomology, principles of bacteriology, photography, astronomy, geology of Oregon, advanced field geology, ornithology, evolution, geography.	

#### Mathematics

Requirements for MINOR: Mth 101, 102, 103 or equivalent, Differential and Integral Calculus (Mth 201, 202, 203), or equivalent .....	24
Additional requirements for MAJOR: Reading and Conference (Mathematics for Secondary Teachers) (Mth 405), elective in mathematics .....	12
Total requirements for teaching major .....	36
Recommended electives: History of Elementary Mathematics (Mth 311); Foundations of Elementary Mathematics (Mth 410); Theory of Equations and Determinants (Mth 331); Advanced Geometry (Mth 415); Projective Geometry (Mth 416).	

#### Physical Science

Requirements for MINOR: General Chemistry (Ch 101, 102, 103 or Ch 204, 205), Qualitative Analysis (Ch 206), General Physics (Ph 201, 202, 203) .....	26-27
Additional requirements for MAJOR: Organic Chemistry (Ch 226, 227), Quantitative Analysis (Ch 234), Introduction to Modern Physics (Ph 311, 312, 313)....	19-24
Total requirements for teaching major .....	45-51
Recommended to accompany major: Biological Science Survey.	

**Agriculture**Term  
Hours

Requirements for MAJOR: Introduction to Agricultural Economics (AEc 111), Principles of Farm Management (AEc 211), Farm Organization (AEc 414); Vocational Education in Agriculture (AEd 220); Agricultural Engineering Survey (AE 211), Farm Mechanics (AE 221); Introduction to Animal Husbandry (AH 121); Introduction to Dairying (D 121), Poultry Production (PH 121), Animal Nutrition I (AI 311) or Animal Nutrition II (AI 411), Animal Breeding (AI 316) or Plant Genetics (FC 517); Elements of Agronomy I (FC 111), Elements of Agronomy II (FC 211), Elements of Horticulture (Hrt 111), Soils (Sls 211 and 212).

A B.S. degree in agriculture is required of all majors in Agricultural Education.

**Business Education**

Requirements for MAJOR: Stenography (SS 111, 112, 113), Typing (SS 121, 122, 123), Applied Stenography (SS 211, 212, 213), Principles of Accounting (BA 211, 212, 213), Office Procedure (SS 311), Business Law (BA 411), Retail Merchandising (BA 463), Office Organization and Management (SS 421) .....

46

**Home Economics**

Requirements for MINOR: Foods (FN 211, 212, 213, or for students electing chemistry, FN 211, 221, 222), Nutrition (FN 225), Clothing and Textiles (CT 111, 211, 212, 250), Child Development (FL 311, 312), The Nursery School Child (FL 425), Family Living (FL 223) or Marriage (FL 222), Management in Family Living (HAD 340) .....

37

Additional requirements for MAJOR: Electives from at least two of the following groups

8

A. *Foods*: Family Nutrition (FN 325), Food Demonstrations (FN 410), Food Purchasing (FN 411), Food Management (FN 412), Experimental Cookery (FN 435), Quantity Cookery (IM 311), Cafeteria Management (IM 320).

B. *Clothing*: Home Furnishing (CT 231), Flat Pattern and Draping (CT 310), Costume Design (CT 311), Tailoring (CT 312), Clothing for Children (CT 320), Home Furnishing (CT 331), Textile Design (CT 335), Consumer Buying in Clothing and Textiles (CT 350).

C. *Family Life and Home Administration*: All courses in the Department of Family Life and Home Administration are open to those who have completed the courses listed previously. The following are particularly recommended: Household Equipment (HAD 330), Organization and Use of House Space (HAD 335), Family Finance Management (HAD 341), Economics of the Family (HAD 441), Home Management House (HAD 450), Family Relationships (FL 422), Parent Education (FL 423).

Total requirements for teaching major .....

45

**Industrial Arts**

For a major in Industrial Arts see Professional Curriculum in Industrial Arts.

**Physical Education****Minor for Men**

Requirements for MINOR: Physical Education Laboratory (PE 124, 125, 126, 224, 225, 226), School Programs and Organization (PE 411), Special Secondary Methods (Ed 408), and any three of the following: Coaching of Basketball (PE 346), Coaching of Football (PE 347), Coaching of Baseball (PE 348), and Coaching of Track and Field (PE 349) .....

29

All teachers of physical education in Oregon are also required to have at least 18 hours in health education. Courses in health education include: PE 250; PE 358; SED 321, 322; Ed 360; Bac 261; Bac 321; Bac 425, 426; Bac 453; FN 225. Students interested in teaching physical education or biological science, or both, may include a minor in health education.

Additional requirements for MAJOR: See DIVISION OF PHYSICAL EDUCATION.

**Minor for Women**

Requirements for MINOR: Physical Education Technique (PE 333, 334), Special Secondary Methods (Ed 408), School Programs and Organization (PE 411), Recreation Leadership (PE 240), ten hours in physical education activities .....

27

Additional requirements for MAJOR: See DIVISION OF PHYSICAL EDUCATION.

**Health Education**

See BIOLOGICAL SCIENCE: HEALTH EDUCATION, page 265.

**Recreation***Term  
Hours*

Requirements for **MINOR**: Laboratory Practice in Camping Skills (Ed 364), Introduction to Recreation (Ed 121), Youth Agencies (Ed 425), Recreation Leadership (PE 240), Playground Leadership (PE 435), Field Work (Ed 347), electives, on advice of minor adviser, selected from the following fields: arts and crafts, music, drama, physical education (in addition to college requirements) or natural sciences ..... 27

**Camp Education**

Requirements for **MINOR**: Camp Counseling (Ed 263), Laboratory Practice in Camping Skills (Ed 364), Camp Management (Ed 365), Group Dynamics (Psy 361), Youth Agencies (Ed 425), Public School Camping (Ed 366), electives approved by Camp Education Minor adviser, representing areas of arts, natural sciences, and physical education ..... 27

**Dance**

Requirements for **MINOR**: Introduction to Dance Education (PE 221), Physical Education Techniques (PE 333, 334, 335), Physical Education Laboratory (PE 124, 125, 126), electives approved by Dance minor adviser selected from music, speech or dramatics, arts and crafts, and recreation ..... 27

**ADDITIONAL TEACHING MINORS**

Student teaching is not offered in these fields.

**Architecture**

For industrial arts majors only.

**Architecture and Construction**

Requirements for **MINOR**: Graphics I (AA 111, 112), Graphics II (AA 211, 212), House Planning and Architectural Drawing (AA 178), Construction (AA 218, 219, 220), Basic Design (AA 195), Lower Division Architectural Design (AA 297) ..... 27-33

**Architecture and Allied Arts**

Requirements for **MINOR**: House Planning and Architectural Drawing (AA 178, 179, 180), Elements of Interiors (AA 223), Introduction to Visual Arts (AA 203), Lower Division Architectural Design (AA 297), Rural House Planning (AE 451), six hours of electives in architecture and allied arts ..... 30

**Art**

Drawing and Painting

Requirements for **MINOR**: Basic Design (AA 195), Survey of Visual Arts (AA 201, 202, 203), Painting (AA 290), Drawing (AA 291) ..... 30

**Art Crafts**

Requirements for **MINOR**: Basic Design (AA 195), Survey of Visual Arts (AA 201, 202, 203); nine hours selected from this group: Leathercraft (AA 254), Ceramics (AA 255), Jewelry (AA 257), Art Metalcraft (AA 258), Art Craft (AA 259); six hours electives in art ..... 30

**Art**

For industrial arts majors only.

Requirements for **MINOR**: Industrial Arts Drawing and Design (AA 281, 282, 283), Leathercraft (AA 254), Ceramics (AA 255), Jewelry (AA 257), Art Craft (AA 259), Graphic Arts (AA 275 or 276 or 277), Elementary Sculpture (AA 293); three hours electives to reflect extended interest in one of the above ..... 30

**Business Administration**

May not be offered as a teaching minor by business education teaching majors.

Requirements for **MINOR**: Principles of Accounting (BA 211, 212, 213), Production (BA 311), Finance (BA 312), Marketing (BA 313), Business Law (BA 411, 412, 413) ..... 30

**English***Term  
Hours*

- Requirements for MINOR: Survey of English Literature (Eng 101, 102, 103), American Literature (Eng 253, 254, 255), one course in Shakespeare (Eng 201, 202, or 203), Literature for Teachers (Eng 488), Development of English Language (Eng 490), English Composition for Teachers (Wr 411) ..... 30
- Recommended electives: Shakespeare (Eng 201, 202, 203), Elementary School Library (Lib 379), Children's Literature and Library (Eng 388), Literature for Higher School Libraries (Lib 385).

**French**

- Requirements for MINOR: RL 1, 2, 3, (first year), or equivalent, and the following courses: Second-Year French (RL 101, 102, 103), Survey of French Literature (RL 311, 312, 313), Second-Year French (RL 101, 102, 103) (conversational drill), Directed Reading in French (RL 211, 212, 213) ..... 30

**German**

- Requirements for MINOR: GL 1, 2, 3, (first year), or equivalent, and the following courses: Second-Year German (GL 101, 102, 103), Survey of German Literature (GL 343, 344, 345), Second-Year German (GL 101, 102, 103) (conversational drill), Scientific German (GL 320, 321, 322) ..... 30

**Journalism**

Must be accompanied by another teaching minor.

- Requirements for Minor: Elementary Journalism (J 111, 112), Copyediting (J 214), Editorial Writing (J 223), Special Feature Articles (J 317), Public Information Methods (J 318), nine hours approved electives ..... 27
- Suggested electives: Technical Writing (J 319), Journalism Projects (J 351, 352, 353), Creative Writing (Wr 218), English Composition for Teachers (Wr 411), Advertising (BA 464), Photography (Ph 361).

**Music****Vocal**

- Requirements for MINOR: Music Theory (Mus 111, 112, 113), History and Literature of Music (Mus 221, 222), \*Applied Music (Mus 190-390) or Class Lessons in Voice (Mus 191)—five hours as directed, Choral Conducting (Mus 324, 325), Music for the High School Teacher (Mus 350) ..... 30

**Instrumental**

- Requirements for MINOR: Music Theory (Mus 111, 112, 113), History and Literature of Music (Mus 221, 222), Applied Music (Mus 190-390) or Class Lessons in Voice (Mus 191)—four hours as directed. Instrumental Conducting (Mus 321, 322), Band and Orchestra Techniques (Mus 335, 336) ..... 30
- Suggested electives: College Band (Mus 195-395), College Orchestra (Mus 196-396), College Chorus (Mus 197-397), History and Literature of Music (Mus 223), Music Theory (Mus 211, 212, 213), Band Arranging (Mus 354, 355).

**Social Science**

- Requirements for MINOR: HISTORY (18 hours): History of Western Civilization (Hst 101, 102, 103), History of American Civilization (Hst 224, 225, 226). ECONOMICS (6 hours): Outlines of Economics (Ec 212) and Economic Development of the United States (Ec 215). GEOGRAPHY (6 hours): Introductory Geography (Geog 105, 106). POLITICAL SCIENCE (6 hours): American Governments (PS 201) and either PS 202 or PS 203. SOCIOLOGY (6 hours): General Sociology (Soc 212) and one of the following: Soc 411 (g), 412 (g), 413 (g), 474 (g), 475 (g) or Ed 490 (G) ..... 42

**Spanish**

- Requirements for MINOR: RL 11, 12, 13 (first year), or equivalent, and the following courses: Second-Year Spanish (RL 107, 108, 109), Spanish Literature (third year) (RL 341, 342, 343), nine hours electives approved by department.... 27

\* The subject for applied music (voice, piano, violin, or other) will be determined by the student with the guidance of his adviser in the department.



**Speech**

**General Speech**

*Term  
Hours*

Requirements for **MINOR**: Speech Science (Sp 291), Voice and Diction (Sp 120), Extempore Speaking (Sp 111, 112), Interpretation (Sp 121, 122), and twelve hours from the following courses: Extempore Speaking (Sp 113), Interpretation (Sp 123), Parliamentary Procedure (Sp 231), Group Discussion (Sp 232), Argumentation (Sp 237), Persuasion (Sp 238), Stagecraft and Lighting (Sp 244), Community Drama (Sp 247), Radio Speaking (Sp 361), Basic Television (Sp 367), or Principles and Techniques of Speech Correction (Sp 493) (G) ..... 30

**Dramatics**

Requirements for **MINOR**: Interpretation (Sp 121, 122), Voice and Diction (Sp 120), Extempore Speaking (Sp 111), Stagecraft and Lighting (Sp 244), Community Drama (Sp 247, 248, 249), Speech Science (Sp 291) ..... 27

**Forensics**

Requirements for **MINOR**: Extempore Speaking (Sp 111, 112), Voice and Diction (Sp 120), Interpretation (Sp 121), Argumentation (Sp 237), Persuasion (Sp 238), Parliamentary Procedure (Sp 231), Group Discussion (Sp 232), Speech Science (Sp 291) ..... 27

**Radio and Television**

Requirements for **MINOR**: Extempore Speaking (Sp 111), Interpretation (Sp 121), Voice and Diction (Sp 120), Speech Science (Sp 291), Radio Speaking (Sp 361, 362, 363), Basic Television (Sp 367), Television Programing (Sp 368) ..... 27

**Speech Correction**

Requirements for **MINOR**: Voice and Diction (Sp 120), Extempore Speaking (Sp 111, 112), Interpretation (Sp 121), Speech Science (Sp 291), Principles and Techniques of Speech Correction (Sp 493) (G), Clinic Procedures (Sp 494), Electives in Speech ..... 27

**CURRICULUM IN INDUSTRIAL ARTS**

*B.S. Degree*

**General Notes**

a. All students following the professional curriculum for Industrial Arts will report directly to the head of the department for counseling on objectives, program planning, and occupational opportunities.

b. General Hygiene (PE 150, 1 term hour for men; PE 160, 2 term hours for women) is taken one term in place of physical education.

c. Technical electives must be related directly to the major option of the student and are selected with approval of the major adviser.

d. Students who are not candidates for the Oregon Credential, but who wish recommendations for teaching certificates based on a four-year curriculum (instead of the five-year certification requirement) will omit Hst 478, Ed 476, IEd 420. To complete graduation requirements and be eligible for certification and teaching recommendations it will be necessary to complete IEd 472, IEd 473, and IE 411 as substitutes for the three courses omitted.

**Freshman Year**

Term hours  
F W S

Pattern Making (IE 111) .....	3	...	...
Methods in Woodworking (IE 112, 113) .....	...	3	3
Foundry Practices (IE 240) .....	2	...	...
Forging and Welding (IE 250) .....	...	2	...
Machine Tool Practices (IE 260) .....	...	...	2
Engineering Drawing (GE 111, 112, 113) .....	2	2	2
Group requirement in Science .....	4	4	4
English Composition (Wr 111, 112, 113) .....	3	3	3
Physical Education and General Hygiene .....	1	1	1
Air, Military, or Naval Science .....	1-3	1-3	1-3

16-18 16-18 16-18

Sophomore Year	Term hours		
	F	W	S
NORM			
Industrial Arts Drawing and Design (AA 281, 282, 283) .....	3	3	3
Abridged General Physics (Ph 211, 212) .....	3	3	3
Extempore Speaking (Sp 111) .....	3	.....	.....
General Psychology (Psy 201, 202) .....	.....	3	3
Physical Education .....	1	1	1
Air, Military, or Naval Science .....	1-3	1-3	1-3
	8-10	11-13	11-13
WOOD INDUSTRIES OPTION			
Sophomore Year Norm .....	8-10	11-13	11-13
Wood Turning (IE 220) .....	.....	2	.....
Machine and Tool Maintenance (Wood Shop) (IE 225) .....	2	.....	.....
Fiber Furniture Weaving (IE 326) or Pattern Making (IE 332) .....	.....	.....	2
House Planning and Architectural Drawing (AA 178, 179, 180) .....	3	3	3
Elective in Science Group .....	3	.....	.....
	16-18	16-18	16-18
METAL INDUSTRIES OPTION			
Sophomore Year Norm .....	8-10	11-13	11-13
Machine Tool Practices (IE 261) .....	2	.....	.....
Machine and Tool Maintenance (Machine Shop) (IE 265) .....	.....	2	.....
Foundry Practices (IE 342) or Welding Processes and Applications (IE 354) .....	.....	.....	2
Descriptive Geometry (GE 123) .....	3	.....	.....
Sheet-Metal Work (IE 380) .....	.....	3	.....
Metal Crafts (IE 387) .....	.....	.....	3
Elective in Science Group .....	3	.....	.....
	16-18	16-18	16-18
Junior Year			
NORM			
Wood and Metal Finishing (IE 316) .....	.....	.....	3
Extempore Speaking (Sp 112) or Stagecraft and Lighting (Sp 244) .....	3	.....	.....
Stagecraft and Lighting (Sp 244) or Parliamentary Procedure (Sp 231) .....	.....	3	.....
School in American Life (Ed 310) .....	3	.....	.....
Educational Psychology: Learning (Ed 312) .....	.....	3	.....
Special Secondary Methods (Ed 408) .....	.....	.....	3
Oregon School Law and Organization (Ed 476) .....	.....	.....	2
History of Oregon (Hst 377) (See General Note d.) .....	.....	.....	3
Electives in Science or Social Science .....	3	3	.....
General electives .....	3	3	4
	12	12	15
WOOD INDUSTRIES OPTION			
Junior Year Norm .....	12	12	15
Millwork—Machine Woodwork (IE 311) .....	3	.....	.....
Carpentry and Building Construction (IE 333) .....	.....	3	.....
Approved technical electives .....	2	2	2
	17	17	17
METAL INDUSTRIES OPTION			
Junior Year Norm .....	12	12	15
Mass Production Methods (IE 361, 362) .....	2	2	.....
Approved technical electives .....	3	3	2
	17	17	17
Senior Year			
Applied Electricity (IE 370) .....	3	.....	.....
Industrial Arts Organization (IE 420) .....	.....	3	.....
Student Teaching: Secondary (Ed 416) .....	.....	.....	10
Approved technical electives .....	5	8	.....
Electives in Science or Social Science .....	3	3	3
General electives .....	7	3	3
	18	17	16

## Education

The Department of Education offers courses in principles and techniques of teaching at the elementary, secondary, and college levels, special methods in teaching the various major subjects in which Oregon State College gives teacher training, the history and philosophy of education, guidance, counseling, and personnel work.

### Lower Division Courses

- Ed 101. **Methods of Study.** 3 hours. 2 ① 1 ②  
Specific methods of study as applied to various subject-matter fields; the general principles of note-taking; study schedule; fixing study habits; evaluation of the various broad fields of human learning. Laboratory work also scheduled.
- Ed 112. **Pupil, Teacher, and Society.** 3 hours. 3 ①  
Over-all purpose is to give student a concept and ideal of effective teaching and place of school in society.
- Ed 121. **Introduction to Recreation.** 3 hours. 3 ①  
Concept of community recreation; growth and development of public recreation movement; types of recreation; role of organized recreation in the present social order.
- Ed 200. **Field Experience.** 2 hours. 2 ①  
To help prospective teachers bridge gap between classroom theory and student teaching. Observation of and participation in school and community organizations and programs.
- Ed 263. **Camp Counseling.** 3 hours. 3 ①  
Counselor training; responsibility in camp; camper problems; camp relationships. Three day practical camping field trip.
- Ed 296. **Leadership Training.** 2 hours. 2 ①  
Interpretation of leadership, understanding functions of group, examination of possible methods involved; leadership in campus life used as laboratory experience. Prerequisite: an actual leadership position or consent of instructor.

### Upper Division Courses

- Ed 310. **School in American Life.** 3 hours. 3 ①  
Problems of elementary and high schools from standpoint of teacher; aims, functions, and characteristics. Prerequisite: Psy 201, 202.
- Ed 312. **Educational Psychology: Learning.** 3 hours. 3 ①  
Laws of learning and application to classroom; motivation; transfer of training; memory; forgetting; psychology of secondary school subjects. Prerequisite: Psy 201, 202.
- Ed 314. **Principles of Secondary Teaching.** 3 hours. 3 ①  
Different methods of presentation of subject-matter; values and weaknesses of each method; individual and group differences; extracurricular activity programs; measuring the results of teaching. Prerequisite: Ed 310, 312.
- Ed 347, 348, 349. **Field Work.** 2 hours each term. 2 ①  
Observation and participation in planning, operation, and administration of wide variety of functioning recreation or youth organization programs under direction and supervision of trained leaders. Prerequisite: junior standing.
- Ed 350. **Methods in Reading.** 3 hours. 3 ①
- Ed 360. **Safety Education.** 3 hours. 3 ①  
Background and knowledge of all phases of safety; home, fire, industrial, water, rural, school, and traffic safety; elementary, secondary, and adult. Prerequisite: Ed 310, 312, 408.
- Ed 364. **Laboratory Practice in Camping Skills.** 3 hours. 3 ①  
Practical experience and development of skills in a variety of camping activities.
- Ed 365. **Camp Management.** 3 hours. 3 ①  
Directed toward preparation for camp administration. Prerequisite: Ed 263 or camp counseling experience.

- Ed 366. **Public School Camping.** 3 hours. 3 ①  
Role of camping in education; study of school camp, its organization, administration, and leadership. Prerequisite: Ed 365.
- Ed 367. **Methods and Materials: Language Arts.** 3 hours. 3 ①
- Ed 368. **Methods and Materials: Science and Mathematics.** 3 hours. 3 ①
- Ed 369. **Methods and Materials: Social Science.** 3 hours. 3 ①
- Ed 401. **Research.** Terms and hours to be arranged.
- Ed 405. **Reading and Conference.** Terms and hours to be arranged.
- Ed 407. **Seminar.** 1, 2, or 3 hours any term. 1, 2, 3 ①  
Prerequisite: Ed 310, 312, 408, or consen. of instructor.
- Ed 408. **Special Secondary Methods.** 3 hours.  
Problems and methods in selecting and organizing materials for instruction; comparison and evaluation of methods, laboratory techniques, supplies, equipment; economy of time and materials. Sections include: (a) agriculture, (b) biological science, (c) business, (d) home economics, (e) industrial arts, (f) mathematics, (g) physical science, (h) physical education, (i) health education, (t) trade and industrial education. Prerequisite: Ed 310, 312, 350. (Six hours maximum allowed toward certification.)
- Ed 414. **Student Teaching: Kindergarten.** 3 to 15 hours.  
Open only to students in Elementary Education. Prerequisite: Ed 415 (Elementary) minimum of 6 quarter hours; Ed 451 Preprimary Education (Kindergarten) and consent of adviser.
- Ed 415. **Student Teaching: Elementary.** 3 to 15 hours.  
Open only to students in Elementary Education. Prerequisite: Mth 211, 212; Psy 201, 202; Psy 311; PE 340, 341, 342, 343; Ed 310, 312, 350, 367, 368, 369; Eng 388; SEd 321, 322; Mus 381, 382, 383; AA 311, 312, 313; GS 104, 105; GS 101, 102 and consent of adviser.
- Ed 416. **Student Teaching: Secondary.** 3 to 15 hours.  
Experience in classroom procedures in fields of student's preparation and interests: (a) agriculture, (b) biological science, (c) business, (d) home economics, (e) industrial arts, (f) mathematics, (g) physical science, (h) physical education, (i) health education, (t) trade and industrial education. Arrangements to do student teaching must be made during registration for winter term of junior year. Prerequisite: Ed 310, 312, 350, 408 and consent of director of teacher training. *Student must have grade-point average of 2.50 in his teaching major at the beginning of the term in which he does student teaching and must not be on probation. He must also have a teaching minor.*
- Ed 423. **Organization and Administration of Recreation.** (g) 3 hours. 3 ①  
Organizing, administering, and conducting recreation programs; study of problems in recreation. Prerequisite: Ed 347, 348, 349.
- Ed 424. **Measurement in Education.** (G) 3 hours. 3 ①  
Use of standard tests and scales to measure achievement in secondary school subjects; elements of statistical method. Prerequisite: senior standing.
- Ed 425. **Youth Agencies.** (G) 3 hours. 3 ①  
Survey of youth-serving organizations; organization and leadership of school and community clubs. Prerequisite: senior or graduate standing, or consent of instructor.
- Ed 426. **Community Recreation.** (G) 3 hours. 3 ①  
The developing philosophy of recreation; current trends and problems in inter-relationships of community agencies offering recreation programs. Prerequisite: Ed 423.
- Ed 434. **Preparation of Audio-Visual Aids.** (G) 3 hours. 1 ① 2 ②  
Aids for more efficient teaching in large and diversified classes; diagrams, charts, illustrated instruction sheets, and blackboard illustrations. Prerequisite: senior standing or consent of instructor.
- Ed 435. **Audio-Visual Aids.** (G) 3 hours. 1 ① 2 ②  
Film, slide, chart, and other visual materials; selection and use to best advantage; operation of projectors and other equipment. Prerequisite: senior standing or consent of instructor.

- Ed 440. **History of Education.** (G) 3 hours. 3 ①  
Growth and development of education; Plato, Aristotle, Renaissance educators, Comenius, Locke, Rousseau, Pestalozzi, Froebel, Herbart, Herbert Spencer, and Dewey. Prerequisite: Ed 310, 312.
- Ed 451. **Preprimary Education: Kindergarten.** (G) 3 hours. 3 ①  
Opportunities in kindergarten to build good attitudes toward school, group adjustment, work habits, readiness for first-grade subjects. Prerequisite: Ed 310, 312. Limited to students enrolled in or having a degree in elementary education.
- Ed 460. **Psychology of Childhood.** (G) 3 hours. 3 ①  
Growth of behavior during the prenatal period, infancy, and childhood; development of muscular activities, perception, emotional adjustment, intelligence, language, and social behavior in childhood. Prerequisite: senior standing.
- Ed 461. **Psychology of Adolescence.** (G) 3 hours. 3 ①  
Behavior changes during preadolescence and adolescence as related to physiological development and social and cultural factors. Emphasis on personal and social adjustment. Prerequisite: senior standing.
- Ed 463. **The Maladjusted Child.** (G) 3 hours. 3 ①  
The discovery and treatment of the emotionally and socially maladjusted child; the home, school, and community in relation to the child's mental health. Prerequisite: Ed 310, 312.
- Ed 465. **Diagnostic and Remedial Techniques.** (G) 3 hours. 3 ①  
Diagnostic, remedial, and corrective techniques in basic school subjects; application of techniques to actual cases. Prerequisite: Ed 310, 312.
- Ed 468. **Diagnostic and Remedial Instruction in Reading.** (G) 3 hours. 3 ①  
Nature of the reading process, reading readiness, reading skills; causes of retardation; methods of diagnosing difficulties and evaluating progress; and procedures and materials for the development of reading abilities. Prerequisite: Ed 310, 312.
- Ed 476. **Oregon School Law and Organization.** (G) 2 hours. 2 ①  
Oregon school system and laws on which it is based; problems of Oregon schools; plans for solution; course of study; trends in educational development. Prerequisite: junior standing.
- Ed 479. **Corrective Reading Laboratory.** (G) 3 hours. 3 ①  
Administration and evaluation of diagnostic tests; remedial techniques in reading; diagnosis; planning and executing corrective procedures. Prerequisite: Ed 468 and consent of instructor.
- Ed 484. **Junior High School.** (G) 3 hours. 3 ①  
Development of junior high school; purpose and objectives; general organization; courses of study; present practices in leading representative junior high schools; direction of classroom activities; provision for individual differences; pupil personnel. Prerequisite: Ed 310, 312.
- Ed 485. **Principles and Practices of Guidance Services.** (G) 3 hours. 3 ①  
Beginning course in guidance. Overview of guidance and personnel work; vocational, educational, health, social, personality, recreational, and individual development; participation of teachers, counselors, administrators, parents, and community organizations in guidance program. For teachers and administrators. Prerequisite: senior standing.
- Ed 486. **Occupational and Educational Information.** (G) 3 hours. 3 ①  
Materials available regarding occupations; interpretations of present trends; value and usefulness for high school and college students. Prerequisite: senior standing.
- Ed 487. **Counseling Techniques.** (G) 3 hours. 3 ①  
Mental, achievement, trade and other tests; administration of such tests; classification, methods in educational and vocational counseling. Prerequisite: Ed 485.
- Ed 490. **Educational Sociology.** (G) 3 hours. 3 ①  
Analysis of contributions of sociology to educational problems and practices. Prerequisite: Ed 310, 312, and introductory sociology or consent of instructor.

- Ed 494. **Principles and Objectives of Vocational Education.** (G) 3 hours. 3 ①  
 Basic principles and development of vocational education; review of history and legislation; analysis of objectives of vocational schools and vocational programs in relationship to the total program of education. Prerequisite: consent of instructor.
- Ed 495. **Organization and Administration of Vocational Education.** (G) 3 hours. 3 ①  
 Federal vocational education acts; state boards for vocational education; local boards of education; analysis of laws, regulations, policies; problems and principles of vocational education as related to organization, administration, cooperating personnel, agencies, finances, budgets, and committees. Prerequisite: consent of instructor.
- Ed 496. **Conference Leader Training.** (G) 3 hours. 3 ①  
 Techniques of leading group meetings in which problems are thoughtfully and freely discussed; training conference leaders to pool experiences and ideas of the group for problem solving and developing teamwork. Prerequisite: consent of instructor.
- Ed 498. **Organization and Supervision for High School Teachers.** (G) 3 hours. 3 ①  
 Administrative organization, methods, and purposes of supervision as they involve the classroom teacher. Prerequisite: Ed 310, 312.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Ed 501. **Research.** Terms and hours to be arranged.  
 In addition to regular courses listed, members of the staff supervise research and investigation by qualified graduate students. Registration by permission of staff members. Prerequisite: graduate standing in education. See also AEd 501, BEd 501, HEd 501, IEd 501, SEd 501.  
 Problems in Curriculum and Instruction—Professor Williamson.  
 Problems in Educational Psychology—Professor Reichart, Associate Professor Baron.  
 Problems in Guidance—Professor Zeran.  
 Problems in History or Philosophy of Education—Professor Reichart.  
 Problems in Measurements—Professor Clinton, Associate Professor Baron.
- Ed 502. **Tests and Measurements.** 3 hours. 3 ①  
 Selected tests and measurements applicable in a particular subject or department. Prerequisite: Ed 424 and other courses specified by department.
- Ed 503. **Thesis.** Terms and hours to be arranged.
- Ed 505. **Reading and Conference.** Terms and hours to be arranged.
- Ed 507. **Seminar.** Terms and hours to be arranged.
- Ed 508. **Workshop.** Terms and hours to be arranged.  
 COUNSELOR TRAINING—Each student concentrates on special problem in guidance; training and assistance to teachers, counselors, deans, and administrative officers. Prerequisite: 9 hours in education and teaching experience.  
 CURRICULUM—Experience in planning curricula for specific situations. On an individual basis or (preferably) by a staff group working cooperatively in developing or revising plans and programs.
- Ed 511. **Recent Educational Trends and Problems.** 3 hours. 3 ①  
 Trends, problems, and developments in all fields of education with particular reference to high schools. Prerequisite: 24 hours of upper division education including student teaching.
- Ed 512. **Research Procedures in Education.** 3 hours. 3 ①  
 Methods, techniques, and tools for doing research work; meaning of scientific method; ways of locating and formulating problems; techniques for solving problems; necessary statistical tools; collection and interpretation of data; preparation of research reports.
- Ed 522. **Secondary School Curriculum.** 3 hours. 3 ①  
 Advanced course for experienced teachers. Schools in the community; guidance activities in school; extra class activities; role of school in contemporary society; teacher in local community. Prerequisite: graduate standing in education.

- Ed 523. **School Activities.** 3 hours. 3 ①  
Principles and purposes of school activities; pupil participation in school government; assemblies, clubs, social activities, drama, speech activities, music, and publications; evaluation of activity program. Prerequisite: Ed 310, 312.
- Ed 524. **Construction and Use of Objective Examinations.** 3 hours. 3 ①  
Principles and statistics involved in the selection of test items; types of examinations; validity; reliability; administering, scoring, grouping results. Prerequisite: graduate standing in education.
- Ed 527. **Secondary School Administration and Supervision.** 3 hours. 3 ①  
Principalship; principles of administration, staff relationships, public relations, professional growth; business administration; administration of guidance services, curriculum, activities; evaluation of secondary schools. Prerequisite: secondary certificate, one year secondary teaching experience.
- Ed 535. **Psychological Aspects of Vocations.** 3 hours. 3 ①  
Psychological principles applied to: (1) choice of occupations, (2) adjusting or aiding others in adjusting, and (3) alteration of occupational conditions and demand to meet needs. Prerequisite: graduate standing in education.
- Ed 543. **History of American Education.** 3 hours. 3 ①  
Intellectual development of America with special reference to education. Prerequisite: graduate standing in education.
- Ed 546. **Philosophy of Education.** 3 hours. 3 ①  
Fundamental problems of education, with some attempt at their solution; meaning of philosophy; philosophy of education; value for teacher and administrator. Prerequisite: graduate standing in education.
- Ed 550. **The Junior College.** 3 hours. 3 ①  
Early junior colleges; junior college movement; aims and functions; curriculum; organization and operation; relation to secondary and higher education. Prerequisite: consent of instructor.
- Ed 553. **Elementary School Curriculum.** 4 hours. 4 ①  
Pupil needs in life situations, objectives, essentials of a goal program, varying curriculum designs, organization of learning experiences, evaluation of learning, appraisal of new curriculum practices. Prerequisite: elementary certification, one year elementary teaching experience.
- Ed 554. **Elementary School Supervision and Administration.** 4 hours. 4 ①  
Role duties, needs, problems of supervision; evaluation and improvement of teaching-learning situation. Prerequisite: elementary certification, one year elementary teaching experience.
- Ed 556. **The College Student.** 3 hours. 3 ①  
Student as central factor in college and university teaching; hereditary background, physical environment, cultural environment, and group relationships as contributors to his maturation; learning as nurture; motivation and direction of college student's learning. Prerequisite: graduate standing.
- Ed 557. **College and University Teaching.** 3 hours. 3 ①  
Evaluation, aims, procedures, and outcomes in college and university teaching; professional relationships and interests; individual studies according to student's field. Prerequisite: graduate standing.
- Ed 558. **American Higher Education.** 3 hours. 3 ①  
Functions and structures of American higher education; land-grant college movement; junior college; current problems and trends in their historical perspective. Prerequisite: graduate standing.
- Ed 561. **Advanced Educational Psychology.** 3 hours. 3 ①  
Experimental material that seems most useful and relevant to educational psychology. Prerequisite: graduate standing in education.

- Ed 566. **Curriculum Construction.** 3 hours. 3 ①  
Building elementary and secondary school curricula; theories and policies since 1900; selecting and organizing subject matter; courses of study; curriculum organization. Prerequisite: 24 hours of upper division credit in education including student teaching.
- Ed 574. **School Supervision.** 3 hours. 3 ①  
Purpose and plans for supervision; use of tests, diagnosis of pupil difficulty. Prerequisite: elementary or secondary certification, one year teaching experience.
- Ed 575. **School Finance.** 3 hours. 3 ①  
School finance and business administration; sources of school income: State financial structure; budgeting and accounting. Prerequisite: elementary or secondary certification, one year teaching experience.
- Ed 577. **Counselor Training: Group Procedures.** 3 hours. 3 ①  
Principles underlying behavior and methods for modifying individual's attitudes and actions by group procedures; survey of group dynamics; evaluation of leader's role in group; process of attitudinal change and its results; approaches to group and play therapy; relation between individual and group counseling methods. Prerequisite: Ed 485, 487.
- Ed 578. **Camp Counselor Training: Group Behavior.** 3 hours summer. 3 ①  
Directed laboratory experience in camp situation; studying, analyzing, and directing individual's attitude and actions through group procedures. Prerequisite: consent of instructor.
- Ed 579, 582. **Counselor Training.** 3 hours each. 3 ①  
Through cooperation of department stores and industries in Portland, students gain experience in both customer-contact and nonselling departments, or move from job to job in industry to obtain both production-line experience and contact with top management; conferences, lectures, and discussions by executives, faculty members, leaders in labor relations and others. Extramural or summer session. Prerequisite: Ed 485, 487.
- Ed 583. **Camp Counselor Training.** 6 hours summer. 3 ①  
Directed experience in camp counseling under supervision in organized camp. One week of concentrated lecture and discussion workshop on campus followed by several weeks in camp. Prerequisite: consent of instructor.
- Ed 587. **Adult Education.** 3 hours. 3 ①  
Development, methods, and results; public schools, extension instruction, industrial and commercial organizations, radio, and other agencies of adult learning. Prerequisite: senior standing.
- Ed 588. **Supervised Counseling Techniques.** 3 hours each term, two terms. 3 ①  
Provides actual counseling experience in counseling laboratory. Interviewing; administering, scoring, and interpreting psychological tests; writing case studies. Prerequisite: Ed 485, 487, Psy 474, 475, 476, and consent of instructor.
- Ed 589. **Organization and Administration of Guidance Services.** 3 hours. 3 ①  
Criteria for evaluating present personnel services, setting up guidance committees, selection of personnel, responsibilities and duties of staff, development of program of services, and in-service training program. Prerequisite: Ed 485, 487.

## Agricultural Education

The Department of Agricultural Education is a joint department within the schools of Agriculture and Education. It trains teachers and supervisors of agriculture for secondary schools and for schools and classes of adult farmers and young men not enrolled in regular day schools. The strong demand for teachers of vocational agriculture in Oregon, in the Pacific Region including Hawaii, and throughout the United States, is expected to continue indefinitely. Special consideration is given to George-Barden Act and to Smith-Hughes Act. Certain field activities, including a followup service for new teachers and preparation of instructional material for use by agricultural instructors, are handled



by this department in cooperation with staff members of the School of Agriculture.

**Requirements for Teaching Agriculture.** The prospective vocational agriculture teacher should confer early with the department head. Discussion will center on attainment of certain fundamental qualifications and knowledge as well as a high level of practical ability necessary for admission to this field of teaching. The Agricultural Education curriculum is printed on another page.

**Requirements in Agriculture:**

- Graduation from a college of agriculture of standard rank.
- 80 term hours or equivalent, or special work in agriculture. Courses depend somewhat on previous training and experience and recommendations of head of department.

**Requirements in Education and for Certification:**

- Course requirements in Education: A minimum of 25 term hours in the 4-year curriculum, including courses in special secondary methods and supervised teaching.
- Vocational Teaching Certificate: The curriculum in Agricultural Education is designed to fulfill requirements for a vocational teaching certificate. The State Director of Vocational Education will issue this certificate after determining applicant's qualifications for teaching vocational agriculture and after applicant has been placed in a teaching position.
- It is expected that persons who have been employed to teach vocational agriculture, after receiving the vocational certificate and completing the 4-year curriculum, will continue systematic work in education and agriculture, as needed, through summer courses and otherwise during their period of employment in full-time teaching. Such work may carry college credit leading to a master's degree.

**Graduate Study and Apprentice Teaching.** For those wishing to continue studies beyond a bachelor's degree, a program of experience and graduate study leading to a master's degree will be developed to meet individual needs. A portion of such experience may be in apprentice teaching for graduate credit whereby students of approved standing are placed in high school centers, and outstanding departments of agriculture, under the general supervision of the Department of Agricultural Education and the immediate supervision of the local agriculture instructor.

**Lower Division Course**

AEd 220. Vocational Education in Agriculture. 2 hours. 2 ①  
Principles and development of vocational education in agriculture; significance of national aims and objectives in vocational education.

**Upper Division Courses**

AEd 401. Research. Terms and hours to be arranged.

AEd 405. Reading and Conference. Terms and hours to be arranged.

Ed 408. Special Secondary Methods. 3 hours. (See page 272.)  
Section 1: Supervised Farming, FFA. Section 2: Shop and Manipulative Skills.

AEd 411. Program Report Analysis. 2 hours fall and spring. 2 ①  
Analysis of Federal, State, and local reports and records prepared by the Vocational Agriculture Teacher. Prerequisite: AEd 220.

Ed 416. Student Teaching: Secondary. 3 to 15 hours.  
See School of Education. Associate Professor Ten Pas.

AEd 417. The Agricultural Curriculum. (G) 3 hours. 3 ①  
Determining course content and evaluating types of course organization with reference to the objectives to be attained in the field of agriculture. Prerequisite: Ed 313, 416. Associate Professor Ten Pas.

AEd 418. Adult Education in Agriculture. (G) 3 hours. 3 ①  
Developing programs for young and adult farmer groups; supervision of classes for young farmers, for older farmers, and for farm veterans and special classes of veterans. Prerequisite: AEd 417. Associate Professor Ten Pas.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- AEd 501. **Research.** Terms and hours to be arranged.
- AEd 503. **Thesis.** Terms and hours to be arranged.
- AEd 505. **Reading and Conference.** Terms and hours to be arranged.
- AEd 507. **Seminar.** Terms and hours to be arranged.
- AEd 516. **Extension Course in Teacher Training.** Hours to be arranged, any term.  
Enables present and prospective teachers of agriculture to continue professional improvement; conferences, follow-up instruction, supervision, correspondence, reports.  
Prerequisite: Ed 310, 312.
- AEd 533. **Rural Survey Methods.** 3 hours. 1 ③  
Technique of surveys; analyzing, interpreting, and using results in evaluating and formulating programs in agricultural education; field studies. Prerequisite: Ed 310, 312, teaching experience.
- AEd 541. **Community Programs of Agricultural Education.** 3 hours. 3 ①  
Developing the natural and human resources of a community through agricultural education. Prerequisite: Ed 408a, teaching experience.

**Business Education**

Professional preparation for teachers of business subjects is provided in the Department of Business Education, which is a joint department in the School of Business and Technology and the School of Education. A student may major in either school, but before registering he must confer with the head of the Department of Business Education.

**Baccalaureate Degrees.** The program for undergraduates for a baccalaureate degree is outlined in the curriculum on a previous page. Courses from business administration, business education, education, and secretarial science form the major background. A liberal number of elective hours permits the selection of a teaching minor. The requirements for a State High School Teacher's Certificate are listed on pages 260-261.

**Advanced Degrees.** Graduate study with a major in business education is available through the School of Education for all those who complete the undergraduate curriculum or its equivalent. Thirty of the required 45 term hours for the Master of Science or the Master of Arts degree are taken in business education (including the thesis). Other master degree options are described under GRADUATE SCHOOL. A choice of graduate program can be made following a conference with the head of the Department of Business Education.

**Upper Division Courses**

- BEd 401. **Research.** Terms and hours to be arranged.
- BEd 403. **Thesis.** Terms and hours to be arranged.
- BEd 405. **Reading and Conference.** Terms and hours to be arranged.
- BEd 407. **Seminar.** Terms and hours to be arranged.
- Ed 408. **Special Secondary Methods.** 3 hours. (See page 272.)

**Graduate Courses**

- BEEd 501. **Research.** Terms and hours to be arranged.
- BEEd 503. **Thesis.** Terms and hours to be arranged.
- BEEd 505. **Reading and Conference.** Terms and hours to be arranged.
- BEEd 507. **Seminar.** Terms and hours to be arranged.

**SUPERVISION AND ADMINISTRATION OF BUSINESS EDUCATION.**

**TEACHING SOCIO-BUSINESS SUBJECTS IN THE SECONDARY SCHOOL.**

**PRACTICUM IN BUSINESS EDUCATION**—The planning and development of practical and creative projects, group or individual, in the field of business education. Students will be urged to use actual school situations as nucleus for the term's work and to arrive at the best possible solutions.

- BEEd 536. **Problems and Research Techniques in Business Education.** 3 hours. 1 ①  
Trends in high school commercial curriculum; evaluation of methods and available research studies. Prerequisite: Ed 408 or teaching experience in business subjects.

- BEEd 537. **Measurements in Business Education.** 3 hours. 3 ①  
Objectives and principles of measurement in business education; testing in specific areas; construction of sample tests; evaluation of available testing materials; use of tests in diagnostic and remedial teaching. Prerequisite: Ed 408 or teaching experience in business subjects; BEEd 536.

- BEEd 538. **Current Trends in Office Procedure.** 3 hours. 3 ①  
Types of clerical and secretarial procedure programs used in secondary and collegiate schools; course content, teaching methods and materials; organization of laboratories; development of objectives, standards, instruction sheets, courses of study, and miscellaneous teaching aids. Prerequisite: Ed 408 or teaching experience in business subjects; BEEd 536.

- BEEd 541. **Current Practices in Typewriting.** 3 hours fall. 3 ①  
Principles underlying development of typing skills; motivation, supplementary materials, and special devices. Prerequisite: Ed 408 or teaching experience in typing.

- BEEd 542. **Current Practices in Shorthand.** 3 hours winter. 3 ①  
Correct writing habits; correlation of sound and symbol response; word and sentence building and transcription technique. Prerequisite: Ed 408 or teaching experience in stenography.

## Home Economics Education

Professional preparation for prospective teachers of home economics is provided by the Department of Home Economics Education which is a joint department within the School of Home Economics and the School of Education. A student in either school may meet qualifications for certification to teach homemaking. *Any student who has not taken her home economics courses at Oregon State College will be required to have at least one course in each home economics subject matter department at this institution before she will be allowed to register for student teaching.* Before registering for teacher training courses, every student should receive permission for registering and guidance for selection of courses from the Home Economics Education Department staff members. (For information regarding specific requirements for the State Teacher's Certificate see pages 260-261.)

**Upper Division Courses**

- HEd 401. Research. Terms and hours to be arranged.
- HEd 403. Thesis. Terms and hours to be arranged.
- HEd 405. Reading and Conference. Terms and hours to be arranged.
- HEd 407. Seminar. Terms and hours to be arranged.  
 STUDENT TEACHING ROUNDTABLE  
 PLANNED HOME EXPERIENCES  
 PLANNED WORK EXPERIENCES
- Ed 408. Special Secondary Methods. 3 hours. (See page 272.)  
 Professor DuBois.
- HEd 420. Field Work in Community Nutrition Programs. (G) 3 hours. 3 ①  
 Agencies, organizations, and movements concerned with community nutrition; individual and group projects in cooperation with agencies interested in nutrition-health programs. Prerequisite: FN 321 or 325, Ed 312.
- HEd 422. Organization and Administration of Homemaking Education. (G) 3 hours. 3 ①  
 Typical organizations of homemaking departments on both vocational and nonvocational bases with special attention to equipment and management. Prerequisite: Ed 408. Associate Professor McQuesten.
- HEd 440. Adult Education in Home Economics. (G) Hours to be arranged.  
 Problems in the adult-education program authorized under the vocational education program; field work in promoting, organizing, observing, and teaching adult classes. Prerequisite: Ed 408. Associate Professor McQuesten.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G)  
 may be taken for graduate credit.

- HEd 501. Research. Terms and hours to be arranged.
- HEd 503. Thesis. Terms and hours to be arranged.
- HEd 505. Reading and Conference. Terms and hours to be arranged.
- HEd 507. Seminar. Terms and hours to be arranged. Professor DuBois, Associate Professor McQuesten, Miss Wohlgenant.  
 PROBLEMS OF BEGINNING TEACHERS  
 HOME AND COMMUNITY EXPERIENCES  
 SUPERVISION OF HOMEMAKING EDUCATION  
 AUDIO-VISUAL AIDS FOR TEACHING HOMEMAKING  
 CURRENT METHODS IN TEACHING HOMEMAKING  
 EVALUATION OF HOMEMAKING INSTRUCTION  
 STUDIES IN HOME ECONOMICS EDUCATION
- HEd 554. Community Programs in Homemaking. 3 hours. 3 ①  
 Planning, organizing, coordinating, directing, and appraising total community programs in family life education; emphasis on adult education. Prerequisite: HEd 440.

## Industrial Education

Jointly with the Department of Industrial Engineering and Industrial Arts (School of Engineering) the Department of Industrial Education prepares teachers and supervisors in industrial-arts education and in trade and industrial (Smith-Hughes vocational) education. While the department is organized as a part of the School of Education, and offers no technical courses or curricula of its own, it makes use of such courses in other schools and departments as serve its needs. Special attention is called to the joint administration of curricula for teacher training in industrial-arts education and in vocational trade and industrial education. The Department of Industrial Engineering and Industrial Arts is responsible for the technical training, while the Department of Industrial Education (School of Education) is responsible for the professional curriculum and for the teacher-education courses and applied teaching methods. The preparation for vocational teachers in trade and industrial education is carried on co-operatively with the State Department of Vocational Education, Salem.

**Undergraduate Curriculum.** The four-year professional program, leading to the degree of Bachelor of Science, meets certification requirements of any state except those requiring graduate study as a prerequisite to certification. In such cases it furnishes an excellent foundation for the required graduate study, which may be completed at Oregon State College or elsewhere. (See pages 306-311).

**Graduate Study in Industrial Education.** Many school systems, and some state departments of education, now require all teachers to present graduate study or a master's degree as a principal prerequisite to a teaching credential for the secondary schools. Since the demands upon teachers the country over are becoming increasingly more exacting each year, graduate work in industrial education brings its proportional rewards and is usually necessary for those who desire to enter the field of supervision, administration, or teacher-education. Programs of study leading to the degree of Master of Science or Master of Education are outlined by this department for industrial-arts or industrial-education students and teachers with approved graduate standing.

### Courses for Industrial Arts Students

See also courses in the Department of Education, especially Ed 408, and courses in technical subject matter appropriate to industrial arts teachers in the Department of Industrial Engineering and Industrial Arts.

#### Upper Division Courses

- IEd 311, 312. **Elementary School Industrial Arts.** 3 hours each term. 3 ①  
Objectives, methods, techniques of *expressional* industrial arts in elementary schools. First term: Objectives and techniques; group projects in home room; creative expression. Second term: Individual projects for special displays; tools and materials for special-subjects room. Prerequisite: Ed 310 or junior standing.
- IEd 401. **Research.** Terms and hours to be arranged.
- IEd 403. **Thesis.** Terms and hours to be arranged.
- IEd 405. **Reading and Conference.** Terms and hours to be arranged.
- IEd 407. **Seminar.** Terms and hours to be arranged.
- Ed 408. **Special Secondary Methods.** 3 hours. (See page 272.)

- IEd 420. **Industrial Arts Organization.** (g) 3 hours. 3 ①  
Diversified programs for smaller high schools; evaluation of jobs, projects, and class problems; survey of appropriate teaching aids; development of professional relationships. Prerequisite: Ed 408e and senior standing.
- IEd 470. **History of Manual and Industrial Education.** (G) 3 hours. 3 ①  
Historical development and present-day aims of industrial-arts and vocational-industrial education. Prerequisite: senior standing.
- IEd 472. **Occupational Analysis.** (G) 3 hours. 3 ①  
Analysis of an occupation, trade, or job into its component subdivisions, blocks, operation, and teaching units; occupational analysis in teaching procedure. Prerequisite: Ed 408, and technical background.
- IEd 473. **The General Shop and Its Problems.** (G) 2 hours. 2 ①  
The "general shop" type of organization; advantages and limitations; probable future; content, organization, and methods of presenting subject matter; class control. Prerequisite: Ed 408e.
- IEd 475. **Project Analysis and the Contract Plan.** (G) 2 hours. 2 ①  
Projects for various types of shop teaching; history and development of the contract plan; technique of preparing contracts; suggestions for use in industrial-arts classes. Prerequisite: IEd 472 or equivalent.
- IEd 476. **Supervision of Industrial Arts.** (G) 2 hours. 2 ①  
Functions, techniques of supervisor; supervision principles from teacher's viewpoint; teacher-supervisor relationships. Problems of supervisor in large and small school systems. Prerequisite: graduate standing and teaching experience in industrial arts.

#### Graduate Courses

(For both Industrial Arts and Trade Education students)  
Courses numbered 400-499 and designated (g) or (G)  
may be taken for graduate credit.

- IEd 501. **Research.** Terms and hours to be arranged.
- IEd 503. **Thesis.** Terms and hours to be arranged.
- IEd 505. **Reading and Conference.** Terms and hours to be arranged.
- IEd 507. **Seminar.** Terms and hours to be arranged.

## Physical Education

The Division of Physical Education offers major work in physical education leading to baccalaureate degrees through the School of Education. The major provides professional preparation for physical education and coaching. It may be combined with health education, camp education, or recreation to meet needs in many public schools or communities. Graduates are prepared for positions in YMCA or YWCA, city recreation, industrial recreation, camping, and various youth-serving organizations. The major provides a foundation for students preparing to enter the field of physiotherapy and other closely related fields. The program is flexible so that varied needs may be met.

See the DIVISION OF PHYSICAL EDUCATION for outline of a suggested Student's Basic Program for a major in physical education.

Many opportunities exist for combining a physical-education major with courses in the schools of Science, Agriculture, Education, Engineering, and Home Economics. These schools offer work closely related to the offerings in health and physical education.

## Science Education

Professional preparation for prospective teachers of biological and physical science and mathematics is offered by the Department of Science Education, a joint department within the School of Science and the School of Education. Students preparing to teach science in secondary schools may major in one of the sciences, or in general science, according to the degree or emphasis on subject matter or professional preparation. Combination of subjects to be taught and scope of preparation desired influence the choice of major school.

The requirements for the State High School Teacher's Certificate and list of approved teaching majors and minors in science on page 265 may be supplemented by additional courses in the several fields. Teaching majors in general biology, general science, mathematics, and physical science provide electives that permit flexibility in selection of courses. The major in health education is made up of required courses and may well be augmented by additional courses in biology and related fields. A wide range of health-education courses is available in the schools of Science, Education, Agriculture, Engineering, and Home Economics, and the Division of Physical Education. Both undergraduate and graduate majors in hygiene and sanitation are offered in the Department of Bacteriology and Hygiene.

### Lower Division Courses

SEd 123. **Introduction to Health Education.** 3 hours spring. 3 ①  
Historical background and underlying philosophy of health education; study of statistical facts that indicate need for health education; survey of modern practices in, and organizations for, health education; opportunities for professional work in field.

F 260. **Conservation of Natural Resources.** (See FORESTRY.)

### Upper Division Courses

SEd 321. **School Health Education.** 3 hours. 3 ①  
Procedures, processes, and techniques in developing ability of public school student to understand and guide his own health and to contribute to health of community. Prerequisite: SEd 123 or junior standing.

SEd 322. **School Health Services.** 3 hours. 3 ①  
School procedures in development, maintenance, and protection of health of student; organization of services, examinations, screening, special services, communicable disease control, emergency care, school environment, forms and records. Prerequisite: SEd 123 or junior standing.

SEd 401. **Research.** Terms and hours to be arranged.

SEd 403. **Thesis.** Terms and hours to be arranged.

SEd 405. **Reading and Conference.** Terms and hours to be arranged.

SEd 407. **Seminar.** Terms and hours to be arranged.

Ed 408. **Special Secondary Methods.** 3 hours. (See page 272.)  
(b) Biological Science. (f) Mathematics. (g) Physical Science.

GS 411, 412, 413. **History of Science.** (G) (See GENERAL SCIENCE.)

GS 421, 422, 423. **Classics of Science.** (G) (See GENERAL SCIENCE.)

SEd 431, 432, 433. **School Health Problems.** (G) 3 hours each term. 3 ①  
Maintenance of health of school children; communicable diseases; school sanitation; planning of school buildings; health of school child; hygiene instruction. Prerequisite: Ed 311, 312, and one year of upper division biology. Professor Langton.

- SEd 441, 442, 443. **Health Education.** (G) 3 hours each term. 3 ①  
Philosophy and principles of health education; organization and administration; health education curriculum; coordination of school health activities with other health resources. Prerequisite: one year of upper division biological science and SEd 321 and 322, or equivalent.
- SEd 481. **Alcohol Studies in School Curriculum.** (G) 3 hours. 3 ①  
Incorporation of scientific information about alcohol in school curriculum; physiological, psychological, sociological, and legal aspects of alcoholism. Prerequisite: 24 hours upper division education.
- Graduate Courses**  
Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.
- SEd 501. **Research.** Terms and hours to be arranged.
- SEd 503. **Thesis.** Terms and hours to be arranged.
- SEd 505. **Reading and Conference.** Terms and hours to be arranged.
- SEd 507. **Seminar.** Terms and hours to be arranged.  
Current trends in science education; administration of science education; evaluation techniques in science instruction; science in general education.
- Ph 510. **Laboratory Arts.** (See PHYSICS.)
- SEd 521. **Physical Growth and Development.** 3 hours. 3 ①  
Normal physical changes from birth to adulthood with consideration of deviation; determination and appraisal of levels of growth and development. Prerequisite: Consent of instructor.
- SEd 598. **Science Curriculum in Secondary Schools.** 3 hours. 3 ①  
Trends, problems, and procedures in junior high and secondary school science program. Prerequisite: 24 hours upper division education including Ed 416. Associate Professor Williamson.

## Trade and Industrial Education

In cooperation with Oregon State Department of Vocational Education, Oregon State College offers a program of study leading to the bachelor's degree in trade and industrial education. Candidates will receive some credit based on trade or industrial experience but must fulfill the regular institutional requirements listed under DEGREES AND CERTIFICATES. In order to be admitted to this program a candidate must present evidence of three years above the standard learning experience or acceptable trade or industrial experience or must present credentials indicating that he is qualified to teach or supervise reimbursed Smith-Hughes classes in his state. He must also be engaged in teaching or about to be engaged in teaching or supervising a vocational program.

**Required Professional Courses.** General Psychology (Psy 201, 202), School in American Life (Ed 310), Educational Psychology: Learning (Ed 312), Special Secondary Methods (Trade and Industrial Education) (Ed 408t), and the following Trade and Industrial Education courses: IEd 381, 382, 480, 481, 482, and 491. The student's program must also include 16 hours of approved electives in Trade and Industrial Education to make a total of 48 hours of required professional courses.

**Recommended Professional Electives.** Principles and Objectives of Vocational Education (Ed 494), Conference Leader Training (Ed 496), Organization and Administration of Vocational Education (Ed 495), and the



following Trade and Industrial Education courses: IEd 383, 483, 484, 485, 486, 487, 488, 490, 407.

**Credit through Examination.** Students with three or more years above the standard learning period of trade or industrial experience may be granted a maximum of 48 term hours of credit for such experience. This credit is granted upon the candidate's successful performance on a special examination.

A year's trade or industrial experience is defined as 48 weeks as a wage earner. Experience in the employment of school boards or in the armed services will not be accepted. The minimum period of experience acceptable under one employer is 3 months. In those trades or occupations where assignment to short time jobs is made through a union hiring hall, the assigning union may be considered as the employer. Experience in scattered fields is not acceptable.

#### Summary:

Required courses (general) .....	54 term hours
Required courses (professional) .....	48 term hours
Credit through examination (maximum) .....	48 term hours
General electives .....	42 term hours

Total required for bachelor's degree .....192 term hours

Additional information in regard to provisions for obtaining credit for experience through examination may be obtained from the School of Education. Courses listed below are offered only infrequently, extramurally or in summer session in cooperation with the Department of Vocational Education.

### Courses for Trade and Industrial Education Students

#### Upper Division Courses

- IEd 381. **Introduction to Industrial Education.** 2 hours. 2 ①  
Orientation in and purposes and operation of vocational education emphasizing trade and industrial aspects; practice in organizing materials, planning lessons, and developing teaching techniques. Prerequisite: 3 years practical trade experience.
- IEd 382. **Analysis and Course Construction.** 3 hours. 3 ①  
Course construction based on trade analysis; selection of type of jobs that require skills and knowledge discovered through analysis, arranged in sequence of difficulty within each division of the trade. Prerequisite: Ed 408, IEd 381, or equivalent.
- IEd 383. **Educational Psychology for Trade and Industrial Teachers.** 3 hours. 3 ①  
Psychology applied to acquisition of manipulative skills and related technical information; the learning process, factors in emotional control, development of attitudes, abilities and evaluations. Prerequisite: IEd 381 or experience as a vocational instructor.
- Ed 408. **Special Secondary Methods.** 3 hours. (See page 272.)
- IEd 480. **Shop Organization and Management.** (g) 3 hours. 3 ①  
Organizing and controlling shop instruction, handling supplies, maintaining equipment and tools, purchasing materials, keeping records, making inventories, and meeting other problems of setting up and operating vocational shop courses; shop plans and layout. Prerequisite: IEd 381, Ed 408, IEd 382 or equivalent.
- IEd 481. **Development and Use of Audio-Visual Aids.** (g) 3 hours. 3 ①  
Types of instructional aids and methods of evaluating them; practice in techniques of development, preparation, and construction; methods of using instructional aids; the operation of audio-visual equipment in vocational classes. Prerequisite: IEd 382 or teaching experience.

- IEd 482. Development, Organization, and Use of Instructional Materials.** (g) 2 hours. 2 ①  
Sources, values, limitations, and classification of instruction sheets and reference materials. Techniques of developing and using instructional materials in shop and related classes. Prerequisite: IEd 382 or equivalent.
- IEd 483. Coordination of Diversified Occupations Programs.** (G) 2 hours. 2 ①  
Principles and practices of effective coordination applied to diversified occupation programs; problems involved in organizing, conducting, and reporting a diversified occupation program. Prerequisite: IEd 381 or coordination experience.
- IEd 484. Coordination of Trade and Industrial Classes.** (G) 2 hours. 2 ①  
Principles, practices of coordination between trade and industrial education and industry; problems of coordinator in unit trade, trade extension, and cooperative programs; relationships between coordinator, supervisor, and administrator; placement and follow-up problems. Prerequisite: IEd 483 or coordination experience.
- IEd 485. Supervision of Trade and Industrial Education.** (G) 2 hours. 2 ①  
Supervisory techniques applied to local and State-level programs. Analysis of supervisory needs for individual situations; planning supervisory programs to meet the needs. Prerequisite: IEd 382, IEd 484, or equivalent.
- IEd 486. Vocational Guidance for Trade and Industrial Teachers.** (G) 2 hours. 2 ①  
Principles and problems of guidance that will enable a vocational teacher to serve as an outpost of guidance counselor's office; number of workers in trade, working conditions, rates of compensation, special laws pertaining to occupation, opportunities for advancement, and necessary preparation for promotion and success in different phases of the occupation. Prerequisite: IEd 382 or equivalent.
- IEd 487. Industrial and Public Relations for Trade and Industrial Teachers.** (G) 3 hours. 3 ①  
History and development of industrial, civic, and labor organizations; techniques necessary to promote wholesome relationships with the community and outside groups. Prerequisite: Ed 408 or teaching experience.
- IEd 488. Educational Personnel Relations (Supervisory Development).** (G) 2 hours. 2 ①  
Designed to aid school administrators, supervisors, coordinators, and teachers in building and maintaining good personnel relations; methods of handling individual and group relations and problems. Prerequisite: IEd 484 or IEd 485 or equivalent.
- IEd 490. Shop Design and Layout for Trade and Industrial Teachers.** (G) 2 hours. 2 ①  
Shop planning and layout principles applied to vocational or trade school; planning, designing, and layout of vocational-type shops. Prerequisite: IEd 480 or equivalent.
- IEd 491. Testing for Trade and Industrial Teachers.** (g) 3 hours. 3 ①  
Selection and construction of tests to measure effectiveness of trade teacher and advancement of pupils; types of tests; techniques of construction and administration; possibilities and limitations; reliability and validity. Prerequisite: IEd 382, IEd 482, or equivalent.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit. See also IEd 501-507, page 282.

# School of Engineering and Industrial Arts

## Faculty

- GEORGE WALTER GLEESON, Ch.E., Dean of the School of Engineering and Industrial Arts.  
MILOSH POPOVICH, M.S., Assistant Dean.  
MARVIN REYNOLDS HAITH, B.S., Personnel and Placement Officer.  
General Engineering: Professors WANLESS (chairman), WILLEY; Associate Professors HAITH, RICHARDSON; Assistant Professors CAMPBELL, GRAY, PARKINSON, SIMPSON; Instructors BUCY, CROENI, OLSON, RENNER, STOVER<sup>1</sup>.  
Agricultural Engineering: Professors RODGERS (department head), GILMORE (emeritus), LUNDE, SINNARD; Associate Professors CROPSEY, KIRK, WOLFE; Assistant Professors BONNICKSEN, LONG; Instructors BOOSTER, RILEY.  
Chemical Engineering: Professor WALTON (department head); Associate Professors KNUDSEN, SCHULEIN; Assistant Professor WICKS; Instructor OLSON.  
Civil Engineering: Professors HOLCOMB (chairman), COOPEY, MERRYFIELD; Associate Professors BEHLKE, KOFOID, McCLELLAN; Assistant Professors LEONARD, SHOEMAKER, WESTGARTH; Instructors BURGESS, NORTHCRAFT, OLSON.  
Electrical Engineering: Professors BARNETT (chairman), ALBERT, COCKERLINE; Associate Professors FEIKERT, MAGNUSON, STONE; Assistant Professors ALEXANDER, ENGLE, JENSEN, MICHAEL, SHIRLEY, STONE, WEBER.  
Industrial Engineering and Industrial Arts: Professors COX (department head), ENGESSER, SHEELY; Associate Professors MEYER, ROBLEY<sup>2</sup>; Assistant Professors FRAZIER, JOHNSON, LANGMO, SMITH, SODERLUND,<sup>1</sup> WILLIAMSON, WILSON; Instructors LOVE, RUNYAN, STOOFS.  
Mechanical Engineering: Professors SLEGEL (chairman), GRAF (emeritus), HUGHES, MARTIN (emeritus), PAUL, PHILLIPS (emeritus), THOMAS (emeritus); Associate Professors HEATH,<sup>1</sup> PAASCHE, SMITH; Assistant Professors BECKLEY, BOLLES, CHRISTENSEN, LARSON, LOTHGREN, OSBORNE; Instructors BOUBEL, DAWSON, NOYES.

## General Statement

**E**NGINEERS *apply* science. They apply scientific knowledge and principles to the design and operation of machines, to the selection of materials, and to the use of men, money, and energy. Engineering, therefore, is known as "applied science."

Men and women trained in engineering have numerous job opportunities. A continuing demand exists for personnel trained in design and in research and development. Companies search constantly for men and women capable of assuming important positions in production, operation, and construction. There are also opportunities in consulting, maintenance, sales, service, and administrative work. Salaries and rate of advancement compare favorably with other recognized professions. Personal characteristics of initiative, patience, thoroughness, orderliness, accuracy, persistence, and reliability are unusually well rewarded.

A young man or woman who plans to enter the profession of engineering must have a comprehensive knowledge of the basic sciences, particularly mathematics, physics, and chemistry. Some of this knowledge can be acquired in high school by taking the maximum number of courses available to him in these subjects. A high school student who plans to go into engineering should take a *minimum* of  $1\frac{1}{2}$  years of algebra and  $\frac{1}{2}$  year of geometry. To succeed in study of engineering in college, students should be from the upper two-thirds of their

<sup>1</sup> On leave of absence.

<sup>2</sup> On sabbatical leave.

high school graduating classes. They should have demonstrated proficiency in mathematics, the physical sciences, and English. They should also have an interest in material things and a patient, sustained enthusiasm to work hard at difficult tasks.

Because engineering is a job of *heads* rather than *hands*, a person taking engineering must develop a habit of problem solving which results in some final plan, or design, or procedure, or method. Such plans or designs or procedures generally involve materials, money, and manpower. Many professions other than engineering use a similar approach to problem solving. An engineering education, therefore, serves purposes other than those of the professional engineer. The educational pattern is strong, and rigorous, compatible with the technical aspects of modern society, and provides sound preparation for many pursuits other than engineering.

Those who go into professional engineering practice find that the profession is regulated by state laws. A professional engineer must have a license from the state in which he practices. To obtain such a license he must show that he has had satisfactory engineering education and practical experience. In order that the standards of the profession may be held at a proper level, the educational requirements for engineering are both rigid and thorough. The Engineers' Council for Professional Development periodically inspects and evaluates college courses in engineering to make sure that they meet the standards of the profession. Once a curriculum of a school of engineering passes this inspection it becomes "accredited"; it keeps this rating as long as it maintains high standards. Satisfactory completion of such an accredited curriculum—that is, graduation from an accredited school of engineering—is almost everywhere a requisite for a state license or a civil service appointment.

The School of Engineering and Industrial Arts at Oregon State College is such an accredited school. Each of the six curricula offered is accredited by the Engineers' Council for Professional Development. A student at Oregon State College may take courses of study leading to B.S., M.S., Ph.D., or a professional degree in one of these six branches: Agricultural, Chemical, Civil, Electrical, Industrial, or Mechanical Engineering. The freshman year course pattern is common to all six branches.

In the junior and senior years, a student has opportunity to take work in an optional subdivision of a major field. In agricultural engineering he may specialize in soil and water, power and machinery, or farm structures; in civil engineering, in highway engineering, sanitary engineering, or structures; in electrical engineering in power, communications (including electronics), or business; in mechanical engineering in aeronautics, applied mechanics, automotive, business, heating and air conditioning, power, or metallurgy.

Associated with engineering, but not an engineering curriculum, is a course of study in Production Technology in which only the B.S. degree is offered. In this curriculum a student has a choice of one of three options: wood industries, metal industries, or tool design. This training leads to positions in the manufacturing industries associated with mass-production procedures. Freshman students who elect Production Technology as a major report directly to the Department of Industrial Engineering and Industrial Arts.

Entering students who have weak backgrounds in mathematics and English have opportunity to take refresher courses. Transfer students from nonaccredited institutions may be required to complete a comprehensive placement examination in the field of their major to establish their ability to engage in courses at the level of transfer indicated by their academic record.

**Requirements for Advanced Degrees.** Advanced degrees of Master of Science, Master of Arts, and Doctor of Philosophy are offered in the several departments. Programs for advanced degrees are developed to satisfy the interests and objectives of the individual candidate. General regulations and requirements for all advanced degrees, including professional degrees, are printed under GRADUATE SCHOOL.

**Placement.** The School of Engineering maintains an organized, central placement office directly under the Dean of Engineering. The service of the placement office is available to industrial organizations, undergraduate and graduate students, and alumni. Services are not necessarily restricted to Engineering, but are available to all associated fields including Chemistry, Mathematics, Physics, and Business and Technology.

## Curricula in Engineering and Industrial Arts

*B.A., B.S., M.A., M.S.,  
A.E., Ch.E., C.E., E.E., I.E., M.E., Min.E., Ph.D. Degrees*

*Agricultural Engineering  
Chemical Engineering  
Civil Engineering  
Electrical Engineering*

*Industrial Engineering  
Mechanical Engineering  
Production Technology*

Common to Agricultural, Chemical, Civil, Electrical, Industrial, and Mechanical Engineering.

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Engineering Concepts (GE 101, 102, 103).....	3	3	3
Engineering Graphics (GE 111, 112, 113).....	2	2	2
Mathematics (Mth 101, 102, 103).....	4	4	4
General Chemistry (Ch 201, 202, 203).....	3	3	3
English Composition (Wr 111, 112, 113).....	3	3	3
Air, Military, or Naval Science.....	1-3	1-3	1-3
Physical Education and General Hygiene.....	1	1	1

### Sophomore Year Norm

Common to Agricultural, Chemical, Civil, Electrical, Industrial, and Mechanical Engineering.

	Term hours		
	F	W	S
Differential and Integral Calculus (Mth 201, 202, 203).....	4	4	4
Engineering Physics (Ph 207, 208, 209).....	4	4	4
Air, Military, or Naval Science.....	1-3	1-3	1-3
Physical Education.....	1	1	1

## Agricultural Engineering

*E.C.P.D. Accredited*

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Sophomore Year Norm.....	10-12	10-12	10-12
Mechanics of Materials (ME 217, 218, 219).....	3	3	3
Forging and Welding (IE 250).....	2	.....	.....
Machine Tool Practices (IE 260).....	.....	2	.....
Elements of Agronomy I (FC 111) or Elements of Horticulture (Hrt 111).....	3	.....	.....
Farm Mechanics (AE 221).....	.....	3	.....
<sup>1</sup> Introduction to Animal Husbandry (AH 121) or Introduction to Dairying (D 121).....	.....	.....	3

<sup>1</sup> Not taken by Naval Science students.

	Term hours		
	F	W	S
<b>Junior Year</b>			
Dynamics of Solids and Fluids (ME 317, 318, 319).....	3	3	3
Engineering Materials (ME 215).....	3	3	3
Farm Motors and Tractors (AE 311).....	3	3	3
Soils (Sls 211, 212).....	3	3	3
Plane Surveying (CE 226).....	3	3	3
Approved Social Science.....	3	3	3
Air, Military, or Naval Science or electives.....	3	3	3
<sup>1</sup> Optional restricted electives.....	3	3	3
<b>Senior Year</b>			
Farm Structures (AE 461, 462).....	3	3	3
Rural Electrification (AE 431).....	3	3	3
<sup>2</sup> Sprinkler Irrigation Design (AE 473).....	3	3	3
Contracts and Specifications (CE 427).....	3	3	3
Industrial Electricity (EE 351).....	3	3	3
Business Law (BA 411).....	3	3	3
Air, Military, or Naval Science or electives.....	3	3	3
<sup>1</sup> Optional restricted electives.....	9	6	5

## Chemical Engineering

*E.C.P.D. Accredited*

	Term hours			
	F	W	S	
<b>Sophomore Year</b>				
Sophomore Year Norm.....	10-12	10-12	10-12	
Chemical Technology (ChE 211).....	2	2	2	
Industrial Stoichiometry (ChE 212).....	4	4	4	
Industrial Chemical Calculations (ChE 213).....	4	4	4	
Chemical Theory (Ch 241).....	4	4	4	
Quantitative Analysis for Chemical Engineering Students (Ch 232).....	4	4	4	
Commercial Methods of Analysis (Ch 243).....	4	4	4	
<b>Junior Year</b>				
Chemical Engineering Thermodynamics (ChE 311, 312).....	3	3	3	
Elementary Unit Operations (ChE 313).....	4	4	4	
Organic Chemistry (Ch 430, 431, 432).....	4	4	4	
Physical Chemistry (Ch 440, 441, 442).....	4	4	4	
Mechanics (Statics) (ME 212).....	3	3	3	
Strength of Materials (ME 311).....	3	3	3	
Engineering Materials (ME 215).....	3	3	3	
Field trip.....	0	0	0	
Air, Military, or Naval Science, or electives.....	4	4	4	
<b>Senior Year</b>				
Unit Operations (ChE 411, 412, 413).....	3	3	3	
Elements of Process Industries (ChE 441, 442, 443).....	2	2	2	
Chemical Engineering Laboratory (ChE 414, 415, 416).....	3	3	3	
<sup>3</sup> Industrial Electricity (EE 354, 355).....	3	3	3	
Chemical Plant Design (ChE 432).....	3	3	3	
Field Trip.....	0	0	0	
International Politics and National Power (SSc 441, 442, 443) or other social sciences.....	3	3	3	
Air, Military, or Naval Science or electives.....	3	3	3	

## Civil Engineering

*E.C.P.D. Accredited*

	Term hours			
	F	W	S	
<b>Sophomore Year</b>				
Sophomore Year Norm.....	10-12	10-12	10-12	
<sup>4</sup> Introduction to Civil Engineering (CE 201, 202, 203).....	2	2	2	
Plane Surveying (CE 221, 222, 223).....	3	3	3	
Mechanics (CE 212, 213).....	3	3	3	
<sup>5</sup> Electives.....	3	3	3	

<sup>1</sup> Selected on approval of adviser in Soil and Water, Power and Machinery, and Farm Structures options.

<sup>2</sup> AE 321 required by Farm Structures students in lieu of AE 473.

<sup>3</sup> EE 355 not required of students taking 400 sequence in ROTC.

<sup>4</sup> Naval Science students omit CE 202, 203, and elective.

<sup>5</sup> American Governments (PS 201), General Sociology (Soc 212), Outlines of Economics (Ec 212), or International Politics and National Power (SSc 441, 442, 443).

	Term hours		
	F	W	S
<b>Junior Year</b>			
Fluid Mechanics (CE 311).....	3	.....	.....
Structural Analysis (CE 382).....	.....	4	.....
Reinforced Concrete (CE 383).....	.....	.....	4
Strength of Materials (CE 351, 352).....	3	3	.....
Hydraulics (CE 312).....	.....	3	.....
Hydraulic Machinery (CE 313).....	.....	.....	3
Materials Testing Laboratory (ME 316).....	3	.....	.....
Industrial Electricity (EE 356).....	3	.....	.....
Curves and Earthwork (CE 332).....	.....	.....	3
<sup>1</sup> Social Science.....	3	3	3
Air, Military, or Naval Science, or electives.....	3	3	3

<b>Senior Year</b>			
Hydraulic Design (CE 411).....	.....	3	.....
Sanitary Engineering (CE 412).....	3	.....	.....
Highway Engineering (CE 421).....	3	.....	.....
Contracts and Specifications (CE 427).....	.....	.....	3
Estimating and Cost Analysis (CE 460).....	.....	.....	3
Masonry and Foundations (CE 472).....	.....	4	.....
Structural Engineering (CE 481).....	4	.....	.....
Structural Design (CE 482).....	.....	4	.....
Steam, Air, and Gas Power (ME 336).....	.....	.....	3
Indeterminate Structures (CE 485).....	3	.....	.....
Seminar (CE 407).....	1	.....	.....
Air, Military, or Naval Science, or electives.....	3	3	3
<sup>2</sup> Optional restricted electives.....	.....	3	3

### Electrical Engineering

*E.C.P.D. Accredited*

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Sophomore Year Norm.....	10-12	10-12	10-12
Introduction to Electrical Engineering (EE 201, 202, 203).....	4	4	4
Plane Surveying (CE 226).....	.....	.....	3
<sup>1</sup> American Governments (PS 201).....	3	.....	.....
Social Science elective.....	.....	3	.....
Machine Tool Practices (IE 260).....	2	.....	.....
<sup>2</sup> Extempore Speaking (Sp 111).....	.....	3	.....
<sup>3</sup> Principles of Accounting (BA 211).....	.....	.....	3

<b>Junior Year</b>			
Electric Circuits and Equipment (EE 311, 312, 313).....	3	3	3
Electronics (EE 321, 322, 323).....	3	3	3
Differential Equations (Mth 321, 322).....	3	3	.....
Electrical Engineering Analysis (EE 420).....	.....	.....	3
Mechanics (ME 212, 213).....	3	3	.....
Fluid Mechanics (CE 341).....	.....	.....	3
<sup>3</sup> Heat Power Engineering (ME 331, 332).....	3	3	.....
<sup>4</sup> Outlines of Economics (Ec 212).....	.....	.....	3
<sup>4</sup> International Politics and National Power (SSc 441, 442, 443).....	3	3	3
Air, Military, or Naval Science, or electives.....	3	3	3

<b>Senior Year</b>			
Electrical Engineering Economy (EE 411, 412, 413).....	3	3	3
Electrical Measurements and Analysis (EE 414, 415, 416).....	3	3	3
Transmission Lines and Networks (EE 421, 422, 423).....	3	3	3
Seminar (EE 407).....	1	1	1
Field Trip.....	0	.....	.....
Air, Military, or Naval Science, or electives.....	3	3	3
<sup>5</sup> Optional restricted electives.....	3	3	3

<sup>1</sup> American Governments (PS 201), General Sociology (Soc 212), Outlines of Economics (Ec 212), or International Politics and National Power (SSc 441, 442, 443).

<sup>2</sup> Highway Engineering (CE 422), Cement and Concrete (ME 414), Water Supply (CE 452), Sewage Disposal (CE 454), Building Design (CE 483), Structural Analysis (CE 486).

<sup>3</sup> Not required in Naval Science.

<sup>4</sup> Required in Naval Science only.

<sup>5</sup> Selected on approval of adviser in Power, Communications, or Business options.

**Industrial Engineering***E.C.P.D. Accredited*

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Sophomore Year Norm.....	10-12	10-12	10-12
Foundry Practice (IE 240).....	2	...	2
Machine Tool Practices (IE 260, 261).....	...	2	...
Introduction to Scientific Management (IE 290).....	...	...	3
Mechanics of Materials (ME 217, 218, 219).....	3	3	3
Casting Quality Control (IE 345).....	...	2	...
Forging and Welding (IE 250).....	2	...	...
<b>Junior Year</b>			
Mass Production Methods (IE 361, 362).....	2	2	...
Methods and Motion (IE 391).....	3	...	...
Time Study (IE 392).....	...	3	...
Production Planning and Control (IE 393).....	...	...	3
Field Trip.....	...	...	0
Metallurgy and Materials (ME 312, 313).....	...	3	3
Dynamics of Solids and Fluids (ME 317, 318, 319).....	3	3	3
Basic Techniques (St 314, 315).....	3	3	...
Outlines of Economics (Ec 212).....	3	...	...
American Governments (PS 201).....	...	...	3
Practical Psychology (Psy 212).....	...	...	3
Air, Military, or Naval Science, or electives.....	3	3	3
<b>Senior Year</b>			
Tool Engineering (IE 464).....	3	...	...
Production Planning and Control (IE 491, 492).....	...	3	3
Supervision Principles (IE 490).....	...	...	3
Safety in Industry (IE 390).....	...	...	2
Field Trip.....	0	...	...
Industrial Electricity (EE 351, 352).....	3	3	...
Machine Design (ME 411).....	3	...	...
Mechanical Engineering Analysis (ME 371).....	3	...	...
Steam, Air, and Gas Power (ME 336).....	...	3	...
Fundamentals of Accounting (BA 214, 215).....	3	3	...
Industrial Cost Accounting (BA 424).....	...	...	3
Air, Military, or Naval Science, or electives.....	3	4	4

**Mechanical Engineering***E.C.P.D. Accredited*

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Sophomore Year Norm.....	10-12	10-12	10-12
Mechanics of Materials (ME 217, 218, 219).....	3	3	3
Foundry Practices (IE 240).....	2	...	...
Machine Tool Practices (IE 260).....	...	2	...
Forging and Welding (IE 250).....	...	...	2
Approved Electives in Social Science.....	3	3	3
<b>Junior Year</b>			
Mechanical Engineering Thermodynamics and Heat Transfer (ME 321, 322, 323).....	3	3	3
Dynamics of Solids and Fluids (ME 317, 318, 319).....	3	3	3
Industrial Electricity (EE 351, 352, 353).....	3	3	3
Engineering Analysis (ME 371).....	3	...	3
Metallurgy and Materials (ME 312, 313).....	...	3	...
Air, Military, or Naval Science, or electives.....	6	6	6
<b>Senior Year</b>			
<sup>1</sup> Machine Design (ME 411, 412).....	3	3	...
Mechanical Engineering Economy (ME 473).....	...	...	3
Mechanical Laboratory (ME 436).....	4	...	...
Air, Military, or Naval Science, or electives.....	3	3	3
<sup>2</sup> Optional restricted electives.....	7	11	11
Field Trip.....	...	...	0

<sup>1</sup> ME 441, Aeronautical Design, may be substituted for ME 412 in the Aeronautics option.<sup>2</sup> Selected upon approval of adviser in Aeronautics, Applied Mechanics, Automotive, Business, Heating and Air Conditioning, Power, and Metallurgy options.



**Production Technology**

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Pattern Making (IE 111).....	3	---	---
Foundry Practice (IE 141).....	3	---	---
Methods in Woodworking (IE 112).....	---	3	---
Forging and Welding (IE 152).....	---	3	---
Machine Tool Practices (IE 163).....	---	---	3
Engineering Fundamentals (GE 104) or Methods in Woodworking (IE 113).....	---	---	3
Engineering Graphics (GE 111, 112, 113).....	2	2	2
<sup>1</sup> Intermediate Algebra (Mth 100).....	4	---	---
Mathematics (Mth 101, 102).....	---	4	4
English Composition (Wr 111, 112, 113).....	3	3	3
Physical Education and General Hygiene.....	1	1	1
Air, Military, or Naval Science, or electives.....	1-3	1-3	1-3

<b>Sophomore Year</b>			
Introduction to Scientific Management (IE 290) or House Planning and Architectural Drawing (AA 180).....	---	---	3
Abridged General Physics (Ph 211, 212).....	3	3	---
Descriptive General Chemistry (Ch 130).....	---	---	3
Outlines of Economics (Ec 212).....	3	---	---
Economic Development of the United States (Ec 215).....	---	3	---
American Governments (PS 201).....	---	---	3
Extempore Speaking (Sp 111).....	3	---	---
Business English (Wr 217).....	---	3	---
Technical Report Writing (Wr 227).....	---	---	3
<sup>2</sup> Optional restricted electives.....	6	5	3
Physical Education.....	1	1	1
Air, Military, or Naval Sciences, or electives.....	1-3	1-3	1-3

<b>Junior Year</b>			
Methods and Motion Study (IE 391).....	3	---	---
Time Study (IE 392).....	---	3	---
Production Planning and Control (IE 393).....	---	---	3
Field Trip.....	---	---	0
Fundamentals of Accounting (BA 214, 215).....	3	3	---
Industrial Cost Accounting (BA 421).....	3	---	---
Optional restricted electives; see list below.....	9	8	8
Air, Military, or Naval Science, or electives.....	3	3	3

<b>Senior Year</b>			
Safety in Industry (IE 390).....	---	---	2
Industrial Supervision Principles (IE 490).....	---	---	3
Field Trip.....	0	---	---
Business Law (BA 411, 412, or 413).....	3	3	---
Practical Psychology (Psy 212).....	3	---	---
Money and Banking (Ec 424).....	---	---	4
Labor Problems (Ec 425).....	---	4	---
Optional restricted electives; see list below.....	8	7	5
Air, Military, or Naval Science, or electives.....	3	3	3

**Optional Restricted Electives****METAL INDUSTRIES OPTION**

SOPHOMORE YEAR: IE 261, 265, 344, 354, 380.  
 JUNIOR YEAR: IE 345, 355, 361, 362, 363; GE 311.  
 SENIOR YEAR: IE 464, 465.

**TOOL DESIGN OPTION**

SOPHOMORE YEAR: IE 261.  
 JUNIOR YEAR: IE 345, 354, 361, 362, 363; GE 311.  
 SENIOR YEAR: IE 464, 465, 466.

**BUILDING CONSTRUCTION OPTION**

SOPHOMORE YEAR: IE 220, 225, 380; AA 178, 179, 180, 223, 281.  
 JUNIOR YEAR: IE 311, 316, 333; CE 226; LA 279.  
 SENIOR YEAR: AE 465.

**FURNITURE AND MILL-CABINET OPTION**

SOPHOMORE YEAR: IE 213, 220, 225, 380; AA 178, 179, 180, 223, 281.  
 JUNIOR YEAR: IE 311, 313, 314, 316, 333.  
 SENIOR YEAR: AE 465.

<sup>1</sup> Students electing the Tool Design option must complete mathematics through Mth 103.

<sup>2</sup> Selected upon approval of adviser in Metals Industries, Wood Industries, or Tool Design options.

## General Engineering

Engineering courses required in the common freshman year for civil, electrical, industrial, and mechanical engineering are grouped in the Department of General Engineering. Staff members from all departments of the school work as a committee to plan, coordinate, and unify instruction.

### Lower Division Courses

- GE 101, 102, 103. **Engineering Concepts.** 3 hours each term. 1 ① 2 ③  
Lectures and elementary problems dealing with basic concepts common to all fields of engineering; engineering analysis and methods of work. Prerequisite: Mth 100 or equivalent.
- GE 104, 105, 106. **Engineering Fundamentals.** 3 hours each term. 1 ① 2 ③  
Basic concepts and principles of physical science; elementary technical problems; algebraic composition; training in use of slide rule.
- GE 111, 112, 113. **Engineering Graphics.** 2 hours each term. 3 ②  
Fundamental principles and rules of composition of the graphic language of engineering.
- GE 115. **Engineering Drawing.** 3 hours. 1 ① 3 ②  
Fundamental principles and rules of composition of the graphic language of industry. For forestry students only.
- GE 116. **Lettering.** 1 hour. 2 ①  
Engineering and other descriptive styles of lettering; use of mechanical lettering devices.
- GE 121, 122. **Engineering Drawing.** 3 hours each term. 1 ① 3 ②  
Fundamentals of graphic composition with particular emphasis on reading and interpretation of line drawings, charts, and diagrams. For students in Business and Technology.

### Upper Division Service Courses

- GE 311. **Applied Mechanisms.** 3 hours spring. 2 ① 1 ②  
Theory, application, and selection of mechanisms as applied to product design and production tooling.
- GE 444. **Technological Patents.** (g) 2 hours. 2 ①  
The various phases of the patent system with emphasis on factors pertinent to the development of technical processes and equipment.

## Agricultural Engineering

The curriculum in agricultural engineering is planned to prepare young men for positions in the major fields of agricultural engineering: power and machinery, rural electrification, farm structures, soil and water control and conservation, and crop processing. The curriculum is planned also to give the student general training in agriculture since a sympathetic understanding of the problems of agriculture is essential to anyone going into agricultural engineering. The Department of Agricultural Engineering is a joint department within the School of Engineering and the School of Agriculture.

Facilities are provided in the Agricultural Engineering Building for teaching and experimental work in the major fields. Modern equipment and demonstration material is loaned to the institution by leading manufacturers and distributors for study and operation by the student. The tractor and automobile laboratories are well equipped with modern tools and testing equipment including an engine-testing dynamometer. Well lighted drafting rooms with modern equipment are available to students studying farm structures. Numerous samples of

building material, models, modern farm buildings, farm water systems, centrifugal and turbine pumps, and sprinkler irrigation equipment are available for instruction purposes.

**Lower Division Courses**

AE 221. **Farm Mechanics.** 3 hours fall or winter. 1 ① 2 ③  
Use of hand and power tools for wood and metal working, arc and acetylene welding, construction of wood and metal farm appliances, concrete work.

**Upper Division Courses**

AE 311. **Farm Motors and Tractors.** 3 hours any term. 2 ① 1 ③  
Farm motors and accessories; carburetors, magnetos, ignition, governing, cooling, lubricating systems; fuels and oils; testing, timing, trouble hunting.

AE 313. **Automobile Mechanics.** 3 hours any term. 1 ① 2 ③  
Service and repair of automobiles, tractors, and trucks, with emphasis on preventive maintenance, lubrication, engine tune up, brake adjusting, etc. Prerequisite: AE 311.

AE 314. **Automobile Mechanics.** 3 hours spring. 2 ① 1 ③  
Engine rebuilding; advanced electrical testing; repairing and rebuilding of electrical accessories; use of precision equipment of all types commonly found in up-to-date repair shops. Prerequisite: AE 313.

AE 401. **Research.** Terms and hours to be arranged.

AE 405. **Reading and Conference.** Terms and hours to be arranged.

AE 407. **Seminar.** Terms and hours to be arranged.

AE 431. **Rural Electrification.** (g) 3 hours spring. 2 ① 1 ③  
Fundamentals of alternating currents, code and wiring, electric motors; principles of using electricity profitably on the farm. Prerequisite: EE 356 or equivalent.

AE 461, 462. **Farm Structures.** (g) 3 hours each term. 1 ① 2 ③  
Farmstead building arrangements; functional and structural requirements of farm structures; principles of wood and masonry framing and construction; appraisals and estimates. Prerequisite: ME 219.

AE 465. **Building Cost Estimating.** (g) 3 hours spring. 2 ① 1 ②  
Complete and approximate estimates; general and detailed considerations in establishing unit prices; quantity surveying; overhead costs and profit estimates; specification interpretations; estimates for separate contracts and subcontracts. Prerequisite: AA 221 or AE 462, and upper division standing.

AE 471. **Soil Conservation Engineering.** (g) 3 hours fall. 2 ① 1 ③  
Engineering phases of soil-erosion control; design of dams, terraces, and gully-control structures; hydrology of small watersheds. Prerequisite: CE 226, SIs 212.

AE 472. **Drainage and Irrigation Engineering.** (g) 3 hours winter 2 ① 1 ③  
Design of farm drainage and irrigation systems; tile drains; open ditches; distribution systems; control structures; land leveling; construction methods. Prerequisite: AE 471.

AE 473. **Sprinkler Irrigation Design.** (g) 3 hours spring. 3 ①  
Operating characteristics, selection and testing of irrigation and other agricultural pumps; design and testing of sprinkler irrigation systems; comparison with other methods of irrigation. Prerequisite: AE 472.

AE 481. **Agricultural Machine Design.** (g) 3 hours winter. 1 ① 2 ③  
Application of principles of mechanism, mechanics, and strength of materials to design of agricultural machinery. Prerequisite: ME 219.

AE 491. **Power Farming Machinery.** (g) 3 hours winter. 2 ① 1 ③  
Modern power farming equipment; operation, maintenance, and adjustment. Prerequisite: AE 311, ME 219.

AE 495. **Agricultural Instrumentation and Application.** (G) 3 hours fall. 2 ① 1 ③

Basic theory and application of instruments used in agricultural research with emphasis on pyrometry, air measurements, psychrometry, soil and field-crop moisture determinations, and water measurements. Prerequisite: Senior standing in engineering or equivalent. Offered alternate years. Not offered 1957-58.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

AE 501. **Research.** Terms and hours to be arranged.

AE 503. **Thesis.** Terms and hours to be arranged.

AE 505. **Reading and Conference.** Terms and hours to be arranged.

AE 507. **Seminar.** Terms and hours to be arranged.

AE 515. **Agricultural Machine Applications and Methods.** 3 hours winter. 2 ① 1 ③

Application of machines to changing agricultural methods; mechanization and labor economy; labor-saving equipment and applications; hydraulic control systems; specialty crop-machines. Prerequisite: AE 481, 491.

AE 520. **Ground-Water Development and Conservation.** 3 hours fall. 2 ① 1 ③

Occurrence, development, and conservation use of ground water for irrigation; construction, development, and testing of wells; ground-water replenishment. Prerequisite: AE 473 or consent of instructor. Offered alternate years. Not offered 1957-58.

AE 525. **Processing Equipment for Agricultural Products.** 3 hours fall. 2 ① 1 ③

Fundamental theory and applications of various methods and equipment in the processing of farm products. Prerequisite: AE 495 or equivalent. Offered alternate years. Offered 1957-58.

## Chemical Engineering

Chemical engineering is a branch of engineering based on those operations involving mass transfer, heat transfer, and energy transfer, which in their proper sequence and coordination constitute chemical processes as conducted on the industrial scale. The design of industrial equipment for carrying out such chemical processes is an important phase of chemical engineering, as is research on influence of various transfer phenomena on the chemical processes themselves.

The curriculum in chemical engineering is designed to give a broad training in the principles fundamental to chemical industry. It aims to lay a foundation for responsible work in laboratory and plant, and to prepare for graduate work in engineering or in physical sciences. The curriculum is equally applicable in preparation for research, design, control, operation, or technical sales. The student is given a thorough foundation in chemistry, mathematics, English, and physics. This training is accompanied by professional subject matter falling into three groups: (1) courses providing a knowledge of more advanced principles of chemistry, (2) courses in engineering principles, and (3) courses dealing with chemical engineering as a separate entity. The last group includes a thorough study of basic transfer phenomena including application to many specific unit operations of chemical engineering and their applications to chemical processes.

The curriculum aims to give a broad training in fundamentals, rather than specialized training for a narrow field. A corresponding breadth of opportunity is presented, including the entire field of chemical industry as well as allied fields. Many positions of responsibility, particularly in research and development work, demand a more extensive training than can be given in four years, and students with proper qualifications may pursue graduate work leading to advanced degrees. Some specialization is possible in the senior year.

The Chemical Engineering Department occupies a building completed in 1955 which provides unexcelled, modern facilities for instruction in all phases of chemical engineering. A wide variety of instruments is available for securing engineering data, and laboratories contain a complete stock of chemical reagents and chemical apparatus. Special laboratories are available for undergraduate and advanced research projects.

## Courses in Chemical Engineering

### Lower Division Courses

- ChE 211. **Chemical Technology.** 2 hours. 3 ①  
Fundamentals of chemical engineering; graphical analysis; instrumentation; control of process variables; applications in the solution of typical problems.
- ChE 212. **Industrial Stoichiometry.** 2 hours winter. 3 ①  
Quantitative interpretation and application of physical and chemical data to various industrial chemical processes.
- ChE 213. **Industrial-Chemical Calculations.** 2 hours spring. 3 ①  
Application of physical and chemical principles to industrial problems; introduction to chemical engineering thermodynamics.
- ChE 263. **Assaying.** 3 hours. 1 ① 2 ③  
Commercial methods of wet and dry assay of ores, metallurgical products. Prerequisite: Ch 232 or equivalent. Offered alternate years. Offered 1957-58.

### Upper Division Courses

- ChE 311, 312. **Chemical Engineering Thermodynamics.** 3 hours fall and winter. 3 ① 1 ②  
Principles and relationships of thermodynamics as applied to typical problems encountered in the field of chemical engineering. Prerequisite: Ch 440 or concurrent enrollment.
- ChE 313. **Elementary Unit Operations.** 3 hours. 3 ① 1 ②  
Introduction to unit operations of chemical engineering; flow of fluids and flow of heat.
- ChE 321, 322, 323. **Industrial Chemistry.** 3 hours each term. 3 ①  
For nonchemical engineering majors. Treatment is quantitative but restricted to chemical engineering principles as applied to industrial chemical processes. Prerequisite: consent of instructor.
- Met 331, 332, 333. **Metallurgy.** 3 hours each term. 3 ① 1 ②  
General operations and principles of physical and extractive metallurgy; behavior and production of metals; metallurgical calculations. Prerequisite: enrollment in Ch 440, Mth 203, or equivalents.
- ChE 401. **Research.** Terms and project to be arranged.
- ChE 403. **Thesis.** Terms and hours to be arranged.
- ChE 405. **Reading and Conference.** Terms, hours, and subject to be arranged.
- ChE 407. **Seminar.** 1 hour any term. 1 ①

- ChE 411, 412, 413. **Unit Operations.** (g) 3 hours each term. 3 ① 1 ②  
Quantitative treatment of principles of mass, energy, and heat transfer operations to typical engineering problems.
- ChE 414, 415, 416. **Chemical Engineering Laboratory.** (g) 3 hours each term. 1 ① 1 ④  
Quantitative laboratory study of the unit operations and transfer processes of chemical engineering; emphasis placed on preparation of technical reports. Prerequisite or parallel: ChE 411.
- ChE 425, 426. **Chemical Engineering Calculations.** (G) 3 hours each term. 3 ①  
Mathematical analysis of chemical engineering problems with particular emphasis on setting up differential equations; special methods of solving problems. Prerequisite: ChE 313.
- ChE 432. **Chemical Plant Design.** (g) 3 hours. 2 ① 1 ②  
Problems in the design of a chemical plant and chemical engineering equipment. Reports required. Prerequisite or parallel: ChE 413.
- ChE 441, 442, 443. **Elements of Process Industries.** (g) 2 hours each term. 3 ①  
Inorganic and organic chemical technology; the development and economic aspects of commercial operations; kinetics.
- ChE 452. **Nuclear Processes in Chemical Engineering.** (g) 3 hours winter. 3 ①  
Theory and computations involved in engineering situations encountered in nuclear processes; design of equipment for carrying out such processes.
- ChE 460. **Mineral Dressing.** (g) 3 hours fall. 3 ①  
Principles of comminution, concentration, and related processes; methods of treatment and machinery used. Prerequisite or parallel: G 312 or equivalent.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- ChE 501. **Research.** Terms and hours to be arranged.
- ChE 503. **Thesis.** Terms and hours to be arranged.
- ChE 505. **Reading and Conference.** Terms and hours to be arranged.
- ChE 507. **Seminar.** Terms and hours to be arranged.
- ChE 511. **Industrial Plastics.** 3 hours. 3 ①  
Classification of modern plastics; preparation, properties, and special fields of application; commercial processes of manufacture; fabrication. Prerequisite: Ch 432, or equivalent.
- ChE 512. **Economic Balance.** 3 hours. 3 ①  
Solution of typical chemical engineering and applied chemistry problems from the standpoint of economic considerations; optimum conditions of design and operation.
- ChE 514. **Fluid Flow.** 3 hours. 2 ① 1 ②  
Investigation of special phases of fluid flow, such as high pressure gas transmission systems, economics, and multiple, parallel lines; special attention to recent literature. Prerequisite: ChE 413.
- ChE 521. **Diffusional Operations.** 3 hours. 2 ① 1 ②  
Unit operations of evaporation, distillation, absorption, and extraction at an advanced level; stress on methods of solution of problems dealing with multicomponent mixtures. Prerequisite: ChE 413.
- ChE 522. **Heat Transmission.** 3 hours. 2 ① 1 ②  
Mechanisms of transference of heat energy; engineering applications.

- ChE 531, 532, 533. **Electrochemical Engineering.** 3 hours each term. 2 ① 1 ②  
 A study of present-day electrochemical and electrometallurgical industrial practices with emphasis upon processes, efficiencies, operation, and cell or furnace design.
- ChE 537. **Chemical Engineering Thermodynamics.** 3 hours. 3 ①  
 Application of laws of energy and thermodynamics to chemical engineering design; irreversible processes and nonideal systems. Prerequisite: ChE 412, 413.
- ChE 540. **Applied Reaction Kinetics.** 3 hours. 2 ① 1 ②  
 Application of fundamental theories of reaction kinetics and adsorption to catalytic and noncatalytic processes; emphasis on evaluating experimental data and designing industrial reaction vessels.

## Civil Engineering

The curriculum in civil engineering is organized to train young men in those principles of engineering science and technology that are basic and common to the fields of geodesy and surveying, highways, railroads, irrigation and drainage, river and harbor improvements, structures, hydraulics, sanitation, and municipal engineering, and to permit some latitude of choice in the four general fields of structures, hydraulics, sanitation, and highways. The curriculum is planned to prepare graduates for advancement to responsible positions.

### Lower Division Courses

- CE 201, 202, 203. **Introduction to Civil Engineering.** 2 hours each term. 2 ③  
 Fundamentals of graphic analysis, descriptive geometry, structural and topographic drafting; hydrostatics, and field geometry. Prerequisite: for CE 201: GE 113; for CE 202: GE 101; for CE 203: CE 221 or CE 226 and Mth 102.
- CE 212. **Mechanics (Statics).** 3 hours. 1 ① 2 ②  
 Theory and application of force systems to rigid bodies. Prerequisite: GE 112, GE 101, Mth 201.
- CE 213. **Mechanics (Dynamics).** 3 hours. 1 ① 2 ②  
 Continuation of CE 212. Principles and problems in kinetics; force as a factor causing motion; work, energy, friction, and impact. Prerequisite: CE 212.
- CE 221. **Plane Surveying.** 3 hours. 1 ① 2 ③  
 Theory and use of engineer's transit, tape, and level; evaluation of effect of errors on observation; application of surveying methods to problems in construction and area surveys. Prerequisite: Mth 101, GE 112.
- CE 222. **Plane Surveying.** 3 hours. 1 ① 2 ③  
 Surveying problems relating to construction surveys, urban and rural land surveys; special computation problems in map projections, control surveys, and earthwork; tests and adjustment of engineer's transit and level. Prerequisite: CE 221.
- CE 223. **Plane Surveying.** 3 hours. 1 ① 1 ⑥  
 Control surveys; computation of statewide coordinates; topographic mapping; theory and use of stadia and plane table; field astronomy. Prerequisite: CE 222.
- CE 224, 225. **Surveying for Landscape Architecture Students.** 3 hours each term. 1 ① 2 ③  
 Practical use of engineer's level, tape, and transit in planning and layout of projects in landscape architecture; principles of topographic mapping; use of engineer's transit and telescopic alidade in making stadia surveys; practical use of plane table; practical problems in making and using topographic data.
- CE 226. **Plane Surveying.** 3 hours. 1 ① 2 ③  
 Theory and use of engineer's transit, tape, and level; application of surveying methods to problems in construction and area survey. Prerequisite: Mth 102.

## Upper Division Courses

- CE 311. Fluid Mechanics. 3 hours. 2 ① 1 ③  
Application of mechanics to compressible and incompressible fluids; laboratory measurements. Prerequisite: CE 213, Mth 203.
- CE 312. Hydraulics. 3 hours. 1 ① 2 ②  
Continuation of CE 311. Special hydraulic problems, including the laws of hydraulic similitude. Prerequisite: CE 311.
- CE 313. Hydraulic Machinery. 3 hours. 2 ① 1 ③  
Theory, operation, characteristics, efficiency, design, and installation of pumps and turbines; laboratory studies. Prerequisite: CE 311.
- CE 322. Elementary Hydraulics. 3 hours. 2 ① 1 ③  
Principles underlying pressure and flow of water; laboratory measurements. For agricultural-engineering students. Prerequisite: Mth 103.
- CE 332. Curves and Earthwork. 3 hours. 1 ① 2 ③  
Theory and practice of route surveying, including use of simple circular, spiral easement, and parabolic curves as applied to highway location; quantity estimates of earthwork. Prerequisite: CE 203, 223.
- CE 341. Fluid Mechanics. 3 hours any term. 2 ① 1 ③  
For students in electrical, mining, and mechanical engineering. Prerequisite: CE 213 or ME 213, Mth 203.
- CE 342. Hydraulic Machinery. 3 hours. 2 ① 1 ③  
Application of the principles of hydraulics to the performance and design of pumps and turbines and the layout of pumping and power plants. Prerequisite: CE 311 or 341.
- CE 351, 352. Strength of Materials. 3 hours each term. 1 ① 2 ②  
General principles of mechanics applied to the elements of engineering structures to determine their strength and fitness. Prerequisite: CE 212 or ME 212, Mth 203.
- CE 362. Modern Construction Methods. 2 hours.  
Modern methods of earth moving; economic haul for various types of equipment; use of explosives. One lecture; 30 hours laboratory arranged during the term.
- CE 382. Structural Analysis. 4 hours. 2 ① 2 ②  
Graphical and algebraic analysis of statically determinate structures. Prerequisite: CE 212 or ME 212, CE 351.
- CE 383. Reinforced Concrete. 4 hours. 2 ① 2 ②  
Study and design of the elements of reinforced concrete including beams, slabs, girders, and columns. Prerequisite: CE 351, 382.
- CE 401. Research. Terms and hours to be arranged.
- CE 403. Thesis. Terms and hours to be arranged.
- CE 405. Reading and Conference. Terms and hours to be arranged.
- CE 407. Seminar. 1 hour. 1 ①
- CE 411. Hydraulic Design. 3 hours. 2 ① 1 ③  
Precipitation, storage, and run-off; field studies in standard methods of measurement. Prerequisite: CE 312.
- CE 412. Sanitary Engineering. (g) 3 hours. 2 ① 1 ③  
Fundamental processes and operations of the conditioning of water as applied to water supply and sewage disposal. Prerequisite: CE 313.
- CE 413. Sanitary Engineering Laboratory. (g) 3 hours. 1 ① 2 ③  
Laboratory practice in standard methods of water and sewage analysis. Prerequisite: CE 412.
- CE 414. Sanitary Water Measurements. (g) 3 hours. 1 ① 2 ③  
Measurement of sanitary quality and quantity of domestic wastes and of streams. Primarily for biology students, particularly those majoring in fisheries field. Prerequisite: Ch 103, Bac 204, FG 276.



- CE 421, 422. **Highway Engineering.** (g) 3 hours each term. 2 ① 1 ③  
Highway and street design; theory of pavement design, subgrade treatments, drainage design, highway planning, traffic surveys, highway economics and finance. Prerequisite: senior standing and CE 332.
- CE 427. **Contracts and Specifications.** (g) 3 hours. 3 ①  
General principles and laws of contracts as applied to engineering. Prerequisite: CE 412, 421, 481.
- CE 452. **Water Supply.** (g) 3 hours any term. 2 ① 1 ③  
Quality and quantity of water necessary for a municipal supply and of works for its collection, purification, and distribution. Prerequisite: CE 412.
- CE 454. **Sewage Disposal.** (g) 3 hours. 2 ① 1 ③  
Disposal and treatment of sewage; design and operation of sewage-treatment plants. Prerequisite: CE 412.
- CE 460. **Estimating and Cost Analysis.** (g) 3 hours. 2 ① 1 ③  
Quantity surveying; general and detailed considerations in establishing unit prices; subcontracts, overhead cost, and profits; estimates. Prerequisite: CE 412, 421, 481.
- CE 471. **Soil Mechanics.** (g) 3 hours. 2 ① 1 ③  
Evaluation and utilization of soil materials for engineering applications; highway subgrades and base courses; earth dam construction and foundations. Prerequisite: CE 311, 351, 352, ME 316.
- CE 472. **Masonry and Foundations.** (g) 4 hours. 2 ① 2 ③  
Study and design of masonry foundations, walls, piers, dams, and arches. Prerequisite: CE 383.
- CE 481. **Structural Engineering.** (g) 4 hours. 2 ① 2 ③  
Study and design of elements of steel structures; design and detail problems. Prerequisite: CE 351, CE 382.
- CE 482. **Structural Design.** (g) 4 hours. 2 ① 2 ③  
Study and design of timber members in tension, compression, and flexure, with their connections; design and details of simple timber structures. Prerequisite: CE 351, 382.
- CE 483. **Building Design.** (g) 3 hours. 1 ① 2 ③  
Study and design of building elements constructed of steel, reinforced concrete, timber, and miscellaneous building materials; fabrication and construction. Prerequisite: CE 472, 481.
- CE 485. **Indeterminate Structures.** (g) 3 hours. 2 ① 1 ③  
Elastic deflections and methods of analysis of statically indeterminate structures. Prerequisite: CE 382, CE 351.
- CE 486. **Structural Analysis.** (g) 3 hours. 2 ① 1 ③  
Study and stress analysis of statically indeterminate structures such as continuous beams and rigid frames; methods of analysis. Prerequisite: CE 485.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- CE 501. **Research.** Terms and hours to be arranged.
- CE 503. **Thesis.** Terms and hours to be arranged.
- CE 505. **Reading and Conference.** Terms and hours to be arranged.
- CE 507. **Seminar.** Terms and hours to be arranged.
- CE 519. **Soil Mechanics.** 3 hours. 3 ①  
Factors affecting settlement of building foundations; stability of earth dams and dikes; variations in shear strength of clays; principle of flow nets; trends in soil mechanics.
- CE 520. **Measurement of Water.** 3 hours. 3 ①  
Intensive study of reports on the measurement of flowing water by means of weirs, orifices, venturi meters, pitot tubes, current meters, bends, salt-velocity, and Parshall flumes.

- CE 521. **Fluid Mechanics.** 3 hours. 3 ①  
Dimensional analysis; principles of energy, continuity, and momentum; hydraulic jump and wave motion; hydrodynamics.
- CE 522. **Water-Power Engineering.** 3 hours. 3 ①  
Development of water power; storage and load; characteristics of modern turbines; selection of turbines; problems in design.
- CE 523. **River Control and Utilization.** 3 hours. 3 ①  
Study of the methods of controlling flood flow in streams; design of dikes, shore protection facilities, retarding and impounding basins; laws of similitude; use of hydraulic models.
- CE 530. **Structural Stresses.** 2 hours. 2 ①  
Stress analysis of space frames and continuous frames; use of elastic equations and distributed moments.
- CE 531. **Mechanical Methods of Stress Analysis.** 2 hours. 2 ①  
Theory and use of Beggs Deformeter, wire models, Gottschalk Continostat and Photo-elastic Polariscope as applied to the solution of stresses in continuous frames.
- CE 532. **Bridge Design.** 3 hours. 3 ①  
Problems in location, economic selection, and design of steel bridges.
- CE 533. **Analysis and Design of Concrete Structures.** 3 hours. 3 ①  
Problems in analysis and design of elastic concrete structures. Prerequisite: CE 483, 485.
- CE 534. **Mechanics of Materials.** 3 hours. 2 ① 1 ③  
Behavior of structural materials; theories of failure, multiaxial stress conditions, torsion, shear distortions, impact and vibrations, energy methods of analysis, stresses in plates and shells. Prerequisite: CE 352, 485.
- CE 535. **Prestressed Concrete.** 3 hours. 2 ① 1 ②  
Analysis and design of prestressed concrete structural elements; systems of prestressing, material specifications, stress analysis, linear and circular prestressing, economics. Prerequisite: CE 352, 383; ME 316.
- CE 540. **Sanitary Engineering Design.** 3 hours. 3 ①  
Measurements, computations, and estimates of storm and sanitary sewers. Flow networks investigations. Design and estimates of water and sewage treatment plants.
- CE 541. **Stream Purification.** 3 hours. 3 ①  
A study of stream pollution, oxygen sag, reaeration, and their effects.
- CE 542. **Water and Sewage Treatment Processes.** 3 hours. 3 ①  
Critical review of recent and current researches in the field of water and sewage treatment.
- CE 543. **Treatment Plant Operation and Control.** 3 hours. 3 ①  
Field analysis of water and sewage treatment plant operations and methods of control.
- CE 550. **Highway Administration and Finance.** 3 hours. 3 ①  
Development of highway systems; organization of state and national highways; principles of highway finance; Federal aid; technical functions of various highway units.
- CE 551. **Municipal Engineering and City Planning.** 3 hours. 3 ①  
Modern city streets, boulevards, transportation systems; drainage and sanitation; water supply; lighting.
- CE 552. **Transportation Engineering.** 3 hours. 3 ①  
Study of related engineering factors pertaining to movement of freight by rail, water, air, and highways.
- CE 553. **Street and Highway Traffic Control.** 3 hours. 3 ①  
Study of various factors affecting operation of streets and highways from standpoint of efficiency and safety.

## Electrical Engineering

The curricula in electrical engineering are designed to train the student in the fundamental principles and in those collateral subjects needed by a well-trained engineer. Both electrical theory and application are presented. Although specialized courses are kept to a relatively small number in the undergraduate program, opportunity is offered to select specialized optional courses at the senior level. Options include Power, Communication, and Business.

The Electrical Engineering Department occupies Dearborn Hall which has a floor space of 56,500 square feet for classrooms, laboratories, offices, and other space requirements. Laboratory equipment is available for demonstrating and verifying the fundamental electrical principles and theories, and also for research in electric circuits, electric-power machinery, wire communications, radio, television, electromagnetic radiation, electronics, industrial electronics, electrical measurements, high voltage, illumination, servo-mechanisms, and standardization of instruments. The machinery laboratory is equipped with alternating- and direct-current machinery, transformers of various types, and power supply sources making available d-c and a-c power over a wide range of voltages and currents.

The communications laboratories include research, shop, storage rooms, and equipment and instruments for studying wire and radio communication, television, and related subjects. The facilities of Radio Station KOAC with directional antenna array are available for instructional purposes.

The circuits laboratory has adequate facilities for laboratory work in the basic electrical theory given during the sophomore year. The high-voltage laboratory is equipped with apparatus for 60-cycle potentials up to 350,000 volts, impulse or "lightning" voltage waves of adjustable shape and magnitude, high-voltage, sphere gap voltmeters, surge-voltage recorders, high-voltage rectifiers, and other apparatus.

Other laboratories include: measurements laboratory, standardizing laboratory, illumination measurements laboratory, two laboratories for experimental and research work in electronics, and the control laboratory.

### Lower Division Courses

- EE 201, 202, 203. **Introduction to Electrical Engineering.** 4 hours each term. 1 ① 3 ②  
 Fundamentals of magnetic and electric fields and associated circuits, and electric circuit theory. Prerequisite: GE 101, 102, 103; Ph 207, 208, 209; Mth 101, 102, 103, or equivalents. Ph sequence may be concurrent.

### Upper Division Courses

- EE 311, 312, 313. **Electric Circuits and Equipment.** 3 hours each term. 2 ① 1 ③  
 Single and polyphase electric circuits; theory and characteristics of direct and alternating current machines and equipment. Prerequisite: EE 201, 202, 203 or equivalent.
- EE 321, 322, 323. **Electronics.** 3 hours each term. 2 ① 1 ③  
 Fundamental theory of electronics including thermionic emission, cold cathode emission, photoelectric emission, space charge, and discharge in gases; principles of vacuum, gas, and vapor tubes, solid state electronic devices, and their basic associated circuits. Prerequisite: EE 201, 202, 203; Ph 207, 208, 209, or equivalents.
- EE 351, 352, 353. **Industrial Electricity.** 3 hours each term. 1 ① 2 ②  
 Fundamentals of electric circuits and equipment emphasizing the application to industry. Prerequisite: junior standing, GE 103, Ph 209, Mth 203, or equivalent.
- EE 354, 355. **Industrial Electricity.** 3 hours each term. 2 ② 1 ③  
 Direct and alternating current circuits and machines. Especially for chemical and metallurgical engineering students. Prerequisite: junior standing.

- EE 356. **Industrial Electricity.** 3 hours. 2 ① 1 ③  
Abbreviated course covering direct and alternating current circuits and machines. For civil engineering students. Prerequisite: junior standing.
- EE 357. **Industrial Electricity.** 3 hours. 2 ① 1 ③  
Distribution systems for industrial power and lighting, including equipment, safety appliances, and economic aspects. Prerequisite: EE 356.
- EE 371, 372, 373. **Fundamentals of Illumination.** 3 hours each term. 2 ① 1 ③  
Fundamentals of good lighting; measurement and calculation of illumination of rooms; study of lighting components and factors affecting illumination. Prerequisite: Ph 207, 208, 209; EE 201, 202, 203, or equivalent.
- EE 401. **Research.** Terms and hours to be arranged.
- EE 403. **Thesis.** 3 hours each term.
- EE 405. **Reading and Conference.** Terms and hours to be arranged.
- EE 407. **Seminar.** 1 hour each term. 1 ①  
Presentation of abstracts and discussion of articles in current engineering literature.
- EE 411, 412, 413. **Electrical Engineering Economy.** (g) 3 hours each term. 3 ①  
Power and communication utility economy including plant investment; system of accounts; service tariffs; operation, regulation, and public relations problems. Prerequisite: EE 313, 323, or equivalent.
- EE 414, 415, 416. **Electrical Measurements and Analysis.** (g) 3 hours each term. 2 ① 1 ③  
Theory and techniques of d-c and a-c electrical measurements, including a study of measuring devices and measurements of electric, dielectric, and magnetic properties of materials encountered in electrical engineering. Prerequisite: EE 313, 323, or equivalent.
- EE 420. **Electrical Engineering Analysis.** (g) 3 hours. 2 ① 1 ②  
Electrical engineering problems, including the derivation and solution of differential equations for electrical and mechanical systems, applications of Fourier series and Bessel functions, and the reduction of experimental data to empirical equations. Prerequisite: differential equations.
- EE 421, 422, 423. **Transmission Lines and Networks.** (g) 3 hours each term. 2 ① 1 ③  
Generalized theory of transmission of electric energy for communication and power purposes over circuits with distributed and with lumped constants. Power limits of transmission lines, steady state and transient stability of transmission systems. Prerequisite: EE 313, 323, or equivalent.
- EE 431, 432, 433. **Transformers and Rotating Electrical Machinery.** (g) 3 hours each term. 2 ① 1 ③  
Theory, design features, and characteristics of transformers and rotating electrical machinery with special emphasis on a-c machinery. Prerequisite: EE 313, 323, or equivalent.
- EE 450. **Electromagnetic Waves.** (g) 3 hours. 3 ①  
Basic equations, theorems, and laws of electromagnetic fields and their applications to problems involving wave reflections, antennas, radiation, wave guides, and propagation in the ionosphere. Prerequisite: senior standing in electrical engineering or physics or mathematics.
- EE 461, 462, 463. **Communication Engineering.** (g) 3 hours each term. 2 ① 1 ③  
Theory and practice of electric communication including telegraphy, telephony, radio, and television. Prerequisite: EE 313, 323, or equivalent.
- EE 465. **Television.** (g) 3 hours. 2 ① 1 ③  
Theory of black-and-white and color television; television transmitters, antennas, and receivers. Prerequisite: EE 422, 462.

- EE 471, 472, 473. **Illumination.** (g) 3 hours each term. 2 ① 1 ③  
 Studies of factors involved in determining room coefficients; combination of daylight with artificial lighting; study and design of luminaires, reflectors, and diffusing mediums. Prerequisite: EE 371, 372, 373, or equivalent.
- EE 481, 482, 483. **Radio and Television Engineering Practices.** 1 hour each term. 1 ① 1 ②  
 Engineering and operating practices employed in modern radio broadcasting. Radio Station KOAC is used; instruction is given by engineer-in-charge. Prerequisite: senior standing in electrical engineering or physics.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit. Courses at the graduate level are given when warranted by demand.

- EE 501. **Research.** Terms and hours to be arranged.
- EE 503. **Thesis.** Terms and hours to be arranged.
- EE 505. **Reading and Conference.** Terms and hours to be arranged.
- EE 507. **Seminar.** Terms and hours to be arranged.
- EE 511, 512, 513. **Electronics.** 3 hours each term. 2 ① 1 ③  
 Emission of electrons; their behavior in electric and magnetic fields; conduction through gases at various pressures; application of electronic principles to high-vacuum gas and vapor tubes; special electronic devices including microwave equipment.
- EE 521, 522, 523. **High-Voltage Engineering.** 2 hours each term. 1 ① 1 ③  
 Experimental investigation and study of dielectric phenomena in high-voltage engineering.
- EE 525, 526, 527. **Industrial Electronics.** 2 hours each term. 1 ① 1 ③  
 Industrial applications of electronics; vacuum tubes such as kenotrons, mercury-arc rectifiers, ignitrons, thyatrons, and photo-tubes; these tubes and devices as power rectifiers, converters, and electrical controls; X-ray production and applications in industry; induction and dielectric heating.
- EE 531. **Materials in Electrical Engineering.** 3 hours. 2 ① 1 ③  
 Properties of conductors, insulators, and magnetic materials used in electrical engineering.
- EE 534. **Circuit Analysis by Laplace Transformation.** 3 hours. 3 ①  
 Application of Laplace transformation to transients in lumped-constant electric networks, analogous mechanical systems, and electromechanically coupled systems. Prerequisite: Mth 321, 322; EE 311, 312, 313.
- EE 535. **Tensor Analysis in Electrical Engineering.** 3 hours. 3 ①  
 Methods used in matrix algebra and tensor analysis with special attention to use in problems involving electric phenomena.
- EE 537. **Electric Transients.** 3 hours. 2 ① 1 ④  
 Direct and alternating current single-energy and double-energy transients in circuits and machines having both fixed and variable circuit parameters.
- EE 541, 542, 543. **Electric Power Systems.** 3 hours each term. 2 ① 1 ③  
 Advanced study of electric power generation, transmission, distribution, and utilization.
- EE 544. **Power System Stability.** 3 hours. 2 ① 1 ③  
 Steady-state and transient stability of electric power systems; attainment of economic loading of long transmission circuits; influence of relay, circuit-breaker, and machine characteristics, and of series and shunt capacitors on system stability. Prerequisite: EE 421, 422, 423, or EE 431, 432, 433.
- EE 545. **Electrical Problems.** 3 hours. 3 ①  
 Advanced problems in electrical engineering, unbalanced circuits, and equivalent networks.

- EE 554, 555, 556. **Control Engineering.** 3 hours each term. 2 ① 1 ③  
Servomechanisms, digital computer, and analog computer principles as applied to control engineering. Steady-state and transient analysis of feedback control systems.
- EE 561, 562, 563. **Wire Communication.** 3 hours each term. 2 ① 1 ③  
Advanced engineering study of theory and application of electrical transmission of information and other signals over wire lines and networks.
- EE 571, 572, 573. **Radio Communication.** 3 hours each term. 2 ① 1 ③  
Advanced study of radio including both broadcast and point-to-point service. Design and testing of transmitters, receivers, antennas and study of propagation phenomena and electromagnetic wave transmission.
- EE 575. **Engineering of Sound Systems.** 3 hours. 2 ① 1 ③  
Electroacoustic equipment such as microphones, amplifiers, and loud speakers and their engineering application to sound amplification and distribution both in buildings and in the open.
- EE 581, 582, 583. **Illumination.** 2 hours each term. 1 ① 1 ③  
Fundamentals of lighting and good lighting practice; measurement and calculation of illumination in various types of rooms; incandescent lamp characteristics with change in voltage; measurements of brightness, visibility, light reflection, and transmission of materials; lighting and electrical characteristics of fluorescent lamps; power loss in fluorescent lamp ballasts; color temperature of illuminants and effect on appearance of decorative materials; wiring methods.

## Industrial Engineering and Industrial Arts

The Department of Industrial Engineering and Industrial Arts provides technical and professional training for industrial engineering, production technology, production control, and other phases of scientific management vital to business and industry. Both the managers and the artisans of industry, from skilled labor to the industrial designers and production managers, are dependent upon an integral and intimate knowledge of industrial processes, the skills, and the machine applications necessary to produce the articles they collectively create. These are the specific concerns of the industrial engineer and the production technologist.

The Department of Industrial Engineering and Industrial Arts also provides instruction in the technical courses required for the preparation of industrial arts teachers (see curriculum under SCHOOL OF EDUCATION) and offers service courses in engineering shop work. Service courses and electives are available to others as the facilities will permit.

The **Production Technology Curriculum** is designed to meet the demand in industry for men with basic skills and technical knowledge, supplemented with studies in scientific management and business administration. This program includes a study of accepted principles and practices by which the manufacturing industries have evolved a system of production and quality control. Correlation of the technical studies, production processes, and management principles is emphasized, so that graduates of the program can progress to supervisory and executive positions. The options (*Metal Industries* with subdivisions involving applications in Metal Castings and Welded Fabrications; *Wood Industries*, with subdivisions in Building Construction and Mill-Cabinet Work; *Tool Design*) and the electives enable a student to specialize in the particular phase of industry consistent with his interests and aptitudes. The program affords opportunity in technical training and business applications appropriate for industrial technicians, tool designers, production managers, and works managers. Students in each of the several options are assigned to indi-

vidual advisers. Restricted electives in each option, appropriate to the objectives of the option, will be selected with the approval of the adviser, compatible with the educational goal of the student.

**The Industrial Engineering Curriculum** is designed to train students for the engineering, production, or technological-administrative departments of industry. Technical knowledge in the manufacturing processes is supplemented with studies in business and industry, economics, safety engineering, and scientific management. Particular emphasis is placed on engineering and industrial management as applied to operation analysis, labor problems, work simplification, plant layout, production planning and control. Students are prepared for those positions in industry which require primarily a combination of engineering and business judgment in the management of men, materials, machines, and processes. The goal of the professional industrial engineer is to produce a superior product at the minimum cost consistent with fair employer-employee relationships. After satisfactory experience in engineering practice, graduates should be qualified for the highest executive positions.

#### Lower Division Courses

- \*IE 111. **Pattern Making.** 3 hours. 2 ① 1 ④  
Fundamentals of pattern making; relation of pattern making to drafting, design, foundry and machine-shop operation.
- \*IE 112, 113. **Methods in Woodworking.** 3 hours each term. 1 ① 2 ③  
Woodworking, with special reference to tool techniques, applied design, and craftsmanship in group and individual projects. Prerequisite: IE 111 or approval of the department.
- \*IE 141. **Foundry Practices.** 3 hours. 2 ① 1 ④  
Constitution, properties, and design limitations of casting in gray iron, malleable iron, and steel; methods used in the production of castings.
- \*IE 152. **Forging and Welding.** 3 hours. 2 ① 1 ④  
Forging, forming, and heat-treating of steel, followed by gas and electric-arc welding, flame cutting, brazing, and resistance welding operations. Attention is given throughout the course to care of equipment and to organization and use of instructional materials.
- \*IE 163. **Machine Tool Practices.** 3 hours. 2 ① 1 ④  
Use of basic machine tools on prescribed projects representative of industrial operations. Prerequisite: Mth 10.
- IE 213. **Furniture Design.** 2 hours. 2 ③ or 3 ②  
Study of types and periods of furniture; application of design and construction principles to furniture and cabinet drawing. Prerequisite: GE 112, AA 281, 282, or equivalent.
- IE 220. **Wood Turning.** 2 hours. 1 ① 1 ④ or 2 ②  
Tool processes and lathe technique; designing, turning, and finishing of individual projects of merit. Prerequisite: IE 111 or IE 112 or equivalent.
- IE 225. **Machine and Tool Maintenance (Wood Shop).** 2 hours. 2 ① 1 ④  
Methods of care and maintenance of woodworking tools, machines, and supplementary equipment. Prerequisite: IE 111 or IE 112 or equivalent.
- \*IE 240. **Foundry Practices.** 2 hours any term. 2 ① 1 ④  
Introductory course covering constitution, properties, and design limitations of castings in iron and steel; fundamental methods in the production of castings.

\* In courses designated by asterisks, in addition to the regularly scheduled meetings, the student may be required to attend three general lectures during the term.

- \*IE 250. **Forging and Welding.** 2 hours any term. 2 ① 1 ③  
 Forging, forming, and heat-treating of steel, followed by gas and electric-arc welding, flame cutting, brazing, and resistance welding operations; primary attention to applications in engineering design and construction and to industrial production problems.
- \*IE 260, 261. **Machine Tool Practices.** 2 hours each term. 2 ① 1 ③;  
 1 ① 1 ④  
 Basic and advanced operations of machine tools on prescribed projects illustrative of industrial operations. Correlation of engineering and manufacturing problems and processes. Prerequisite: Mth 100.
- IE 265. **Machine and Tool Maintenance (Metals).** 2 hours. 1 ① 1 ④  
 Maintenance and repair problems for mechanical equipment. Methods and procedures in tool and cutter sharpening. Prerequisite: IE 261.
- IE 270. **General Metals Laboratory.** 3 hours. 1 ① 2 ③  
 Introductory course covering basic operations and processes of forging, heat-treating, welding, nonferrous metal casting, and machine tool work. For industrial arts teachers who wish to add these areas to a general shop program and to enrich their understanding of modern industrial metal-processing methods.
- IE 290. **Introduction to Scientific Management.** 3 hours. 3 ①  
 History, development, and scope of scientific management. Laws of scientific management as applied to manufacturing.

#### Upper Division Courses

- IE 311. **Mill Work—Machine Woodwork.** 3 hours. 1 ① 2 ③  
 A production course in machine woodworking. Prerequisite: IE 111 or 112 or equivalent.
- IE 313, 314. **Furniture Construction.** 2 hours each term. 2 ③  
 The designing and construction of furniture and cabinet work, according to the needs and ability of the individual student. Prerequisite: IE 311 or approval of department.
- IE 315. **Upholstering and Seat Weaving.** 2 hours. 2 ③  
 Typical upholstering processes including construction of frames and foundations with and without springs; seat and panel weaving. Prerequisite: IE 112 or equivalent.
- IE 316. **Wood and Metal Finishing.** 3 hours. 1 ① 2 ③  
 Materials and processes for application of modern finishes to both old and new work on both wood and metal surfaces; brush and spray application of finishing materials. Prerequisite: IE 112 or equivalent.
- IE 320. **Boat Design and Construction.** 3 hours. 1 ① 2 ③  
 Design and construction of small boats, with particular reference to "seaworthiness" and safety, high utility, performance, and stability. Development of typical plans and actual construction under practical conditions. Prerequisite: IE 112, IE 333, or equivalent.
- IE 321. **Wood Turning.** 1 hour. 1 ③  
 Continuation of IE 220, with emphasis on more intricate turning processes, special chucking devices, and fancy turning. Prerequisite: IE 220.
- IE 326. **Fiber Furniture Weaving.** 2 hours. 2 ③ or 3 ②  
 The construction of frames and the weaving of art-fiber furniture, with suggestions for the use of this material in public-school teaching. Prerequisite: IE 112 or equivalent.
- IE 332. **Pattern Making.** 2 hours. 1 ① 1 ④  
 Continuation of IE 111, with emphasis on problems in making of patterns for more complicated machine parts and on factors influencing production costs of these parts.
- IE 333. **Carpentry and Building Construction.** 3 hours. 1 ① 2 ③  
 Application of carpentry fundamentals including actual construction in miniature from architect's plans; laboratory work in framing of rafters and selected architectural sections with fullsize lumber. Prerequisite: IE 112 or equivalent.

\* In courses designated by asterisks, in addition to the regularly scheduled meetings, the student may be required to attend three general lectures during the term.



- IE 342. **Foundry Practices.** 2 hours. 1 ① 1 ④  
Equipment for school and home workshops; processes and projects suited to public-school applications in industrial-arts classes. Prerequisite: IE 141 or 240.
- IE 344. **Casting Processes: Nonferrous.** 2 hours. 1 ① 1 ④  
Study of fundamental processes in the casting of aluminum and copperbase alloys, with emphasis on quality control. Prerequisite: IE 141 or 240.
- IE 345. **Casting Quality Control.** 2 hours. 1 ① 1 ④  
Foundry raw materials; control of foundry sands; gating and risering theory; pattern design; ferrous melting and refining units; production of alloy cast irons; casting inspection; analysis of defects. Prerequisite: IE 141 or 240.
- IE 346. **Magnesium-Aluminum Foundry Practices.** 2 hours. 1 ① 1 ④  
Magnesium-base casting alloys; practices in sand casting and permanent-mold casting; sand control for molds and cores; gating and risering, melting, safety, and design considerations. Prerequisite: IE 141 or 240.
- IE 353. **Forging and Welding.** 2 hours. 1 ① 1 ③  
Experiments, practice, and projects in forging, heat-treating, and welding of ferrous and nonferrous metals; special attention to problems of instruction, equipment maintenance, and general fabrication. Intended for students in Industrial Arts (School of Education) and Industrial Administration (Wood Industries option). Prerequisite: IE 152 or 250.
- IE 354, 355, 356. **Welding Processes and Applications.** 2 hours each term. 1 ① 1 ③  
A study of welding processes and techniques applied to ferrous and nonferrous metals. Selection of processes for typical production welding jobs; design and use of production welding devices—jigs, fixtures, forming, and handling equipment; welded product design and construction, including the engineering and economics problems involved. Prerequisite: IE 152 or 250.
- IE 361, 362, 363. **Mass Production Methods.** 2 hours each term. 1 ① 1 ④  
The selection, set-up, and operation of production machines in relation to quantity and quality. The construction, use, and application of jigs and fixtures. Job shop problems. Group projects and quality control. Prerequisite: IE 261.
- IE 370. **Applied Electricity.** 3 hours. 1 ① 2 ③  
Basic instruction in practical electricity; principles of electrical circuits and controls, with applications in fields of light and power wiring, stagecraft and lighting, communications. Intended primarily for prospective industrial arts teachers. Prerequisite: junior standing.
- IE 380. **Sheet-Metal Work.** 3 hours. 1 ① 2 ③  
Projects in sheet-metal work and pattern drafting involving the fundamental machine and hand-tool operations. Prerequisite: GE 112.
- IE 387. **Metal Crafts.** 3 hours. 1 ① 2 ③  
Diversified metal crafts; metal spinning, and craft work in iron, copper, and Britannia metal. Prerequisite: AA 282, IE 353, or 380.
- IE 388. **Lapidary Techniques and Processes.** 2 hours. 1 ① 1 ④  
Gem materials and methods used to process the rough material into display specimens or mounted jewelry pieces. Prerequisite: AA 281, IE 387.
- IE 390. **Safety in Industry.** 2 hours. 2 ①  
History of industrial safety; safety legislation, organizations, services, and training; accident costs and causes; methods of safe practice, safety and health standards and records. Prerequisite: junior standing.
- IE 391. **Methods and Motion Study.** 3 hours. 1 ① 2 ③  
Theory and application of methods study; types of methods studies; operation and analysis sheets; principles of motion practice; micromotion studies; standardization and process charts. Prerequisite: junior standing.
- IE 392. **Time Study.** 3 hours. 1 ① 2 ③  
Theory and application of time-study techniques; job analysis and standardization; construction of standard data and formula applications; synthetic determination of time standards; wage payment systems and merit rating. Prerequisite: junior standing and consent of instructor.

- IE 393. **Production Planning and Control.** 3 hours. 1 ① 2 ③  
 Departmental organization and types of production control techniques; codification and symbolization; forecasting, materials control, routine, scheduling, dispatching, and inspecting. Prerequisite: junior standing.
- IE 394. **Materials Handling.** 3 hours. 3 ①  
 Selection of materials-handling equipment, its application, coordination; effect of materials handling on plant layout in industrial situations. Prerequisite: junior standing in engineering.
- IE 405. **Reading and Conference.** Terms and hours to be arranged.
- IE 407. **Seminar.** 2 hours. 2 ①  
 Prerequisite: senior standing.
- IE 412. **Driver Education and Training.** (G) 3 hours. 2 ① 1 ②  
 Preparation of teachers for driver-training classes in high schools; behind-the-wheel instruction in dual-control training cars. Sponsored by American Automobile Association and Department of Motor Vehicles. Limited number of driver-learners (non-drivers) will be admitted with whom driver-teachers will work. Prerequisite: Ed 310, 312, 314.
- IE 464, 465, 466. **Tool Engineering.** 3 hours each term. 1 ① 2 ③  
 Fundamentals of tool engineering: tools, jigs, fixtures, and die design. Analysis of operation sequence, dimensional and quality control. Power press applications on the plastic working of metals and nonmetals. Prerequisite: IE 362.
- IE 490. **Industrial Supervision Principles.** (G) 3 hours. 3 ①  
 Basic company, supervisor, and operator objectives and responsibilities, and their relationship to one another; solutions of case problems compared with fundamentals established by industrial leaders. Prerequisite: IE 391, 392, 393, or consent of instructor.
- IE 491, 492. **Production Planning and Control.** (G) 3 hours each term. 3 ①  
 Quantitative analysis and economic optimum selection of machines, equipment, and labor; quantitative control in inverse relationships, least-cost combinations in purchasing quantities and in seasonal production. Prerequisite: calculus and IE 391, 392, 393.
- IE 495. **Quality Control.** (G) 3 hours. 3 ①  
 Principles of quality control applied to industrial production; frequency distribution, variable, and attribute control charts; acceptance sampling techniques; inspection management; introduction to probability. Prerequisite: Mth 102, IE 393.
- Graduate Courses**
- Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit. Graduate courses in Industrial Education are listed on pages 281-282.
- IE 501. **Research.** Terms and hours to be arranged.
- IE 503. **Thesis.** Terms and hours to be arranged.
- IE 505. **Reading and Conference.** Terms and hours to be arranged.
- IE 507. **Seminar.** Terms and hours to be arranged.
- IE 511. **Shop Planning and Organization.** 3 hours. 1 ① 2 ③  
 Planning and organizing the physical plant for different types of school shops. Prerequisite: Ed 408 and IEd 420 or equivalent.
- IE 525. **Recreational Handicrafts.** 3 hours. 1 ① 2 ③  
 Materials, projects, and procedures in developing a recreational handicraft program in secondary schools, on an extracurricular or curricular basis, and in evening adult classes; laboratory applications. Prerequisite: Ed 408 and courses in wood- and metal-work equivalent to IE 220, 313, and 380.
- IE 587. **Metalcraft Problems.** 3 hours. 1 ① 2 ③  
 Utilization of semiprecious metals in school and home shop work; advanced skills in metal spinning, and craft work in copper, brass, and Britannia metal; processes applied to projects of practical value and artistic merit. Prerequisite: Ed 408, AA 281, 282, 283 and IE 387 or equivalent.

- IE 591. **Operation Analysis.** 3 hours. 3 ①  
Current operation analysis techniques; application of methods and cost studies to advanced problems. Prerequisite: IE 391, 392.
- IE 592. **Timing Techniques.** 3 hours. 3 ①  
Modern time-study methods; critical study of allowances, skill levels, and other advanced problems. Prerequisite: IE 391, 392.
- IE 594. **Plant Layout.** 3 hours. 3 ①  
Application of principles governing selection of a plant site; development of plant layout; selection and planning of building for economic production. Prerequisite: IE 392, 394, 490.

## Mechanical Engineering

The curriculum in mechanical engineering is planned to prepare young men for useful and responsible positions in power plants, various manufacturing enterprises, oil refineries, the metal industries, heating and ventilating, refrigerating, air conditioning, and in the aeronautical and automotive industries. In the senior year, opportunity is provided for limited specialization in metallurgy, applied mechanics, business, heating and air conditioning, power, automotive engineering, or aeronautical engineering.

The department has drafting and computing rooms supplied with the necessary desks, boards, and lockers. The laboratories are equipped for tests and demonstrations in steam, gas, and aeronautical engineering, and in engineering materials. This equipment is located in the Engineering Laboratory, Mines Building, and in the Aeronautical Engines Laboratory. The steam laboratory contains representative turbines, engines, and boilers all of which are set up for testing. Also available are domestic heating, air conditioning, and refrigeration units which may be used for testing or research. The internal combustion engines laboratory contains gasoline and diesel engines connected to generators and dynamometers. Included are ASTM-CFR fuel research engines for both gasoline and diesel oil. All these engines are fully equipped with accessories and instruments. The aeronautical laboratory contains a small wind tunnel, a smoke tunnel, miscellaneous aircraft parts and instruments, a variety of aircraft engines, and a complete airplane. Materials of engineering laboratories include facilities and machines for testing and research on metallic and non-metallic structural materials, and fuels and lubricants. Equipment and instruments, such as balancing machines, vibrometers, photoelasticity apparatus, and a shaking table, are available for instruction and advanced studies in applied mechanics.

### Lower Division Courses

- ME 212. **Mechanics (Statics).** 3 hours. 2 ① 1 ②  
Forces and force systems with reference to the equilibrium of rigid bodies; numerous problems. Prerequisite: Mth 103.
- ME 213. **Mechanics (Dynamics).** 3 hours. 2 ① 1 ②  
Continuation of ME 212. Principles and problems in kinetics; numerous problems. Prerequisite: ME 212.
- ME 215. **Engineering Materials.** 3 hours winter or spring. 3 ① 1 ②  
Properties and structure of engineering materials. Test procedures and specifications. Prerequisite: ME 218.
- ME 216. **Engineering Materials.** 3 hours. 3 ①  
Production, mechanical properties, and their control as applied to materials of machine and building construction. Corrosion resistance and other service requirements. Service course for nonmajors.

- ME 217, 218, 219. **Mechanics of Materials.** 3 hours each term. 3 ① 2 ①  
 Fall: Forces and force systems; characteristics of resultants and of equilibrium conditions of rigid bodies, especially machine and structural elements, numerous problems. Winter and spring: Mechanics as applied to analysis of stress and strain distribution in machine and structural elements; rational design possibilities. Prerequisite: Mth 101, 102, 103.
- ME 241. **Introduction to Aeronautics.** 2 hours. 2 ①  
 Brief descriptive survey of principles of flight, engine and propeller operations; navigation and meteorology; governmental aeronautical aids and regulations. Prerequisite: sophomore standing.
- Upper Division Courses**
- ME 311. **Strength of Materials.** 3 hours. 2 ① 1 ②  
 Principles of mechanics applied to the elements of engineering structures to determine their strength and fitness. Service course for nonmajors. Prerequisite: ME 212.
- ME 312, 313. **Metallurgy and Materials.** 3 hours each. 2 ① 1 ③  
 Nature of the solid state, atomic and crystal structure, electron and band theories of solids; constitution diagrams; solidification; deformation of metals; physical and mechanical properties of metals; methods of control of properties; corrosion; nonmetallic materials. Prerequisite: ME 219, Ph 209.
- ME 314, 315. **Strength of Materials.** 3 hours each term. 2 ① 1 ②  
 Similar to ME 311 with addition of stresses in curved beams, impact stresses, eccentric loading, and theories of failure. Prerequisite: ME 212.
- ME 316. **Materials Testing Laboratory.** 3 hours any term. 1 ① 1 ③  
 Materials of engineering construction; testing methods and specifications adopted by the American Society for Testing Materials, etc.; preparation of reports. Service course for nonmajors.
- ME 317, 318, 319. **Dynamics of Solids and Fluids.** 3 hours each term. 2 ① 1 ③  
 Kinematics and kinetics of solids in general; application of principles of mechanics to flow of compressible and incompressible fluids, kinematic aspects of machines and machine elements. Prerequisite: Mth 202, ME 217.
- ME 321, 322, 323. **Thermodynamics and Heat Transfer.** 3 hours each term. 2 ① 1 ③  
 Study of gas laws, processes, and cycles, fuels and combustion, properties of steam and other vapors, vapor cycles, boilers, steam engines and turbines, internal combustion engines, gas turbines, refrigeration cycles, and heat transfer. Prerequisite: Mth 202, Ph 209, Ch 103.
- ME 325. **Fuels and Lubricants.** 3 hours. 2 ① 1 ③  
 Preparation and processing of the tests upon solid and liquid fuels; production of motor fuels and lubricants; tests on bearings and lubricants. Prerequisite: junior standing.
- ME 331, 332. **Heat Power Engineering.** 3 hours each term. 2 ① 1 ③  
 Brief descriptive survey of the heat power plant and principal auxiliaries; physical properties and laws of gases and their application to power equipment. Prerequisite: Mth 202, Ph 209. Service course for electrical engineering students.
- ME 335. **Refrigeration and Cold Storage.** 3 hours. 2 ① 1 ③  
 Principles and practice of refrigeration and cold storage. For students in dairy manufacturing, horticulture, food industries, etc. Prerequisite: algebra and elementary physics.
- ME 336. **Steam, Air, and Gas Power.** 3 hours. 2 ① 1 ③  
 Elementary thermodynamics; properties of steam; fuels and their combustion; boilers; auxiliaries. Prerequisite: GE 101, 102, Mth 202. Service courses for agricultural, civil, and industrial engineering students.
- ME 337. **Heat Engines.** 3 hours. 2 ① 1 ③  
 Construction, operation, and performance of internal-combustion engines with emphasis on diesel types; fuels, combustion, and lubrication as applied to internal-combustion engines; boilers and auxiliaries. Prerequisite: elementary physics and chemistry. Service course for forest engineering students.

- ME 342. **Aerodynamics.** 3 hours. 3 ①  
Elementary aerodynamics theory and phenomena; characteristics of airfoils and airfoil combinations; factors affecting stability, control, and performance. Prerequisite: junior standing.
- ME 371. **Mechanical Engineering Analysis.** 3 hours. 2 ① 1 ②  
Application of mathematical analysis to problems in mechanics of solids and fluids, strength of materials, thermodynamics, electricity, and data reduction. Prerequisite: Mth 203, EE 351.
- ME 401. **Research.** Terms and hours to be arranged.
- ME 403. **Thesis.** 3 hours any term.
- ME 405. **Reading and Conference.** Terms and hours to be arranged.
- ME 407. **Seminar.** Terms and hours to be arranged.
- ME 411, 412, 413. **Machine Design.** (g) 3 hours each term. 1 ① 2 ③  
Application of the principles of mechanism, mechanics, and strength of materials to design of machine elements. Prerequisite: ME 219, ME 319.
- ME 414. **Cement and Concrete Laboratory.** (g) 3 hours. 1 ① 1 ④  
Design of portland cement concrete and asphaltic concrete. Specifications and test procedures for cements, concretes, and mineral aggregates. Use of entrained air and other admixtures. Prerequisite: ME 215 or ME 316.
- ME 416, 417, 418. **Introduction to Experimental Elasticity.** (g) 2 hours each term. 1 ① 1 ③  
Introduction to theory of elasticity, stress determinations from strain measurement, structural similitude, mechanical and electrical strain gages, photoelasticity, brittle lacquer method; miscellaneous methods in experimental stress analysis. Prerequisite: ME 215, ME 319.
- ME 419. **Mechanical Vibrations.** (G) 3 hours. 2 ① 1 ③  
Vibration as applied to mechanical engineering. General theory of systems having one or more degrees of freedom; vibration isolation and absorption; vibration measuring instruments; reciprocating and rotating inertia balance. Prerequisite: ME 219, 319, Mth 203.
- ME 421, 422. **Heating and Air Conditioning.** (G) 3 hours each term. 2 ① 1 ③  
Application of basic principles to heating, ventilating, and air conditioning of buildings for human comfort or industrial processes; design, selection, construction, and operation of air conditioning equipment, including warm air, steam, hot water, and refrigeration systems; testing of air conditioning equipment and controls. Prerequisite: ME 323.
- ME 423. **Refrigeration.** (G) 3 hours. 2 ① 1 ③  
Thermodynamics of refrigeration; systems in use and principal characteristics of each; fundamentals of design; principal applications. Prerequisite: ME 323.
- ME 425, 426, 427. **Thermodynamics and Heat Transfer.** (G) 3 hours each term. 3 ①  
More advanced and more comprehensive than ME 321, 322, 323. Prerequisite: ME 323.
- ME 428. **Nuclear Reactor Analysis.** (G) 3 hours. 3 ①  
Survey of engineering analysis of nuclear reactor in steady state and transient operation; elementary reactor theory; shielding; heat transfer and fluid flow problems. Prerequisite: ME 323, 371, or ChE 452.
- ME 431, 432, 433. **Power Plant Engineering.** (g) 3 hours each term. 2 ① 1 ③  
Performance of steam and internal-combustion engine power plants from design standpoint; heat transfer; selection of equipment. Prerequisite: ME 323.
- ME 434. **Gas Turbines and Jet Engines.** (G) 3 hours. 2 ① 1 ③  
Gas turbines as applied to power generation, process industries, and aircraft; study of various cycles and component equipment, including compressors, combustion chambers, gas turbines, heat exchangers; jets and ducts; properties of gases, fuels, and high-temperature materials. Prerequisite: ME 215, 323, 325, or equivalent.

- ME 436, 437, 438. **Mechanical Laboratory.** (g) 4 hours each term. 2 ① 2 ③  
 Testing of basic types of mechanical equipment, including selection and calibration of instruments, development and supervision of test procedures, analysis of test data, and preparation of engineering reports. Prerequisite: ME 323.
- ME 441, 442, 443. **Aeronautical Design.** (g) 3 hours each term. 1 ① 2 ③  
 Design of airplane components for specific duties. Prerequisite: ME 342.
- ME 444. **Aerodynamics.** (G) 4 hours. 3 ① 1 ③  
 Introduction into mathematical foundations of aerodynamics; perfect, viscous, and compressible fluid flows; application of results to design of aircraft. Prerequisite: ME 342, 371.
- ME 445. **Aerodynamics.** (G) 2 hours. 1 ① 1 ③  
 Application of theory to more advanced topics in aircraft performance and design with special attention to high-speed aerodynamics. Prerequisite: ME 444.
- ME 446. **Aeropropulsion.** (g) 4 hours. 3 ① 1 ③  
 Screw propeller theories; selection of engines, propellers, and power-plant accessories for specific airplanes; power-plant installation. Prerequisite: ME 444.
- ME 447, 448, 449. **Theory of Structures.** (G) 3 hours each term. 4 ①  
 Theory and application of principles of mechanics to structural analysis of mechanical and aeronautical components. Prerequisites: ME 219, 371.
- ME 451. **Aerodynamics Laboratory.** (g) 2 hours. 1 ④  
 Visual studies of flow about wings, fuselages, and other bodies; calibration of instruments, and wind tunnel tests. Prerequisite: ME 444, 436.
- ME 452. **Aeronautical Structural Laboratory.** (g) 2 hours. 1 ④  
 Application of the fundamental principles of experimental stress analysis to the solution of structural problems. Prerequisite: ME 436, 447.
- ME 453. **Aeropropulsion Laboratory.** (g) 2 hours. 1 ④  
 Special studies in aircraft engine construction, operation, and testing. Prerequisite: ME 446.
- ME 470, 471, 472. **Mechanical Engineering Analysis.** (G) 3 hours each term. 4 ①  
 Continuation of ME 371 with emphasis on analysis of professional engineering type problems using advanced mathematical methods. Prerequisite: ME 371.
- ME 473. **Mechanical Engineering Economy.** (g) 3 hours. 3 ①  
 Especially arranged for mechanical engineering students. Various industrial organization systems and their methods of operation.
- ME 476. **Industrial Instrumentation.** (G) 3 hours. 2 ① 1 ③  
 Analysis of apparatus for measurement and control of pressure, temperature, speed, process duration, dimensional tolerances, fluid flow, liquid level, moisture content, gas composition, and solution concentration. Prerequisite: ME 423, 437 or equivalent.
- ME 481. **Physical Metallurgy.** (g) 3 hours. 2 ① 1 ③  
 Constitution diagrams; homogenous and heterogeneous equilibria; properties of metals and alloys as related to structures. Prerequisite: Ch 340.
- ME 482. **Ferrous Metallography.** (g) 3 hours. 2 ① 1 ③  
 Internal structure, constitution, heat treatment, physical and mechanical properties of various irons and steels; preparation of metallographic specimens and development of microscopic structures; use of metallurgical microscope; photomicrography. Prerequisite: ME 481.
- ME 483. **Nonferrous Metallography.** (g) 3 hours. 2 ① 1 ③  
 Internal structure, constitution, heat treatment, physical and mechanical properties of copper, aluminum, magnesium, lead, and special nonferrous alloys; preparation of metallographic specimens; use of metallographical microscope; photomicrography. Prerequisite: ME 481.
- ME 491, 492, 493. **Automotive Engineering.** (G) 3 hours each term. 2 ① 1 ③  
 Correlation of fuel and lubricant characteristics with engine performance; fuel induction systems, interpretation of exhaust gas analyses, and power-plant testing; automobile body and chassis engineering; tractive resistance; fleet operation, maintenance, and economics. Prerequisite: ME 323.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- ME 501. **Research.** Terms and hours to be arranged.
- ME 503. **Thesis.** Terms and hours to be arranged.
- ME 505. **Reading and Conference.** Terms and hours to be arranged.
- ME 507. **Seminar.** Terms and hours to be arranged.
- ME 511, 512, 513. **Engineering Materials.** 3 hours each term. 1 ① 2 ②  
Critical study of specifications and testing techniques. Metals; ceramic materials; plastics; electrical insulating materials, rubber, and fabrics. Any term may be taken independently. Prerequisite: ME 316, or ME 216, or ME 215.
- ME 516, 517, 518. **Experimental Elasticity.** 3 hours each term.  
ME 516: 3 ① ME 517, 518: 2 ① 1 ③  
Mathematical theory of elasticity; experimental solution of problems in elasticity by means of photoelastic method; use of various types of strain gages, and mathematical analysis.
- ME 519. **Mechanical Vibrations.** 3 hours. 2 ① 1 ③  
General theory of systems having more than one degree of freedom; torsional vibration; geared systems; vibration of elastic structures; harmonic analysis; vibration of frames, plates, casings, turbine disks, rotors; nonlinear systems. Prerequisite: ME 419 or equivalent.
- ME 531. **Applied Thermodynamics.** 3 hours. 3 ①  
Equations of state for real gases, compressibility factors; specific heats, vapor pressures, and properties of real mixtures; available and unavailable energy; reversible and irreversible processes; entropy; compressor and turbine cycles; theory and problems in heat transfer by conduction, radiation, and convection, including the use of dimensional analysis. Prerequisite: ME 323 or equivalent.
- ME 532. **Fuel Technology.** 3 hours. 3 ①  
Manufactured and natural gas production, transmission, and distribution; industrial application. Synthetic fuels processes; combustion reactions and flame temperatures taking into account dissociation. Prerequisite: ME 323, 438, or equivalent.
- ME 534. **Gas Turbine Design.** 3 hours. 2 ① 1 ③  
Fields of application for gas turbines; factors affecting design of compressors, combustion chambers, turbines, heat exchangers, ducts, and nozzles; design of gas turbine unit for a specific application, including auxiliary equipment; testing of various components in laboratory. Prerequisite: ME 434.
- ME 546, 547, 548. **Aerodynamics.** 3 hours each term. 3 ①  
Theories of flow of perfect, viscous, and compressible fluids; theory of wings of finite and infinite spans.
- ME 574. **Theory and Application of Analog Computers.** 3 hours.  
2 ① 1 ④  
Basic theory and principles of operation of analysers including mechanical and electrical computers and networks, membrane and conducting-sheet analogies; laboratory work on solution of engineering problems on electric differential analysers. Prerequisite: Mth 321.
- ME 581. **Metallography and Pyrometry.** 3 hours. 1 ① 1 ④  
Alloy systems, microstructure, thermal analysis, photomicrography, X-ray diffraction; techniques and application to industrial problems and research.
- ME 582. **Metallography.** 3 hours. 1 ① 1 ④  
Alloy equilibrium diagrams; difficult specimens; high-power photomicrography; correlation of properties of metals with microstructure; dilatometry; structure and treatment of special steels; metal radiography. Prerequisite: ME 581.
- ME 583. **Industrial Radiology.** 3 hours. 1 ① 1 ④  
Radiographic inspection of castings, welds, and other metallic as well as nonmetallic engineering materials; X-ray diffraction applications; generating equipment, films, and protection; other nondestructive tests, including magnalux, brittle lacquers, and similar methods. Prerequisite: ME 215, EE 353, or equivalent.

# School of Forestry

## Faculty

WALTER FRASER McCULLOCH, Ed.D., Dean of the School of Forestry; Director of Forest Experiment Station; Professor of Forest Management.

GEORGE HECTOR BARNES, Ph.D., Associate Director of Forest Experiment Station; Professor of Forest Management.

WILLIAM PERRY WHEELER, M.F., Personnel Director; Assistant Professor of Forest Management.

Forest Engineering: Professors DAVIES (department head), PATTERSON (emeritus); Assistant Professors O'LEARY, WILSON.

Forest Management: Professor DILWORTH (department head), ROBINSON; Associate Professors KENISTON, NETTLETON, YODER\*; Assistant Professors ADAMS, FERRELL, KRYGIER, RANDALL, WHEELER; Instructor POWELL.

Forest Products: Professor WEST (department head); Assistant Professor McKIMMY; Instructor VAN VLIET.

Forest Extension: Farm Forestry Specialist ROSS; Forest Products Marketing Specialist SANDER.

Visiting Professors: A. J. JAENICKE, E. J. HANZLIK, D. S. JEFFERS.

**T**HE AIM of the School of Forestry at Oregon State College is the best possible development of men, citizens, and foresters—in that order.

More than 29,000,000 acres or 48 per cent of Oregon's land area is best suited to the continuous production of timber and associated crops. Oregon has the largest amount of standing timber and produces more forest products annually than any other state. The School of Forestry prepares men to manage these great properties for permanent production and for economical and efficient utilization of products.

Forestry is of great importance in Washington, Idaho, and California and provides more than half the industrial employment in Oregon. Forestry graduates are employed in the endless variety of woodworking plants, pulp and paper mills, plywood and lumber plants, and lumber sales organizations. In the woods, foresters are employed on industrial tree farms, in engineering and logging jobs on logging operations, and on road location and construction, mapping, timber cruising, and fire control projects. The public agencies employ foresters in protection, engineering, recreation, range management, forest management, timber sale administration, and reforestation. Independent foresters appraise timberlands and buy and sell timber, logs, and lumber.

The School of Forestry arranges seasonal employment for students and operates a placement service for graduates. Earlier graduates now in managerial positions give special consideration to the career development of present-day Oregon State foresters.

Minor supervisory and skilled jobs are available without professional education, but the greatest career possibilities will come to the man with a professional forestry background. The bachelor's degree from a recognized four-year forestry school is sufficient preparation today for all but specialized forestry positions. Opportunities for good men in forestry are excellent. A forestry career has several advantages: it is pleasant work; it is a growing field with expanding opportunities, particularly on the West Coast; good forestry helps to build the State and the Nation; and foresters are fine men to work with.

Forestry is an exacting and competitive profession with high academic and ethical standards. The School is one of 25 forestry schools in North America accredited by the Society of American Foresters, and it maintains high standards. The most important preparatory subjects are English, mathematics, and

\* On leave 1956-57, 1957-58.



science courses. The student who is considering forestry as a career should take at least  $1\frac{1}{2}$  years of algebra and  $\frac{1}{2}$  year of plane geometry in high school. Deficiencies revealed by the placement tests in English must be corrected.

To gain admission to the School of Forestry a prospective student should: (1) be in the upper four-fifths of his high school graduating class, and (2) place in Mathematics 100 or above as indicated by the Mathematics Placement Test taken at the beginning of the term in which the student first enrolls.

Students not meeting these minimum requirements must enroll in the Preforestry program in Lower Division. When the Preforestry student has completed the necessary remedial mathematics courses and demonstrated ability to carry college level work he may apply to the Dean of the School of Forestry for admission.

Transfer students can avoid a costly extension of their education if they come to Oregon State not later than at the end of the first year. Those who must remain in junior college for two years should concentrate on general education subjects, leaving professional forestry subjects to the School of Forestry. Students transferring two years of college credit to Oregon State should expect to spend more than two additional years in completing the four-year professional forestry program. Vocational forestry courses do not carry college credit.

The School of Forestry offers curricula in three specialized but interrelated fields: forest engineering, forest management, and forest products. In all three fields emphasis is given to West Coast forestry. Each curriculum leads to a degree of Bachelor of Science or Bachelor of Forestry. There is also a combined management-engineering program leading to degrees in both departments. Of special value to forest products majors is the Oregon Forest Products Laboratory, located on the campus.

For the bachelor's degree the student is required to complete: (1) a minimum of 204 term hours of college work plus any additional credit hours required to complete remedial work, (2) a minimum of 80 term hours of professional courses, (3) at least 9 term hours each in English composition, literature, and social sciences, (4) 36 term hours of science, or a total of 45 hours of science and social science, (5) 9 term hours of approved upper division electives in an area supporting the student's major interest, and (6) at least 6 months of practical field work satisfactory to the employer and to the school.

Through the Graduate School, all departments of the School of Forestry offer graduate work leading to the master's degree.

No summer camp is required. The school forest is only 20 minutes from the campus, and a fleet of trucks takes forestry classes there daily for field instruction. During each school year, many trips are made to woods and plants in order to give the students first-hand contact with practical phases of engineering, management, and utilization.

The school personnel program provides every student with a personal adviser, but success is dependent on the student himself. He must prove himself both on the job and on the campus; seasonal and graduate work performance is carefully appraised by the school. Foresters from Oregon State College must be competent and they must be respected.

Notable assets of the School of Forestry: The 6,809-acre McDonald Forest, 7 miles from the campus, established in 1929 through gift of the late Mrs. Mary J. L. McDonald of San Francisco. The 181-acre George W. Peavy Arboretum. The 4000-acre Adair Tract adjacent to the McDonald Forest. The 2400-acre Blodgett Tract of cutover forest land in Columbia County. The 160-acre Spaulding Tract in Benton County.

The Forest Experiment Station described on a later page is under the supervision of the School of Forestry and its work is closely associated with the instructional program.

## Curricula in Forestry

*B.S., B.F. Degrees*

*Forest Engineering  
Forest Management  
Forest Products*

*Wood Technology Option  
Wood Utilization Option*

### Common Freshman Year<sup>1</sup>

	Term hours		
	F	W	S
<sup>2</sup> General Botany (Bot 201, 202) .....	3	3	(3)
<sup>3</sup> Physical Geology (G 200) .....	(3)	(3)	3
Extempore Speaking (Sp 111) .....	.....	2	(2)
General Forestry (F 111) .....	2	.....	.....
Forest Orientation (F 110) .....	(3)	.....	3
Tree Identification (F 153) .....	(3)	3	(3)
Forest Engineering (FE 123) .....	4	4	.....
<sup>4</sup> Mathematics (Mth 101, 102) .....	3	3	3
English Composition (Wr 111, 112, 113) .....	(3)	(3)	3
Engineering Drawing (GE 115) .....	1-3	1-3	1-3
Air, Military, or Naval Science .....	1	1	1
Physical Education, General Hygiene .....	.....	.....	.....
	14-16	17-19	17-19

### Forest Engineering

#### Sophomore Year

Mensuration (F 224) .....	(5)	5	(5)
Forest Engineering (FE 223) .....	(4)	(4)	4
Wood Technology (FP 210) .....	3	.....	.....
Forest Protection (F 231) .....	.....	(3)	3
<sup>5</sup> West Coast Forestry (F 207) .....	1	.....	.....
Engineering Physics (Ph 207, 208, 209) .....	4	4	4
Differential and Integral Calculus (Mth 201) .....	4	.....	.....
American Governments (PS 201, 203) .....	3	3	.....
Outlines of Economics (Ec 212) .....	(3)	(3)	3
Technical Report Writing (Wr 227) .....	(3)	3	(3)
Air, Military, or Naval Science .....	1-3	1-3	1-3
Physical Education .....	1	1	1
	17-19	17-19	16-18

#### Junior Year

Forest Valuation (F 324) .....	.....	(3)	3
Wood Utilization (FP 310) .....	3	.....	.....
Forest Engineering (FE 323) .....	(4)	.....	4
Northwest Logging (FE 360) .....	.....	4	.....
Logging Roads (FE 361) .....	.....	3	.....
Silviculture: Forest Practices (F 342) .....	4	.....	.....
Timber Mechanics (FP 321) .....	.....	4	.....
Aerial Photo-Interpretation in Forestry (F 320) .....	(3)	(3)	3
Seminar (F 307) .....	3	3	1
Principles of Accounting (BA 211, 212) .....	3	.....	.....
Heat Engines (ME 337) .....	3	.....	3
Literature .....	4	4	3
Electives .....	.....	1	.....
	17	18	17

<sup>1</sup> Remedial courses in English and mathematics preceding the college courses will be required unless the student demonstrates ability to undertake college level work. All students receiving credit for the English sequence but who fail to pass a comprehensive examination given upon completion of the sequence will be required to take additional English courses.

<sup>2</sup> Forest engineering majors do not take Bot 202.

<sup>3</sup> Forest management majors only take G 200. Forest engineering majors substitute Ch 130.

<sup>4</sup> Forest products majors and forest engineering majors add Mth 103.

<sup>5</sup> Required only of students who by reason of transfer to Oregon State College or because of experience are excused from F 110.

	Term hours		
	F	W	S
<b>Senior Year</b>			
Logging Plans (FE 461) .....	5	---	---
Logging Transportation (FE 462) .....	---	5	---
Logging Costs (FE 463) .....	---	---	5
Forest Economics (F 412) .....	(3)	3	---
Forest Administration (F 415) .....	---	(3)	3
Timber Management (F 425) .....	---	---	5
Fire Control (F 431) .....	(4)	4	---
Seminar (FE 407) .....	---	---	1
Business Law (BA 411) .....	3	(3)	(3)
Geology .....	3	---	---
Literature .....	3	3	---
Electives .....	4	3	4
	18	18	18

**Forest Management**

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Dendrology (F 253) .....	(3)	---	3
Mensuration (F 224) .....	(5)	(5)	5
Forest Protection (F 231) .....	(3)	3	(3)
Forest Engineering (FE 223) .....	4	---	(4)
Wood Technology (FP 210) .....	---	3	(3)
*West Coast Forestry (F 207) .....	1	---	---
American Governments (PS 201, 203) .....	3	(3)	3
Forest Soils (Sls 214) .....	---	---	3
Outlines of Economics (Ec 212) .....	(3)	3	(3)
Abridged General Physics (Ph 211, 212) .....	3	3	---
General Chemistry (Ch 101, 102) .....	3	3	---
Physical Education .....	1	1	1
Air, Military, or Naval Science .....	1-3	1-3	1-3
	16-18	17-19	16-18

**Junior Year**

Aerial Photo-Interpretation in Forestry (F 320) .....	(3)	(3)	3
Wood Utilization (FP 310) .....	3	(3)	---
Mensuration: Timber Growth (F 327) .....	---	5	(5)
Logging Methods (FE 392) .....	---	(3)	3
Silviculture: Forest Ecology (F 341) .....	4	---	---
Silviculture: Forest Practices (F 342) .....	---	---	4
Silviculture: Forestation (F 343) .....	---	4	---
Forest Valuation (F 324) .....	---	(3)	3
Forest Engineering (FE 323) .....	4	---	(4)
Seminar (F 307) .....	(1)	---	1
Technical Report Writing (Wr 227) .....	(3)	3	(3)
Literature .....	3	3	---
Electives .....	4	3	4
	18	18	18

**Senior Year**

*Watershed Management (F 424) or Industrial Forestry (F 427) .....	---	3	---
Forest Economics (F 412) .....	(3)	3	---
Forest Engineering (FE 423) .....	4	---	(4)
Timber Management (F 425) .....	5	---	---
Forest Administration (F 415) .....	---	(3)	3
Fire Control (F 431) .....	(4)	4	---
Seminar (F 407) .....	---	(1)	1
Range Management (AH 341) .....	3	(3)	---
Public Administration (PS 411) .....	(3)	---	3
Literature .....	---	3	---
Electives .....	6	5	10
	18	18	17

<sup>1</sup> Required only of students who by reason of transfer to Oregon State College or because of experience are excused from F 110.

<sup>2</sup> See adviser.

	Term hours		
	F	W	S
<b>Forest Products</b>			
<b>Common Sophomore Year</b>			
Literature .....	.....	.....	3
West Coast Forestry (F 207) .....	1	.....	.....
Mensuration (F 224) .....	5	.....	(5)
Forest Engineering (FE 223) .....	(4)	.....	4
Forest Protection (F 231) .....	3	.....	.....
Wood Identification (FP 311) .....	.....	.....	3
General Chemistry (Ch 101, 102, 103 or Ch 201, 202, 203) .....	3	3	3
Technical Report Writing (Wr 227) .....	.....	3	(3)
Outlines of Economics (Ec 212) .....	.....	3	.....
American Governments (PS 201, 203) .....	.....	3	3
Principles of Accounting (BA 211, 212) .....	3	3	.....
Air, Military, or Naval Science .....	1-3	1-3	1-3
Physical Education .....	1	1	1
	17-19	17-19	18-20

WOOD TECHNOLOGY OPTION<sup>2</sup>

<b>Junior Year</b>			
Wood Utilization (FP 310) .....	.....	.....	3
Wood Properties (FP 314) .....	4	.....	.....
Timber Mechanics (FP 321, 322) .....	.....	4	4
Seminar (F 307) .....	.....	.....	1
General Physics (Ph 201, 202, 203) .....	4	4	4
Literature .....	3	3	.....
Electives .....	6	6	6
	17	17	18

<b>Senior Year</b>			
The Lumber Plant (FP 451) .....	3	.....	.....
Wood Industry Problems (FP 452) .....	.....	3	.....
Merchandising of Forest Products (FP 453) .....	.....	.....	3
Ply and Laminated Products (FP 464) .....	3	.....	.....
Wood Seasoning (FP 465) .....	.....	3	.....
Wood Preservation (FP 466) .....	.....	.....	3
Forest Administration (F 415) .....	.....	.....	3
Seminar (FP 407) .....	.....	.....	1
Electives .....	12	12	6
	18	18	16

## WOOD UTILIZATION OPTION

<b>Junior Year</b>			
Literature .....	.....	.....	3 (3)
Silviculture: Forest Practices (F 342) .....	4	.....	.....
Wood Properties (FP 314) .....	4	.....	4
Timber Mechanics (FP 321, 322) .....	.....	4	4
Logging Methods (FE 392) .....	.....	(3)	3
Seminar (F 307) .....	.....	.....	1
General Physics (Ph 201, 202, 203) or Engineering Physics (Ph 207, 208, 209) .....	4	4	4
Finance (BA 312) .....	.....	4	.....
Wood Utilization (FP 310) .....	6	.....	3
Electives .....	6	3	3
	18	18	18

<sup>1</sup> Required only of students who by reason of transfer to Oregon State College or because of experience are excused from F 110.

<sup>2</sup> Provides maximum choice of electives in specialized supporting work in science and technology. Subject to approval of his adviser, the student must select and complete two sequences, exclusive of advanced military training, of science or technology courses, and may use rest of elective hours for additional technical courses which will meet his particular educational interests. Elective sequences and other technical electives are available in chemistry, mathematics, physics, plant science, forest management, industrial engineering, etc.

	Term hours		
	F	W	S
<b>Senior Year</b>			
The Lumber Plant (FP 451) .....	3	.....	.....
Wood Industry Problems (FP 452) .....	.....	3	.....
Merchandising of Forest Products (FP 453) .....	.....	.....	3
Ply and Laminated Products (FP 464) .....	3	.....	.....
Wood Seasoning (FP 465) .....	.....	3	.....
Wood Preservation (FP 466) .....	.....	.....	3
Forest Administration (F 415) .....	.....	.....	3
Forest Economics (F 412) .....	.....	3	.....
Seminar (FP 407) .....	.....	.....	1
Literature .....	3	.....	.....
Electives .....	8	8	6
	17	17	16

## Forest Engineering

Courses in forest engineering are designed to prepare men to deal with the woods problems peculiar to the lumber industry of the Pacific Northwest. Emphasis is placed on the preparation of logging plans and the transportation of timber from the woods to the mills.

### Lower Division Courses

- FE 123. Forest Engineering. 3 hours. 2 ① 1 ④  
 Measurement of distance, direction, and elevation. Prerequisite: Mth 102.
- FE 223. Forest Engineering. 4 hours. 2 ① 1 ⑥  
 Topographic surveying; direct and indirect leveling; computing and plotting of field data. Prerequisite: FE 123, engineering drawing.

### Upper Division Courses

- FE 323. Forest Engineering. 4 hours. 2 ① 1 ⑥  
 Public land survey; stadia; plane table; polar and solar observation; triangulation; drafting of field data. Prerequisite: FE 223.
- FE 360. Northwest Logging. 4 hours. 2 ① 1 ⑥  
 A basic course in logging methods and equipment with particular application to the Pacific Northwest. Prerequisite: Mth 103, F 224, FE 223.
- FE 361. Logging Roads. 3 hours. 2 ① 1 ③  
 Problems in design of logging roads. Prerequisite: Ph 209, FE 223.
- FE 392. Logging Methods. 3 hours. 2 ① 1 ③  
 Relation between logging and forest production; felling and bucking; skidding, loading, hauling; relative merits of various methods. Prerequisite: FE 123, F 224.
- FE 401. Research. Terms and hours to be arranged.
- FE 403. Thesis. Terms and hours to be arranged.
- FE 405. Reading and Conference. Terms and hours to be arranged.
- FE 407. Seminar. 1 hour. 1 ①
- FE 423. Forest Engineering. (g) 4 hours. 3 ① 1 ④  
 Basic logging plans and route surveys. Prerequisite: FE 323, FE 392.
- FE 461. Logging Plans. (g) 5 hours. 2 ① 1 ③ 1 ⑥  
 Basic logging plans; analysis of timbered areas for development of logging operations; preliminary transportation plans. Prerequisite: FE 323, FE 360, FE 361, FP 321.
- FE 462. Logging Transportation. (g) 5 hours. 2 ① 1 ③ 1 ⑥  
 Working plans from data obtained in FE 461; development of transportation systems. Prerequisite: FE 461.

<sup>1</sup>A substitution of Forest Management (F 426) or Industrial Forestry (F 427) will be permitted.

- FE 463. **Logging Costs.** (g) 5 hours. 2 ① 1 ③ 1 ⑥  
 Management control; economic theory of location and construction; costs of surveys, construction, operation, and maintenance. Prerequisite: FE 462.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- FE 501. **Research.** Terms and hours to be arranged.  
 FE 503. **Thesis.** Terms and hours to be arranged.  
 FE 505. **Reading and Conference.** Terms and hours to be arranged.  
 FE 507. **Seminar.** Terms and hours to be arranged.  
 Subject matter as required by graduate programs.  
 FE 525. **Forest Engineering.** 3 hours. 2 ① 1 ④  
 Advanced logging plans and route surveys. Not open to forest engineering majors.  
 FE 560. **Logging Methods.** 4 hours. 2 ① 1 ⑥  
 Studies of current developments in logging methods and equipment.  
 FE 561, 562, 563. **Logging Engineering.** 5 hours each term. 2 ① 1 ③ 1 ⑥  
 Advanced study of logging plans and timber transportation systems.  
 FE 581. **Timber Bridge Design.** 3 hours. 1 ① 1 ⑥  
 Problems in location, design, and construction of timber bridges in logging transportation systems.

## Forest Management

The courses in forest management afford a basic training for the practice of forestry, particularly in the Pacific Northwest. Emphasis is placed upon the technical and administrative measures necessary to produce the greatest values from all forest resources.

#### Lower Division Courses

- F 110. **Forest Orientation.** 2 hours. 2 ①  
 Survey of vocational opportunities and requirements in forest engineering, forest products, and forest management; orientation of the student to the profession.  
 F 111. **General Forestry.** 2 hours. 2 ①  
 Preliminary survey of the entire field of forestry including the development of forestry in the United States and the origin and distribution of our public domain. Restricted to forestry students.  
 F 153. **Tree Identification.** 3 hours. 1 ① 2 ②  
 Principal Pacific Coast timber trees; range, occurrence, size, growth, form; climate, soil, moisture requirements, value; wildlife uses.  
 F 207. **West Coast Forestry.** 1 hour. 1 ①  
 Orientation for students who enter by transfer and need background information about western forestry.  
 F 224. **Mensuration.** 5 hours. 3 ① 1 ⑥  
 Measurement of standing and felled timber and timber products. Prerequisite: FE 123, F 153.  
 F 231. **Forest Protection.** 3 hours. 2 ① 1 ③  
 Survey of the major causes of forest damage and their application in forest management. Recognition of damage, methods of salvage, preventive measures, control of damage. Prerequisite: F 153.  
 F 253. **Dendrology.** 3 hours. 1 ① 2 ②  
 Classification and identification of forest trees in the United States; silvical characteristics and distribution; life history and requirements. Prerequisite: F 153.

- F 260. **Conservation of Natural Resources.** 3 hours. 3 ①  
 Nature, extent, and importance of organic resources of United States and operation of various forest agencies in conserving them; forest, forage, recreation, wildlife, soil, water aspects. Not open to forestry majors.

**Upper Division Courses**

- F 307. **Seminar.** 1 hour. 1 ①
- F 320. **Aerial Photo-Interpretation in Forestry.** 3 hours. 2 ① 1 ③  
 Techniques and principles of forest photo-interpretation; forest type mapping; volume estimation from aerial photographs. Prerequisite: F 224.
- F 324. **Forest Valuation.** 3 hours. 2 ① 1 ③  
 Valuation as a tool of management in forest enterprises; methods of valuing various types of assets, including land, stumpage, capital equipment, and the going operation.
- F 327. **Mensuration: Timber Growth.** 5 hours. 3 ① 2 ③  
 Growth of even-aged stands; growth of many-aged stands; growth of individual trees. Prerequisite: F 224.
- F 341. **Silviculture: Forest Ecology.** 4 hours. 3 ① 1 ③  
 Influence of environmental factors on the development, distribution, and succession of forest vegetation. Prerequisite: F 231.
- F 342. **Silviculture: Forest Practices.** 4 hours. 3 ① 1 ③  
 Treatment of stands to insure perpetuation of forest resources. Prerequisite: F 341 (for forest management majors).
- F 343. **Silviculture: Forestation.** 4 hours. 3 ① 1 ③  
 Forest land examination and classification; reproduction surveys; planting plans; establishment and maintenance of plantations; nursery practices. Prerequisite: F 341.
- F 344. **Farm Forestry.** 3 hours. 2 ① 1 ③  
 Relation of forest resources and forestry to agriculture, with emphasis on techniques of farm-woodland management and utilization of farm-forest products. Designed especially for agricultural students. Offered alternate years. Not offered 1957-58.
- F 364. **Park Forestry.** 3 hours. 2 ① 1 ③  
 Trees and their treatment for park and recreational purposes. Offered alternate years. Offered 1957-58.
- F 365. **Forest Recreation.** 3 hours. 2 ① 1 ③  
 Forest recreation, its importance and nature; planning forest use for recreational purposes in relation to other forest use. Not offered 1957-58.
- F 370. **Field Work.** 1 to 6 hours.  
 Practical field work between the sophomore and junior years or the junior and senior years carried on with private concerns or public agencies; report based on an approved outline. (See Section of Academic Regulations regarding work done in absentia.)
- F 401. **Research.** Terms and hours to be arranged.
- F 403. **Thesis.** Terms and hours to be arranged.
- F 405. **Reading and Conference.** Terms and hours to be arranged.
- F 407. **Seminar.** 1 hour fall. 1 ①
- F 411. **Forest Land Use.** 3 hours. 3 ①  
 Application of principles and techniques of economic planning to the problem of coordinating forest land uses with one another and with other forms of land use.
- F 412. **Forest Economics.** (g) 3 hours. 3 ①  
 Economics of forest management and utilization; forest credit, taxation, and marketing.

- F 415. **Forest Administration.** (g) 3 hours. 3 ①  
Administrative organization and personnel work of public and private forest agencies.  
Prerequisite: F 307.
- F 417, 418. **Regional Forestry.** 2 hours each term. 2 ①  
Survey of the field of forest management. Of special interest to those who plan to enter the Federal or State Forest Service.
- F 424. **Watershed Management.** (g) 3 hours. 2 ① 1 ③  
Principles of forest management applied to integrated use of all forest resources for the production of water. Prerequisite: F 341, 342, 343.
- F 425. **Timber Management.** (g) 5 hours. 4 ① 1 ③  
Principles and practices in the regulation of forest properties for sustained yield; timber inventories and management plans. Prerequisite: F 327, for management majors.
- F 426. **Forest Management.** 3 hours. 2 ① 1 ③  
A comprehensive course in the general principles of forest management for students majoring in other fields. Prerequisite: F 224.
- F 427. **Industrial Forestry.** (G) 3 hours. 3 ①  
The principles and methods employed in the operation of industrial forest properties in the Northwest.
- F 431. **Fire Control.** (g) 4 hours. 3 ① 1 ③  
Scientific basis for fire control. Fire-control planning and administration. Prerequisite: F 231.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- F 501. **Research.** Terms and hours to be arranged.
- F 503. **Thesis.** Terms and hours to be arranged.
- F 505. **Reading and Conference.** Terms and hours to be arranged.
- F 507. **Seminar.** Terms and hours to be arranged.  
Subject matter as required by graduate programs.
- F 511. **Economics of Private Forestry.** 3 hours. 3 ①  
Economic and financial problems of private forestry, including insurance, forest credit, cost analysis, and practical problems in forest finance.
- F 512. **Economics of the Forest Resource.** 3 hours. 3 ①  
Place of forests in national and regional economy; structure of forest industries; forest ownership, taxation, and public policy.
- F 513. **Economics of Forest Utilization.** 3 hours. 3 ①  
Factors affecting costs and returns in forest industries.
- F 515. **Forest Administration.** 3 hours. 3 ①  
Organization, administration, operating problems of public and private forestry agencies.
- F 520. **Aerial Photo Mensuration.** 3 hours. 1 ① 2 ③  
Advanced methods in use of aerial photographs in forest inventory; photomensurational techniques in preparation of stand and tree volume tables; planning large scale photomensurational projects.
- F 521, 522, 523. **Forest Management.** 3 hours each term. 2 ① 1 ③  
Managing even-aged and many-aged stands for timber production.
- F 531. **Fire Control.** 3 hours. 2 ① 1 ③  
Forest-fire plans, their preparation and execution.
- F 541, 542, 543. **Silviculture.** 3 hours each term. 2 ① 1 ③  
Advanced approach in treatment of stands; research methods.



## Forest Products

Courses in forest products are designed to meet the needs of those who plan a career in the field of wood utilization. In meeting student objectives it is often desirable to build a study program in cooperation with courses offered in chemistry, physics, and engineering. Special emphasis is given to the practical aspects of the existing and expanding manufacturing techniques in the Pacific Northwest.

### Lower Division Course

- FP 210. **Wood Technology.** 3 hours. 2 ① 1 ③  
 Wood structure, properties, seasoning, grading and treatment; wood identification with the hand lens. Abbreviated course for students not majoring in forest products. Prerequisite: F 153 and F 111 or F 260.

### Upper Division Courses

- FP 310. **Wood Utilization.** 3 hours. 3 ①  
 Survey of the principal wood-using industries; economics, species used, manufacturing processes and products; special emphasis on the Pacific Coast industries. Prerequisite: FP 210; FP 314 for forest products majors.
- FP 311. **Wood Identification.** 3 hours. 1 ① 2 ③  
 Identification of commercial woods with a hand lens; brief introduction to their microscopic structure. Prerequisite: F 153, Bot 201.
- FP 314. **Wood Properties.** 4 hours. 2 ① 2 ③  
 Anatomy of wood; physical and chemical characteristics as related to behavior and uses. Prerequisite: FP 311.
- FP 321. **Timber Mechanics.** 4 hours. 2 ① 2 ③  
 Graphic and analytic statics applied to simple structures and structural elements of wood; stress, strain, strength and elastic characteristics of wood; design and selection of structural elements. Prerequisite: Mth 103, FP 210 or 314.
- FP 322. **Timber Mechanics.** 4 hours. 2 ① 2 ③  
 Development, scope, and procedures of timber testing; factors affecting the strength of wood; gathering and analysis of mechanical properties data; timber fastenings and fabrication; design problems. Prerequisite: FP 321.
- FP 401. **Research.** Terms and hours to be arranged.
- FP 403. **Thesis.** Terms and hours to be arranged.
- FP 405. **Reading and Conference.** Terms and hours to be arranged.
- FP 407. **Seminar.** 1 hour. 1 ①
- FP 451. **The Lumber Plant.** (g) 3 hours. 2 ① 1 ③  
 Survey of physical facilities of the several types of lumber manufacturing plants; equipment selection, operation, maintenance, and power requirements. Prerequisite: FP 310 or consent of instructor.
- FP 452. **Wood Industry Problems.** (g) 3 hours. 2 ① 1 ③  
 Manufacturing problems in wood-using industries; raw material, types of products, production problems, cost analysis, residue utilization, and administration.
- FP 453. **Merchandising of Forest Products.** (g) 3 hours. 3 ①  
 Trade practices and customs pertaining to distribution of forest products, wholesale and retail. Prerequisite: FP 310; FP 451 for forest products majors.
- FP 464. **Ply and Laminated Products.** (g) 3 hours. 2 ① 1 ③  
 Factors affecting gluing of wood; production and properties of glues, veneers, ply and laminated products, and modified wood; gluing techniques and commercial practices; equipment used; field trips. Prerequisite: senior standing in forest products.

- FP 465. **Wood Seasoning.** (g) 3 hours. 2 ① 1 ③  
 Technical aspects of wood drying; types, operation, and maintenance of drying facilities; lumber, veneer, and particles. Prerequisite: FP 314 or consent of instructor.
- FP 466. **Wood Preservation.** (g) 3 hours. 2 ① 1 ③  
 Agencies of wood deterioration; principal preservatives; preparation of wood for treatment; wood preserving processes; properties of treated wood; treating plants and equipment; economic aspects of wood preservation. Prerequisite: FP 314 or consent of instructor.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G)  
 may be taken for graduate credit.

- FP 501. **Research.** Terms and hours to be arranged.
- FP 503. **Thesis.** Terms and hours to be arranged.
- FP 505. **Reading and Conference.** Terms and hours to be arranged.
- FP 507. **Seminar.** Terms and hours to be arranged.  
 Subject matter as required by graduate program.
- FP 514. **Physical Properties of Wood.** 3 hours.  
 Advanced specialized, analytical, and experimental investigations of the mechanical or other physical properties of wood; studies of the relation of physical properties to specific uses.
- FP 516. **Wood Anatomy.** Terms and hours to be arranged.  
 Specific knowledge and technique required for specialization in various fields of forest products; laboratory training in sectioning, staining, and preparation of slides of woody material for microscopic studies related to advanced wood anatomy.
- FP 551, 552, 553. **Wood Industry Problems.** 3 hours each term.  
 Plant layout planning; production studies; production control; residue utilization; management; merchandising.
- FP 564. **Ply and Laminated Products.** 3 hours.  
 Investigations of special gluing problems; testing adhesives used in ply and laminated construction; relation of physical properties of wood to bonding problems; extensive study of technical literature.
- FP 565. **Wood Seasoning.** 3 hours.  
 Analysis of special problems relating to the drying of wood; investigation of procedures and equipment; design of schedules.
- FP 566. **Wood Preservation.** 3 hours.  
 Advanced work in wood preservation designed to meet needs of individual students, with special attention to theoretical considerations and factors that control efficiency of treating processes.

# School of Home Economics

## Faculty

MIRIAM G. SCHOLL, Ed.D., Dean of the School of Home Economics.

VERA L. WELLS, M.S., Head Counselor.

AVA MILAM CLARK, M.A., Professor Emeritus of Home Economics. (Dean and Director School of Home Economics 1917-1950.)

VERA BRANDON, Ph.D., Professor Emeritus of Home Economics. (Acting Dean, School of Home Economics 1950-1954, Associate Dean 1954-1955.)

Clothing, Textiles, and Related Arts: Professors PETZEL (department head), FRITCHOFF (emeritus), GATTON, PATTERSON<sup>1</sup>, STRICKLAND (emeritus); Associate Professors DIED-ESCH<sup>2</sup>, EDABURN, INGALLS; Assistant Professors GRANT, LEDBETTER, MOSER, SMITH; Instructors NELSON, WELLS; Graduate Assistant BUCKWALTER.

Family Life and Home Administration: Professors READ (department head), KIRKENDALL, BRANDON (emeritus), PRENTISS (emeritus); Associate Professors VAN HORN<sup>3</sup>, WIGGENHORN<sup>3</sup>; Assistant Professors AIKIN, PLONK, SCHALOCK; Instructors EMERSON, HART, HOEART, MARTIN; Graduate Assistants MANN, PARK, PEHRSON, STRONG.

Foods and Nutrition: Professors FINCKE (department head), MACKEY, STORVICK, WILLIAMS (emeritus); Associate Professors CHARLEY, HAWTHORNE, TANK; Assistant Professors GARRISON, HUNTER, WARE<sup>4</sup>; Instructors FENNER, MORGAN, PAASCHE, VALSEY; Graduate Assistant DUNCAN.

Home Economics Education: Professor DUBOIS (department head); State Supervisor and Teacher-Trainer KOHLHAGEN; Associate Professor MCQUESTEN; Instructor WOHLGENANT.

Home Economics Research: Professors STORVICK (chairman), MACKEY, WILSON (emeritus); Associate Professors CHARLEY, HAWTHORNE, INGALLS, TANK; Research Assistants (Instructors) CECIL, EDWARDS, HERMANN, IRGENS-MÖLLER, JOINER, STOCKMAN; Graduate Research Fellows MORLEY, STIRNIMAN; Graduate Research Assistants MILLER, ROA.

Institution Management: Assistant Professors MULHERN (chairman, manager of women's food service), CLEVELAND (manager of Memorial Union food service).

Home Economics Extension: Professors CLINTON (State Leader of Home Economics Extension), TASKERUD (State Agent), KOLSHORN<sup>4</sup> (Nutrition Specialist); Associate Professors SEDGWICK, SCALES (State Agents), CARTER (Home Furnishings Specialist), MALLALIEU<sup>4</sup> (Recreation Specialist), MINDEN (Home Management Specialist), ROUTH, POTTER (Clothing Specialists); Assistant Professors WEIGANT (Acting Recreation Specialist), PRICE (Home Management Specialist).

## General Statement

REGON STATE COLLEGE has provided education for women in home economics since 1889, when home economics was in its early beginnings and first organized as a body of knowledge having to do with the science and art of homemaking. Since then, tremendous changes in living have taken place, and a vast amount of knowledge is now available to enhance home and family life. Each year the home economics profession makes increasing contributions to community and society and to the well being of individuals and families around the world. For these and other reasons the demand for women with college training in home economics continues to increase. They are sought after in commerce and industry, by government, and by educational, philanthropic, and international agencies for positions in teaching, extension, business, and research.

The School of Home Economics has three major objectives: (1) to provide the best possible educational opportunities for women, (2) to assist students in fitting themselves for their varied and dual roles as individuals and homemakers, and (3) to provide training for professional careers.

All home economics students take some work in each of the basic areas: clothing, textiles, and related arts; foods and nutrition; and family life and

<sup>1</sup> On sabbatical leave Fall term 1956-57.

<sup>2</sup> On sabbatical leave Spring term 1956-57.

<sup>3</sup> On leave 1956-57.

<sup>4</sup> On sabbatical leave 1956-57.

home administration. They also take work in arts and letters, social science, and science. Two home management houses and two nursery schools provide opportunities for practical experience.

**Curricula.** In order to provide for differing interests of students, three curricula are offered for baccalaureate degrees:

*Curriculum A* prepares for homemaking, home economics teaching, nursery school teaching, home economics extension work, business, and other earning fields related to home economics.

*Curriculum B* prepares for hospital dietetics and institution management in addition to those fields listed under Curriculum A. It prepares for graduate work in foods and nutrition and for college teaching and research.

*Curriculum C* is for students who wish to pursue a more general program, or special types of programs. Students transferring into the School of Home Economics after two years of college study often follow Curriculum C.

One- and two-year students who are interested in home economics but who are not candidates for degrees may plan, with the help of their advisers, special programs to meet individual needs, capabilities, and interests. In such special programs students may elect a variety of courses in other schools and departments of the college.

**Graduate Study and Research.** Through the Graduate School, all departments of the School of Home Economics offer work leading to the master's degree (M.A., M.S., M.H.Ec.). The Master of Home Economics degree may also be completed with a major in general home economics. The Doctor of Philosophy degree is offered in foods and nutrition and in family life and home administration.

Through research and extension, effort is constantly directed toward the solution of problems of home and family life. The School of Home Economics cooperates with the Agricultural Experiment Station in research programs and undertakes studies supported by State and General Research Funds.

## Curricula in Home Economics

### *B.A., B.S. Degrees*

#### Curriculum A

##### General Notes

a. This curriculum includes one-third specified courses in home economics, one-third specified courses in arts and sciences, and one-third electives. The electives provide opportunity for specialization within the School of Home Economics and additional work in the arts, sciences, and social sciences. See areas of concentration and minors on later pages.

b. Students may be exempted from Elementary Clothing (CT 111) by passing a Clothing Placement Test.

c. General Hygiene (PE 160), 2 term hours, is taken one term in place of physical education.

	Term hours		
	F	W	S
Freshman Year			
Color and Composition (AA 160, 161) .....	3	3	(3)
Physical or biological science with laboratory (General Chemistry recommended) .....	3-4	3-4	3-4
English Composition (Wr 111, 112, 113) .....	3	3	3
Introduction to Home Economics (HAd 101) .....	1	....	....
History and Literature of Music (Mus 221) or Survey of Visual Arts (AA 201, 202 or 203) (recommended, not required) .....	3	3	3
Nutrition (FN 225) .....	(3)	(3)	3
Textiles (CT 250) .....	(3)	3	(3)
Clothing (Selection) (CT 211) .....	(3)	(3)	3
Elementary Clothing (CT 111) .....	(3)	(3)	3
Physical Education .....	1	1	1
Electives .....	3	(3)	(3)

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Foods (FN 211, 212, 213 or FN 220, 221, 222) .....	3	3	3
Clothing (Construction) (CT 212) .....	3	(3)	(3)
House Planning and Architectural Drawing (AA 178) .....	(3)	(3)	3
Marriage (FL 222) .....	(2)	(2)	2
General Psychology (Psy 201, 202) .....	3	3	(3)
History of Western Civilization (Hst 101, 102, 103) .....	3	3	3
Literature .....	3	3	(3)
Physical Education .....	1	1	1
Electives .....	(3)	3	3
	16	16	17

<b>Junior Year</b>			
Home Furnishings (CT 331) .....	3	(3)	(3)
Management in Family Living (HAd 340) .....	(2)	2	(2)
Family Finance Management (HAd 341) .....	(2)	2	(2)
Child Development (FL 311, 312) .....	3	3	(3)
General Sociology (Soc 212) .....	(3)	3	(3)
Outlines of Economics (Ec 212) .....	3	(3)	(3)
Literature .....	(3)	(3)	3
Family Nutrition (FN 325) .....	(2)	(2)	2
Historic Costume (CT 309) and Costume Design (CT 311) or Consumer Buying in Clothing and Textiles (CT 350) or Flat Pattern and Draping (CT 310) or Clothing for Children (CT 320), or Textile Design (CT 335) or Home Furnishing Laboratory (CT 332) or Historic Textiles (CT 460) (senior year) .....	(3)	(3)	3
Physiology (Z 331, 332) .....	3	3	---
Electives .....	4	4	7
	16	17	15

<b>Senior Year</b>			
The Nursery School Child (FL 425) .....	3	(3)	(3)
Home Management House (HAd 450) .....	(5)	5	(5)
Political Science .....	(3)	3	(3)
Food Demonstrations (FN 410) or Food Purchasing (FN 411) or Food Management (FN 412) or Home Food Preservation (FN 414) or Quantity Cookery (IM 311) .....	3	(3)	(3)
Electives .....	12	8	16
	18	16	16

## Curriculum B

### General Notes

a. This curriculum includes specified courses in home economics and in the arts and sciences. About one-fourth of the curriculum consists of electives which provide opportunity for specialization within the School of Home Economics and for additional work in the arts, sciences, or social sciences. See areas of concentration and minors on later pages.

b. Students may be exempted from Elementary Clothing (CT 111) by passing a Clothing Placement Test.

c. General Hygiene (PE 160), 2 term hours, is taken one term in place of physical education.

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Color and Composition (AA 160, 161) .....	3	3	(3)
General Chemistry (Ch 101, 102, 103) .....	3	3	3
English Composition (Wr 111, 112, 113) .....	3	3	3
Introduction to Home Economics (HAd 101) .....	1	---	---
History and Literature of Music (Mus 221) or Survey of Visual Arts (AA 201, 202, 203) (recommended, not required) .....	3	3	3
Nutrition (FN 225) .....	(3)	(3)	3
Textiles (CT 250) .....	(3)	3	(3)
Clothing (Selection) (CT 211) .....	---	(3)	3
Elementary Clothing (CT 111) .....	(3)	(3)	3
Physical Education .....	1	1	1
Electives .....	3	(3)	(3)

	Term hours		
	F	W	S
<b>Sophomore Year</b>			
Foods (FN 220, 221, 222) .....	3	3	3
Clothing (Construction) (CT 212) .....	(3)	(3)	3
House Planning and Architectural Drawing (AA 178) .....	(3)	(3)	3
Marriage (FL 222) .....	(2)	(2)	2
Psychology (Psy 201, 202) .....	3	3	(3)
History of Western Civilization (Hst 101, 102, 103) .....	3	3	3
Organic Chemistry (Ch 221) .....	4	—	—
Elements of Biochemistry (Ch 250) .....	3	4	—
Physiology (Z 331, 332) .....	3	3	—
Physical Education .....	1	1	1
	17	17	15
<b>Junior Year</b>			
Home Furnishing (CT 331) .....	(3)	3	(3)
Management in Family Living (HAd 340) .....	2	(2)	(2)
Family Finance Management (HAd 341) .....	2	(2)	(2)
Child Development (FL 311, 312) .....	3	3	(3)
General Sociology (Soc 212) .....	(3)	(3)	(3)
Outlines of Economics (Ec 212) .....	(3)	(3)	(3)
Literature .....	3	3	3
Nutrition (FN 321) .....	4	(4)	—
Historic Costume (CT 309) and Costume Design (CT 311) or Consumer Buying in Clothing and Textiles (CT 350) or Flat Pattern and Draping (CT 310) or Clothing for Children (CT 320) or Textile Design (CT 335) or Home Furnishing Laboratory (CT 332) or Historic Textiles (CT 460) (senior year) .....	3	3	3
General Bacteriology (Bac 204) .....	3	(3)	(3)
Extempore Speaking (Sp 111) or Elementary Journalism (J 111) .....	(3)	(3)	3
Electives .....	—	4	4
	17	16	16
<b>Senior Year</b>			
The Nursery School Child (FL 425) .....	3	(3)	(3)
Home Management House (HAd 450) .....	(5)	5	(5)
Political Science .....	(3)	(3)	3
Food Demonstrations (FN 410) or Food Purchasing (FN 411) or Food Management (FN 412) or Home Food Preservation (FN 414) or Recent Advances in Foods (FN 425) or Experimental Cookery (FN 435) or Quantity Cookery (IM 311) .....	(3)	(3)	3
Electives .....	14	12	10
	17	17	16

## Curriculum C

### General Notes

a. This curriculum is followed in a 4-year program by students in general home economics and some other types of programs such as preprofessional social work. See areas of concentration and minors for additional suggestions.

b. Students following Curriculum C meet the science, social science, and group requirements for a B.S. or B.A. degree.

c. In addition to specific courses listed, students following Curriculum C must have at least 9 term hours approved by the Dean in each of the following groups: (1) literature or upper division foreign language, (2) social science.

The following courses are required for Curriculum C:

	Term hours
Physical or biological science with laboratory (General Chemistry recommended) .....	9-12
Marriage (FL 222) .....	2
Nutrition (FN 225) .....	3
Foods (FN 211, 212, 213 or 220, 221, 222) .....	9
Textiles (CT 250), Clothing (Selection) (CT 211), Clothing (Construction) (CT 212) .....	9
Outlines of Economics (Ec 212) .....	3
General Psychology (Psy 201, 202) .....	3
Color and Composition (AA 160) .....	3
Management in Family Living (HAd 340) .....	2
Family Finance Management (HAd 341) .....	2
Child Development (FL 311, 312) .....	6
Family Nutrition (FN 325) .....	2
Home Management House (HAd 450) .....	5
General Sociology (Soc 212) .....	3
Political Science .....	3
The Nursery School Child (FL 425) .....	3
Home Furnishing (CT 331 or 231) .....	3

## AREAS OF CONCENTRATION AND MINORS

The following areas of concentration and minors have been set up to help direct students in their professional interests in Home Economics. Students need to consult staff members as early as possible in their college careers to plan their total programs for personal and professional preparation as well as to meet graduation requirements. The areas of concentration and minors list recommended courses and are not requirements for graduation.

### Clothing, Textiles, and Related Arts

#### Clothing and Textiles in Business

Students in this area may prepare for careers in retailing, promotion, fashion and styling, in textiles, clothing, and home furnishings.

##### *Recommended Courses:*

Extempore Speaking (Sp 111)  
 Business English (Wr 217)  
 Basic Accounting and Financial Analysis  
 (BA 217)  
 Retail Merchandising (BA 463)  
 Advertising (BA 464)  
 Human Relations in Business and Industry  
 (BA 497)  
 Historic Costume (CT 309)  
 Consumer Buying in Clothing and Textiles  
 (CT 350)  
 The Clothing Buyer (CT 470)  
 Flat Pattern and Draping (CT 310)  
 Tailoring (CT 312)  
 Clothing for Children (CT 320)  
 Quantity Textile Purchasing (CT 351)  
 Home Furnishing (CT 431)  
 Textiles (CT 450)  
 Historic Textiles (CT 460)

##### *Other Electives:*

Elementary Journalism (J 111)  
 Survey of Visual Arts (AA 201, 202, 203)  
 Drawing (AA 291)  
 Leadership Training (Ed 296)  
 Educational Psychology:  
 Learning (Ed 312)  
 Radio Speaking (Sp 361)  
 Basic Television (Sp 367)  
 Business Internship (BA 410)  
 Salesmanship (BA 465)  
 Seminar (CT 407)

#### Clothing Construction and Design

Students may enter this area because of general interest or as additional preparation for teaching, including college teaching, in this field.

##### *Recommended Courses:*

Historic Costume (CT 309)  
 Flat Pattern and Draping (CT 310)  
 Costume Design (CT 311)  
 Tailoring (CT 312) or  
 Clothing for Children (CT 320)  
 Textile Design (CT 335)  
 Consumer Buying in Clothing and  
 Textiles (CT 350)  
 Flat Pattern and Draping (CT 410)  
 Additional courses from: art, economics, edu-  
 cation, French, history, journalism, psy-  
 chology, speech.

##### *Other Electives:*

Quantity Textile Purchasing (CT 351)  
 or Textiles (CT 450)  
 Costume Design (CT 411)  
 Textile Design (CT 435)  
 Historic Textiles (CT 460)  
 The Clothing Buyer (CT 470)  
 Home Furnishing Laboratory (CT 332)

#### Home Furnishing

Students in this area may prepare for the fields of interior decoration, merchandising of home furnishings, college teaching, or journalism related to home furnishings.

##### *Recommended Courses:*

Home Furnishings Laboratory (CT 332)  
 Textile Design (CT 335)  
 Upper division courses in related arts  
 History and Literature of Music (Mus 221)  
 Basic Design (AA 195)  
 Survey of Visual Arts (AA 201, 202, 203)  
 Elements of Interiors (AA 223)

##### *Other Electives:*

Ceramics (AA 255)  
 Organization and Use of House Space  
 (HAD 335)  
 Consumer Buying in Clothing and Textiles  
 (CT 350)  
 Quantity Textile Purchasing (CT 351)  
 Home Furnishing (CT 431)  
 Textile Design (CT 435)  
 Historic Textiles (CT 460)  
 Courses in business administration, journal-  
 ism, and speech

### Textiles

Students in this area may prepare for research or college teaching of textiles. Recommended science courses are credited toward group requirements for graduation.

#### Recommended Courses:

Intermediate Algebra (Mth 100)  
 Abridged General Physics (Ph 211, 212) or  
 General Physics (Ph 201, 202, 203)  
 General Chemistry (Ch 101, 102, 103, or  
 Ch 204, 205)  
 Qualitative Analysis (Ch 206)  
 Organic Chemistry (Ch 226, 227)  
 Quantitative Analysis (Ch 234)  
 Consumer Buying in Clothing and Textiles  
 (CT 350)  
 Upper division course in textiles

#### Other Electives:

Mathematics (Mth 101, 102, 103)  
 Differential and Integral Calculus (Mth 201,  
 202, 203)  
 General Bacteriology (Bac 204)  
 Technical Report Writing (Wr 227)  
 Elements of Biochemistry (Ch 250)  
 Elementary Physical Chemistry (Ch 340)  
 or Physical Chemistry (Ch 440, 441, 442)  
 Basic Techniques (St 314, 315) or Methods  
 for Research (St 421, 422, 423)  
 Quantity Textile Purchasing (CT 351)  
 Textiles (CT 450)  
 Courses in French or German

## Family Life and Home Administration

### Child Development and Nursery School

Students in this area prepare to teach nursery school or pursue further study in child development.

#### Recommended Courses:

Family Relationships (FL 422)  
 Mental Hygiene (Psy 411)  
 Child Development (FL 413)  
 Parent Education (FL 423)  
 Supervised Nursery School Experience  
 (FL 429, 430)  
 Speech Science (Sp 291)  
 Curriculum Enrichment for Young Children  
 (FL 428)

#### Other Electives:

Economics of the Family (HAd 441)  
 Child Nutrition (FN 421)  
 Food Management (FN 412)  
 or Quantity Cookery (IM 311)  
 Clothing for Children (CT 320)  
 Individual Differences (Psy 471, 472, 473)  
 First Aid (PE 358)  
 Children's Literature and Library (Eng 388)  
 Selected Topics in Child Development  
 (FL 481)  
 Reading and Conference (Field Work)  
 (FL 405)  
 Creative Arts and Crafts for Classroom  
 (AA 311)  
 Group Dynamics (Psy 361)  
 Music for Elementary Teachers (Mus 381)

### Family Relationships

For students preparing for research, teaching, and graduate work in the area of marriage and family relationships special programs are arranged.

### Family Economics and Home Management

Students in these areas may prepare for college teaching, or family counseling in social work and personnel departments.

#### Recommended Courses:

**MANAGEMENT IN FAMILY LIVING:**  
 Food Management (FN 412)  
 Household Equipment (HAd 330)  
 Organization and Use of House Space  
 (HAd 335)  
 Management Problems in Home-Communica-  
 tions Relations (HAd 445)  
 Seminar—Decision Making:  
 Case Study Analysis (HAd 407)  
 Seminar—Work Simplification (HAd 407)  
 Seminar—Home Management House Super-  
 vision (HAd 407)  
 Seminar—Time  
 Problems in Management (HAd 407)  
 Seminar—Philosophy of Homemaking  
 (HAd 407)

#### FAMILY ECONOMICS:

Food Purchasing (FN 411)  
 Consumer Buying in Clothing and Textiles  
 (CT 350)  
 Household Equipment (HAd 330)  
 Family Housing (HAd 439)  
 Economics of the Family (HAd 441)  
 Management Problems in Home-Community  
 Relations (HAd 445)  
 Seminar—The American Family and Eco-  
 nomic Change (HAd 407)  
 Use and Interpretation of Statistical Data  
 (Seminar) (HAd 407)  
 Seminar—Survey of Income,  
 Expenditure and Cost of Living  
 Studies (HAd 407)  
 Upper division economics, sociology, psychol-  
 ogy, and political science.



### Housing and Equipment

For students preparing for commercial work with utility and equipment companies, in house planning institutes, and consultant services.

#### Recommended Courses:

Household Equipment (HAd 330)  
 Organization and Use of House Space (HAd 335)  
 Economics of the Family (HAd 441)  
 House Planning in Relation to Function (HAd 435)  
 Family Housing (HAd 439)  
 Household Utilities (AE 435)

Basic Television (Sp 367)  
 Television Programing (Sp 368)  
 Functional Design of Dwellings (HAd 436)  
 Rural House Planning (AE 451)  
 House Planning & Architectural Drawing (AA 179)  
 Food Demonstrations (FN 410)  
 Experimental Cookery (FN 435)  
 Technical Writing (J 319)

### Foods and Nutrition

#### Foods and Nutrition in Business

Students in this area may prepare for commercial positions in test kitchens or as food demonstrators or for positions as food writers for newspapers, magazines, radio, or television.

#### Recommended Courses:

General Chemistry (Ch 101, 102, 103)  
 Organic Chemistry (Ch 221)  
 Biochemistry (Ch 250)  
 General Bacteriology (Bac 204)  
 Food Demonstrations (FN 410)  
 Food Purchasing (FN 411)  
 Food Management (FN 412)  
 Home Food Preservation (FN 414)  
 Recent Advances in Foods (FN 425)  
 Experimental Cookery (FN 435)  
 Dairy Products Standards (D 118)  
 Food and Agriculture (AEc 331)  
 Household Equipment (HAd 330)

Organization and Use of House Space (HAd 335)  
 Economics of the Family (HAd 441)  
 Extempore Speaking (Sp 111)  
 Voice and Diction (Sp 120)  
 Radio Speaking (Sp 361, 362, 363)  
 Basic Television (Sp 367)  
 Television Programing (Sp 368)  
 Elementary Journalism (J 111)  
 Public Information Methods (J 318)  
 Technical Writing (J 319)  
 Business English (Wr 214)  
 Educational Psychology: Learning (Ed 312)  
 Salesmanship (BA 465)

#### Public Health Nutrition

Students in this area may wish to prepare for graduate work in public health nutrition. The courses suggested are in addition to those listed in curriculum B.

#### Recommended Courses:

General Bacteriology (Bac 205)  
 Physiological Chemistry (Ch 330, 331)  
 Community Health Problems (Bac 424, 425, 426)  
 Food Bacteriology (Bac 460)  
 Food Purchasing (FN 411)  
 Recent Advances in Foods (FN 425)  
 Nutrition in Disease (FN 420)  
 Child Nutrition (FN 421)

Readings in Nutrition (FN 481)  
 Group Discussion (Sp 232)  
 Educational Psychology: Learning (Ed 312)  
 Public Information Methods (J 318)  
 Mental Hygiene (Psy 411)  
 History of Great Religions (R 462)  
 Principles of Accounting (BA 211)  
 Economics of the Family (HAd 441)

#### Research and College Teaching

For students primarily interested in preparing for research and graduate study in foods and nutrition, a sound basis in science, particularly chemistry, is essential. Curriculum B provides this basic work.

#### Recommended Courses:

Quantitative Analysis (Ch 234)  
 Intermediate Algebra (Mth 100) or exempt  
 Mathematics (Mth 101, 102, 103)  
 General Bacteriology (Bac 205)

#### Selected Food Courses:

Food Purchasing (FN 411)  
 Home Food Preservation (FN 414)  
 Recent Advances in Foods (FN 425)  
 Experimental Cookery (FN 435)  
 Reading and Conference (FN 405)  
 Research (FN 401)  
 Thesis (FN 403)

#### Selected Nutrition Courses:

Readings in Nutrition (FN 481)  
 Child Nutrition (FN 421)  
 Nutrition in Disease (FN 420)  
 Field Work in Community Nutrition Programs (HEd 420)  
 Reading and Conference (FN 405)  
 Research (FN 401)  
 Thesis (FN 403)

#### Other Electives:

Modern language, 1 to 2 years  
 Qualitative Analysis (Ch 206)  
 Differential and Integral Calculus (Mth 201, 202, 203)  
 General Physics (Ph 201, 202, 203) or  
 Abridged General Physics (Ph 211, 212)  
 Elementary Physical Chemistry (Ch 340) or  
 Physical Chemistry (Ch 440, 441, 442)  
 Organic Chemistry (Ch 430, 431, 432)  
 Biochemistry (Ch 450, 451, 452)

## Institution Management and Dietetics

Students in this area may prepare for positions as dietitians in hospitals, dormitories, cafeterias, and in school lunch management. The following courses are recommended to meet the professional requirements of the fields, in addition to those listed in Curriculum B.

### *Recommended Courses:*

General Bacteriology (Bac 205)  
Principles of Accounting (BA 211)  
Educational Psychology: Learning (Ed 312)  
Special Secondary Methods (Ed 408d)  
Quantity Cookery (IM 311)  
Physiological Chemistry (Ch 330, 331)  
Nutrition in Disease (FN 420)  
Institution Organization and Administration (IM 430)  
Purchasing for Institutions (IM 440)  
Institution Experience (IM 450)

### *Other Electives:*

Food Purchasing (FN 411)  
Food Management (FN 412)  
Food Demonstrations (FN 410)  
Recent Advances in Foods (FN 425)  
Experimental Cookery (FN 435)  
Child Nutrition (FN 421)  
Readings in Nutrition (FN 481)  
Personnel Management (BA 451)  
Quantity Textile Purchasing (CT 351)

## Home Economics Communications

### Home Economics and Journalism

Students interested in the fields of journalism, radio, and television may combine their home economics preparation with elective courses in one or more types of communications.

### *Recommended Courses:*

Elementary Journalism (J 111, 112)  
Copyediting (J 214)  
Editorial Writing (J 223)  
Public Information Methods (J 318)  
Special Feature Articles (J 317)  
Technical Writing (J 319)  
Journalism Projects (J 351, 352, 353)

### *Other Electives:*

Household Equipment (HAd 330)  
Food Demonstration (FN 410)  
Food Purchasing (FN 411)  
Food Management (FN 412)  
Historic Costume (CT 309)  
Consumer Buying in Clothing and Textiles (CT 350)  
Home Furnishing Laboratory (CT 332)  
Organization and Use of House Space (HAd 335)  
Economics of the Family (HAd 441)

### Home Economics, Radio, and Television

### *Recommended Courses:*

Extempore Speech (Sp 111)  
Voice and Diction (Sp 120)  
Interpretation (Sp 121)  
Radio Speaking (Sp 361, 362, 363)  
Basic Television (Sp 367)  
Television Programming (Sp 368)  
Electives in Speech

### *Other Electives:*

Household Equipment (HAd 330)  
Food Demonstration (FN 410)  
Food Purchasing (FN 411)  
Food Management (FN 412)  
Historic Costume (CT 309)  
Consumer Buying in Clothing and Textiles (CT 350)  
Home Furnishing Laboratory (CT 332)  
Organization and Use of House Space (HAd 335)  
Economics of the Family (HAd 441)

## Home Economics Education

Students in this area prepare to teach Home Economics in secondary school. The recommended courses are for teaching certification in Oregon and are not requirements for graduation. Certification requirements for other states may also be met.

### *Recommended Courses:*

Pupil, Teacher, and Society (Ed 112)  
School in American Life (Ed 310)  
Educational Psychology: Learning (Ed 312)  
Methods in Reading (Ed 350)  
Special Secondary Methods (Ed 408)  
Student Teaching (Ed 416)

Seminar: Student Teaching (Ed 407)  
Organization and Administration of Home-making Education (HEd 422)  
Adult Education in Home Economics (HEd 440)  
History of Pacific Northwest (Hst 478)

### *Other Electives:*

If possible, early in her college career, a student should choose a subject-matter area outside Home Economics in which to elect courses for a teaching minor. (See School of Education, Teaching Minors in High School Fields.)

### Home Economics Extension

Students interested in the field of extension as county agents, 4-H Club agents, or similar types of work may combine their home economics preparation with elective courses in home economics extension.

**Recommended Courses:**

- Extension Methods (EM 411)
- Field Work in Home Economics Extension (EM 453)
- Chemistry (Ch 101, 102, 103) to fulfill the science requirement
- Personality and Development (Psy 111) or Methods of Study (Ed 101)
- Journalism (J 111)
- Extempore Speech (Sp 111)
- Bacteriology (Bac 204)
- Consumer Buying in Clothing and Textiles (CT 350)
- Food Purchasing (FN 412)
- Food Demonstrations (FN 410)
- Home Food Preservation (FN 414)
- Group Dynamics (Psy 361)
- Household Equipment (HAD 330)
- Youth Agencies (Ed 425)

- Radio Speaking (Sp 334)
- Educational Psychology: Learning (Ed 312)
- Mental Hygiene (Psy 411)
- Business English (Wr 217)
- Principles of Teaching (Ed 313)
- Psychology of Adolescence (Ed 469)

**Other Electives:**

- Clothing for Children (CT 320)
- Leadership Training (Ed 296)
- Child Development (FL 413)
- Parent Education (FL 423)
- Community Organization (Soc 475)
- Basic Television (Sp 367)
- Recreational Leadership (PE 240) or Recreational Use of Music (Mus 241)
- Human Development (Psy 311)
- Home Ground Planning (LA 279)

### Home Economics in Social Work

Students may prepare for home economics in social work in Curriculum C by substituting 9-hour sequences in sociology and economics for General Sociology (Soc 212) and Outlines of Economics (Ec 212); by increasing political science to 9 hours; and by selecting electives in upper division family life, home administration, sociology, and psychology courses.

Those who expect to make social work a career or to advance in the profession will need professional training in a school of social work. Because of the unmet demands for trained social workers throughout the country, many social work positions are open to students immediately upon graduation from college. Students should familiarize themselves with the requirements formulated by the American Association of Schools of Social Work.

**Recommended Courses:**

- Family Relations (FL 422)
- Child Development (FL 413)
- Family Housing (HAD 439)
- Economics of the Family (HAD 441)
- Management Problems in Home-Community Relations (HAD 445)

- Group Dynamics (Psy 361)
- Quantitative Methods (Psy 371)
- Individual Differences (Psy 471, 472, 473)
- Upper division electives in sociology and economics.

### Minor in Business and Technology

	Term hours		
	F	W	S
Principles of Accounting (BA 211) .....	3	(3)	(3)
Retail Merchandising (BA 463) .....	3	(3)	(3)
Advertising (BA 464) .....	3	(3)	.....
Salesmanship (BA 465) .....	3	(3)	(3)
Sales Management (BA 466) .....	.....	3	(3)
Human Relations in Business and Industry (BA 497) .....	3	(3)	(3)
Personnel Management (BA 451) .....	3	.....	.....
Income Tax Procedure (BA 434) .....	3	(3)	.....

### Minors in Physical Education

Substitutions, on approval of minor adviser, selected from following fields: arts and crafts, music, drama, natural sciences, or physical education. Courses starred (\*) substitute for the 5 terms of physical education activity.

#### Teaching Physical Education

	Term hours		
	F	W	S
Introduction to Physical Education (PE 121) .....	2	(3)	.....
*Physical Education Laboratory (PE 124, 125, 126) .....	2	2	2
*Physical Education Laboratory (PE 224, 225) .....	2	2	(2)
Recreation Leadership (PE 240) .....	3	(3)	.....
Physical Education Technique (PE 333, 334) .....	2	2	(2)
School Programs and Organization (PE 411) .....	.....	3	5
Special Secondary Methods (Ed 408) .....	.....	2	.....
Student Teaching (Ed 416) .....	(3)	(3)	3
School Activities (Ed 523) .....	.....	3	.....

## Recreation or Camp Education or a Combination

	Term hours		
	F	W	S
*Physical Education Laboratory (PE 124, 125, 126) .....	2	2	2
*Physical Education Laboratory (PE 224, 225) .....	2	2	(2)
Introduction to Recreation (Ed 121) .....		3	....
Recreation Leadership (PE 240) .....	3	(3)	....
Fundamentals of Body Movement and Conditioning Exercises (PE 341) .....			1
Rhythms and Dance (PE 342) .....	1	....	(1)
Games, Relays, and Team Activities (PE 343) .....		1	....
Sports Officiating (PE 354) .....	3	(3)	(3)
First Aid (PE 358) .....		3	(3)
Playground Leadership (PE 435) .....			3
Camp Counseling (Ed 263) .....			3
Laboratory Practice in Camping Skills (Ed 364) .....		3	....

## MINORS IN ARTS AND LETTERS, SCIENCE, AND SOCIAL SCIENCE

Each minor totals approximately 27 term hours, in most cases including 9 hours of upper division work. Courses starred (\*) are courses prescribed in the curriculum which may count as part of a minor. For teaching minors see SCHOOL OF EDUCATION.

## Arts and Letters

## Art

\*Color and Composition (AA 160, 161), \*House Planning and Architectural Drawing (AA 178), House Planning and Architectural Drawing (AA 179, 180), Elements of Interiors (AA 223), or Painting (AA 290), Drawing (AA 291), Composition (AA 296) or Survey of Visual Arts (AA 201, 202, 203), \*Home Furnishing (CT 331, 431), Textile Design (CT 335, 435), Historic Textiles (CT 460), Organization and Use of House Space (HAd 335), or Costume Design (CT 311, 411).

## English

\*Survey of English Literature (Eng 101, 102, 103) or Appreciation of Literature (Eng 104, 105, 106) or World Literature (Eng 107, 108, 109), Shakespeare (Eng 201, 202, 203), American Literature (Eng 253, 254, 255), Individual Authors (Eng 261, 262), Great Books (Eng 263), Continental European Literature (Eng 264, 265, 266), Contemporary Literature (Eng 271, 272, 273), Short Story (Eng 274), Bible as Literature (Eng 275), Survey of Russian Culture (Hum 327, 328, 329), The Novel (Eng 376).

## Modern Languages

## French, German, Russian, Spanish

First Year Sequence, Second Year Sequence, Third Year Literature Sequence.

## Journalism

See Home Economics Communications.

## Landscape Architecture

Home Ground Planning (LA 279), Lower Division Landscape Design (LA 290), Plant Materials (LA 326, 327, 328), History and Literature of Landscape Architecture (LA 356, 357, 358), Planting Plans (LA 392).

## Music

Music Theory (Mus 111, 112, 113) or Music for Elementary Teachers (Mus 381, 382, 383), Applied Music (Mus 190) (subject selected in conference with music adviser) or Class Lessons in Voice (Mus 191), College Band (Mus 195), College Orchestra (Mus 196), or College Chorus (Mus 197), History and Literature of Music (Mus 221, 222, 223).

## Speech

Extempore Speaking (Sp 111, 112), Voice and Diction (Sp 120), Interpretation (Sp 121, 122), Speech Science (Sp 291), Principles and Techniques of Speech Correction (Sp 493), Clinical Procedures (Sp 494), Stagecraft and Lighting (Sp 244), Community Drama (Sp 247, 248, 249), Parliamentary Procedure (Sp 231), Group Discussion (Sp 232), Argumentation (Sp 237), Persuasion (Sp 238).

## Science

Minors may be planned in any of the sciences including biology, botany, entomology, geology, mathematics, physics, and zoology as well as bacteriology and chemistry.

### Bacteriology

General Bacteriology (Bac 204, 205), Electives in bacteriology, upper division bacteriology.

### Chemistry

General Chemistry (Ch 101, 102, 103), Organic Chemistry (Ch 221), Quantitative Analysis (Ch 234), Elements of Biochemistry (Ch 250), Physiological Chemistry (Ch 330, 331), Elementary Physical Chemistry (Ch 340).

## Social Science

### Economics

Principles of Economics (Ec 201, 202, 203), Economic Development of the United States (Ec 215), Electives in Economics (6 hours upper division).

Students who take a minor in Economics omit Ec 212 from required courses in junior year.

### Geography

Introductory Geography (Geog 105, 106, 107), Cartography (NR 261, 262), Geography of the Pacific Northwest (Geog 323), Geography electives, any three (Geog 330, 326, 331, 332, 329).

### History

\*History of Western Civilization (Hst 101, 102, 103), The Far East (Hst 204, 205), England and the British Empire (Hst 207, 208), Europe Since 1879 (Hst 341, 342, 343), History of American Civilization (Hst 224, 225, 226), Great Americans in Thought and Action (Hst 230, 231, 232), Tsarist Russia (Hst 447), American Thought and Culture (Hst 331, 332, 333) or Latin-American Civilization (Hst 360, 361), or History of Oregon (Hst 377).

### Political Science

American Governments (PS 201, 202, 203) or European Political Systems (PS 204), Current Problems in American Democracy (PS 334), Municipal Government (PS 423), International Relations (PS 417), Latin American Relations (PS 418), Pacific Area Relations (PS 419), Public Administration (PS 411).

### Psychology

\*General Psychology (Psy 201, 202), Mental Hygiene (Psy 411), Quantitative Methods (Psy 371), Individual Differences (Psy 471, 472, 473), electives in psychology.

### Religion and Philosophy

The Sermon on the Mount (R 220), The New Testament and Its Historical Background (R 211), The Prophets and Their Message (R 225), The Bible as Literature (Eng 275), Introduction to Philosophy (Phl 201, 202, 203), Principles of Religious Leadership (R 370), Philosophy of Religion (R 461), History of Great Religions (R 462), Psychology of Religion (R 463).

Practical Life Philosophies (Phl 211, 212, 213) may be substituted for any of the lower division courses.

### Sociology

General Sociology (Soc 201, 202, 203), Sociology of the Family (Soc 312), Social Problems (Soc 411), Sociology of Rural Life (Soc 364) or Social Psychology (Soc 474), Sociology of Urban Life (Soc 468) or Social Problems (Soc 412), Psychological Tests and Testing (Psy 474), Community Organization (Soc 475) or Social Problems (Soc 413).

Students taking a minor in sociology omit Soc 212 from the required courses in the junior year.

## Clothing, Textiles, and Related Arts

The Department of Clothing, Textiles, and Related Arts offers preliminary training to the beginning student in the basic principles of clothing construction, fabric analysis and identification, and selection of adult clothing. Advanced courses lead to thorough preparation in clothing construction, textiles, consumer education, and applied arts. Business and Technology students may minor in the area of clothing, textiles, and related arts. Service courses are open to students not enrolled in home economics.

Students planning to register for clothing construction courses should keep in mind, when planning their wardrobes for the college year, that these courses require construction of garments.

### Lower Division Courses

- CT 111. **Elementary Clothing.** 3 hours any term. 3 ②  
Fundamental processes of hand and machine sewing; selection and construction of simple garments. Students may become exempt from this course by passing a Clothing Placement Test.
- CT 112. **Elements of Clothing Construction.** 3 hours. 3 ②  
Men only. Garment construction with emphasis on correct procedures and terminology; various types and styles of men's and women's garments.
- CT 211. **Clothing (Selection).** 3 hours any term. 2 ① 1 ②  
Artistic and economic factors in the selection of adult clothing; wardrobe needs of college students. Prerequisite: AA 160.
- CT 212. **Clothing (Construction).** 3 hours any term. 3 ②  
Commercial patterns and their adaptation; organization and management problem applied to cotton garments; fitting and construction principles applied to wool garments. Prerequisite: CT 111 (or its equivalent), CT 211. A home project in clothing construction is required of all students who have completed CT 111 before enrolling for CT 212.
- CT 217. **Clothing Selection.** 3 hours. 3 ①  
Aims to develop good taste in dress and to give an appreciation in selection of clothing from standpoint of beauty, health, and economy. Elective for students not in home economics degree curricula.
- CT 218, 219. **Clothing Construction.** 3 hours each term. 3 ②  
CT 218: Principles of construction and design applied in making cotton and wool garments. Elective for students not in home economics degree curricula. CT 219: Planning and construction of two dresses (an afternoon dress and a speed project) and a child's garment. Prerequisite for CT 219: CT 111 or 218.
- CT 231. **Home Furnishing.** 3 hours. 2 ① 1 ②  
Aims to develop appreciation of beauty and suitability in home furnishings; materials and processes involved. Elective for students not in home economics degree curricula.
- CT 235. **Textile Design and Weaving.** 3 hours. 3 ②  
Decorative art involving consideration of line, texture, and color as applied to problems in weaving. Elective for students not in home economics degree curricula.
- CT 250. **Textiles.** 3 hours any term. 2 ① 1 ②  
Properties, uses, selection and care of textile fibers and fabrics.

### Upper Division Courses

- CT 309. **Historic Costume.** 2 hours. 2 ①  
Historic costume and its relation to modern dress. Prerequisite: CT 250, history recommended. Associate Professor Diedesch.
- CT 310. **Flat Pattern and Draping.** 3 hours any term. 3 ②  
Principles of flat pattern and draping on one-half size dress forms with practical application of principles to the construction of afternoon and evening garments. Prerequisite: CT 212, 250. Associate Professor Edaburn.

- CT 311. **Costume Design.** 1 hour. 1 ②  
Art principles applied in selection and design of appropriate ensembles for various occasions and figure types. Prerequisite: CT 212, 250, AA 161. Associate Professor Diedesch.
- CT 312. **Tailoring.** 4 hours any term. 2 ④  
Principles of tailoring; planning and constructing coat and skirt or suit. Prerequisite: CT 310 or 309 and 311. Assistant Professor Ledbetter.
- CT 320. **Clothing for Children.** 3 hours any term. 3 ②  
Selection and construction of garments for children with emphasis on child development, good design, and the saving of time, money, and energy. Prerequisite: CT 212, 250. Associate Professor Ingalls.
- CT 331. **Home Furnishing.** 3 hours any term. 1 ① 2 ②  
Furnishing a small home from standpoint of comfort, beauty, and economy; influence of historic design. Prerequisite: CT 250, AA 161, 178. Professor Patterson.
- CT 332. **Home Furnishing Laboratory.** 3 hours. 3 ②  
Principles of drapery and slip-cover construction; finishing furniture and interior woodwork; estimating yardage and costs of fabrics; simple upholstering techniques. Student furnishes own sewing equipment, furniture, and fabrics. Prerequisite: CT 112, 212, or 219, or consent of instructor. Professor Patterson.
- CT 335. **Textile Design.** 3 hours. 3 ②  
Line, texture, and color as applied to design of woven textiles; contemporary weaving techniques. Prerequisite: AA 161, CT 250 and 212 or 218, or consent of instructor. Professor Patterson.
- CT 350. **Consumer Buying in Clothing and Textiles.** 3 hours any term. 3 ①  
Problems and aids in purchasing clothing and textiles from consumer's point of view. Prerequisite: CT 211, 250, Ec 212. Associate Professor Diedesch.
- CT 351. **Quantity Textile Purchasing.** 3 hours. 3 ①  
Construction, purchasing, and care of fabrics in quantity; writing up specifications. Prerequisite or parallel: CT 350 or consent of instructor. Assistant Professor Grant.
- CT 401. **Research.** Terms and hours to be arranged.
- CT 403. **Thesis.** Terms and hours to be arranged.
- CT 405. **Reading and Conference.** Terms and hours to be arranged.
- CT 407. **Seminar.** Terms and hours to be arranged.
- CT 408. **Workshop.** Terms and hours to be arranged.
- CT 410. **Flat Pattern and Draping.** (G) 3 hours. 3 ②  
Principles of flat pattern designing and of draping in varied textures; practical application to afternoon and evening garments. Each student may make a dress form. Prerequisite: CT 310 (CT 309 and 311 recommended). Associate Professor Edaburn.
- CT 411. **Costume Design.** (G) 3 hours. 3 ②  
Designing clothing and accessories for women; creative work. Prerequisite: CT 309, 311. Associate Professor Diedesch.
- CT 412. **Custom Clothing.** (G) 3 hours. 3 ②  
Selecting, designing, and constructing garments for different figure types; organization and sequence of work; speed, economy, effectiveness. Prerequisite: CT 312.
- CT 431. **Home Furnishing.** (G) 3 hours. 3 ②  
Consumer study of home furnishing, fabrics, furniture, rugs, china, silver, and ceramics. Particular attention paid to contemporary designers and materials and to prices and manufacturers. Prerequisite: CT 331. Professor Patterson.
- CT 435. **Textile Design.** (G) 3 hours. 3 ②  
Advanced work in textile design for students who have had CT 335 or equivalent. Professor Patterson.

- CT 450. **Textiles.** (G) 3 hours. 2 ① 1 ②  
 Survey of the literature on recent research and new developments in the textile field. A research problem in the field of the student's special interest. Prerequisite or parallel: CT 350.
- CT 460. **Historic Textiles.** (G) 3 hours. 3 ①  
 Study of textiles from ancient times to present, from an appreciative and historical point of view. Prerequisite: CT 250 and senior standing. Professor Gatton.
- CT 470. **The Clothing Buyer.** 3 hours. 1 ① 1 ②  
 Methods and problems of buyers in buying ready-to-wear clothing for retail markets; sources, style trends, types of merchandise, standards and evaluation. Prerequisite: CT 350. Professor Gatton.

#### Graduate Courses

Courses numbered 400-499 and designated (G) or (G)  
 may be taken for graduate credit.

- CT 501. **Research.** Terms and hours to be arranged.
- CT 503. **Thesis.** Terms and hours to be arranged.
- CT 505. **Reading and Conference.** Terms and hours to be arranged.
- CT 507. **Seminar.** Terms and hours to be arranged.
- CT 508. **Workshop.** Terms and hours to be arranged.
- CT 551. **Textile Fibers.** 3 hours. 2 ① 1 ②  
 Composition and chemical properties of textile fibers; relation to certain structural and physical characteristics. Prerequisite: 12 term hours in clothing and textiles including CT 250; 1 year of chemistry. Professor Petzel.
- CT 552. **Textile Analysis.** 4 hours. 1 ① 2 ③  
 Principles and practice in identification of textile fibers by chemical methods and quantitative analysis for moisture content, total nonfibrous materials, and fiber content. Prerequisite or parallel: CT 551. Professor Petzel.

## Extension Methods

Instruction in the Department of Extension Methods is intended to assist in training students for positions as county extension agents in agriculture, as 4-H club and home economics extension workers, as extension specialists, and as specialists in similar professional fields where extension methods are commonly used. It will also give students in other fields a better understanding of how to take advantage of services available through county extension agents.

An extension worker must know not only the subject matter but also the methods by which extension work succeeds. He must be able to give or know how to obtain authoritative advice for his community or county on problems related to his field of service. He must know the technique of platform speaking and demonstration, radio speaking, conducting discussions, and publicizing the extension program. Combining a major in agriculture or home economics with training in journalism, speech and dramatics, economics, sociology, and other departments, supplemented by work in extension methods, should materially assist in meeting the need for better trained extension workers.

#### Upper Division Courses

- EM 405. **Reading and Conference.** Terms and hours to be arranged.
- EM 411, 412. **Extension Methods.** (G) 3 hours winter. 3 ①  
 First term: Philosophy and organization of extension work; methods employed by extension specialists, county agricultural and home demonstration agents, 4-H club leaders, etc. Second term: Application of knowledge and skills gained in EM 411 and other college courses such as journalism, radio, etc., in the fields of agriculture and home economics extension.



EM 453. **Field Work in Home Economics Extension.** (G) Terms and hours to be arranged.

Field practice in county extension work under supervision of professor of extension methods and county extension agents. Prerequisite: EM 411. Professor Clinton.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

EM 505. **Reading and Conference.** Terms and hours to be arranged.

## Family Life and Home Administration

In the Department of Family Life and Home Administration, instruction pertains to general areas of family living—marriage and family relationships, child development, home management, family economics, household equipment, and housing. Advanced courses offer training for nursery school teaching and work in housing, equipment, and family economics. Laboratories for instruction include two home management houses and two nursery schools on campus, and housing and equipment laboratories in the Home Economics Building.

Courses in marriage, family living, child care, and home management are offered for students in other schools who wish some preparation for home making. Men, as well as women, are welcomed in most of the courses in Family Life and Home Administration.

### Courses in Family Life

#### Lower Division Courses

- FL 222. **Marriage.** 2 hours any term. 2 ①  
Courtship period; factors in a successful marriage; husband-wife relationships. Open to men and women. Professor Kirkendall, Assistant Professor Schalock.
- FL 223. **Family Living.** 2 hours. 2 ①  
Not for majors in home economics; open to men and women. Survey of personal relationships within family; child development; management of family resources. Assistant Professor Aikin and staff.
- FL 225. **Child Care.** 3 hours. 3 ①  
Not for majors in home economics. Growth, development, and care of infant and young child; observations in nursery school. Assistant Professor Aikin.

#### Upper Division Courses

- FL 311, 312. **Child Development.** 3 hours each term. 3 ① 1 ①  
Growth and development of normal preschool children. Prerequisite: Psy 207 or 202. Assistant Professor Aikin.
- FL 401. **Research.** Terms and hours to be arranged.
- FL 403. **Thesis.** Terms and hours to be arranged.
- FL 405. **Reading and Conference.** Terms and hours to be arranged.
- FL 407. **Seminar.** Terms and hours to be arranged.
- FL 408. **Workshop.** Terms and hours to be arranged.
- FL 413. **Child Development.** (G) 3 hours. 3 ①  
Growth and development in middle and late childhood and early adolescence. Prerequisite: FL 312. Assistant Professors Aikin and Schalock.

- FL 421. **Behavior of Young Children.** 2 hours. 2 ①  
For men. Understanding development problems of young children; observation in nursery school. Prerequisite: senior standing or consent of instructor. Assistant Professor Schalock.
- FL 422. **Family Relationships.** (G) 2 hours. 2 ①  
Factors entering into adjustments within modern family group. Emphasis on interpersonal relationships. Prerequisite: FL 312, or consent of instructor. Professor Kirkendall.
- FL 423. **Parent Education.** (G) 3 hours. 1 ① 1 ②  
Relationships of parents and children; resources for meeting problems with emphasis on discussion as a method. Prerequisite or parallel: FL 425. Professor Read.
- FL 425. **The Nursery School Child.** (G) 3 hours any term. 2 ① 1 ④  
Developing insight into child behavior through participation in the nursery school program. Prerequisite or parallel FL 312 and consent of instructor. Professor Read, Miss Emerson, Miss Hart.
- FL 426. **The Nursery School Child Laboratory.** (G) 1 hour. 1 ③  
Accompanies FL 425. Miss Emerson, Miss Hart.
- FL 427. **Nursery School Procedure.** (G) 3 hours. 2 ① 1 ④  
Additional participation in nursery school. Prerequisite: FL 425. Professor Read.
- FL 428. **Curriculum Enrichment for Young Children.** (G) 2 hours spring. 2 ①  
Methods of relating literature, art, music, and science activities to child interests; projects for nursery school. Prerequisite or parallel: FL 425. Professor Read.
- FL 429, 430. **Supervised Nursery School Experience.** (G) 5 hours, 3 hours respectively, winter and spring.  
Full participation in the program of the nursery school. Prerequisite: FL 425 and consent of instructor. Laboratory periods to be arranged; 1 two-hour seminar. Professor Read, Associate Professor Wiggernhorn.
- FL 481. **Selected Topics in Child Development.** (G) 3 hours. 3 ①  
Reading and interpretation of current literature on child development. Prerequisite: FL 312. Assistant Professor Schalock.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- FL 501. **Research.** Terms and hours to be arranged.
- FL 503. **Thesis.** Terms and hours to be arranged.
- FL 505. **Reading and Conference.** Terms and hours to be arranged.
- FL 507. **Seminar.** Terms and hours to be arranged.  
SELECTED PROBLEMS IN MARRIAGE. Professor Kirkendall.  
AUDIO VISUAL AIDS IN FAMILY LIFE EDUCATION. Professor Kirkendall.  
NURSERY SCHOOL PHILOSOPHY. Professor Read.  
WORKING WITH PARENTS. Assistant Professor Schalock.  
UNDERSTANDING BEHAVIOR. Assistant Professor Schalock.  
INFANT DEVELOPMENT. Assistant Professor Schalock.  
OBSERVATIONAL RESEARCH METHODS. Assistant Professor Schalock.
- FL 508. **Workshop.** Terms and hours to be arranged.

#### Courses in Home Administration

##### Lower Division Courses

- HAd 101. **Introduction to Home Economics.** 1 hour. 1 ①  
Orientation of beginning students in home economics.

- HAd 239. **Home Management.** 3 hours. 2 ① 1 ②  
 Managing money, time, and energy in relation to goals of family living. Not open to students majoring in home economics. Assistant Professor Plonk.

**Upper Division Courses**

- HAd 330. **Household Equipment.** 3 hours. 2 ① 1 ②  
 Selection, operation, care, and arrangement of household equipment. Assistant Professor Plonk.
- HAd 335. **Organization and Use of House Space.** 3 hours. 2 ① 1 ②  
 Analysis of housing needs of families; optimum dimensions of activity areas; patterns for space units of family dwelling; evaluation of house plans in terms of family needs. Prerequisite: AA 178. Assistant Professor Plonk.
- HAd 340. **Management in Family Living.** 2 hours any term. 1 ① 1 ②  
 The family's time and energy problems. Associate Professor Van Horn.
- HAd 341. **Family Finance Management.** 2 hours any term. 2 ①  
 Open to men and women. Management of income, expenditures, credit, savings, insurance, Social Security, and taxes. Associate Professor Van Horn.
- HAd 401. **Research.** Terms and hours to be arranged.
- HAd 403. **Thesis.** Terms and hours to be arranged.
- HAd 405. **Reading and Conference.** Terms and hours to be arranged.
- HAd 407. **Seminar.** Terms and hours to be arranged.  
 MANAGEMENT IN FAMILY LIVING. Assistant Professor Plonk.
- HAd 408. **Workshop.** Terms and hours to be arranged.
- HAd 435. **House Planning in Relation to Function.** (G) 3 hours. 2 ① 1 ②  
 An advanced course concerned with the application of principles of functional design to various types of family dwellings and their surroundings. Prerequisite: HAd 335. Assistant Professor Plonk.
- HAd 436. **Functional Design of Dwellings.** (G) Terms and hours to be arranged.  
 Problems in use of storage space; arrangement of equipment; floor plans for small dwellings; illustrative material for use in house planning classes. Prerequisite: HAd 435. Assistant Professor Plonk.
- HAd 439. **Family Housing.** (G) 3 hours. 3 ①  
 Social and economic aspects of housing in relation to family living. Prerequisite: Ec 212, Soc 212, senior or graduate standing. Associate Professor Van Horn.
- HAd 441. **Economics of the Family.** (G) 3 hours. 3 ①  
 Function of family and roles of its members in American economy; problems of setting, improving, and maintaining standards of living. Prerequisite: senior or graduate standing. Associate Professor Van Horn.
- HAd 445. **Management Problems in Home-Community Relations.** (G) 3 hours. 3 ①  
 Relation of family to society in civic, business, and other formal and informal associations. Prerequisite: HAd 340, Soc 212. Associate Professor Van Horn.
- HAd 450. **Home Management House.** 5 hours any term.  
 Experience in applying homemaking courses in a family size group and in a family type house. Prerequisite: FL 312, HAd 340 (may parallel). One-half term residence. Assistant Professor Plonk, Miss Hobart, Miss Martin.

**Graduate Courses**

Courses numbered 400-499 and designated (G) or (G)  
 may be taken for graduate credit.

- HAd 501. **Research.** Terms and hours to be arranged.
- HAd 503. **Thesis.** Terms and hours to be arranged.
- HAd 505. **Reading and Conference.** Terms and hours to be arranged.
- HAd 507. **Seminar.** Terms and hours to be arranged. Note years offered.  
 FAMILY ECONOMICS: THE AMERICAN FAMILY AND ECONOMIC CHANGE. (Each year).  
 FAMILY ECONOMICS: SURVEY OF INCOME EXPENDITURE, AND COST OF LIVING STUDIES. (1957-58.)  
 FAMILY ECONOMICS: USE AND INTERPRETATION OF STATISTICAL DATA. (1958-59).  
 HOME MANAGEMENT AND HOUSE SUPERVISION. (Each year).  
 HOME MANAGEMENT: CASE STUDY ANALYSIS OF FAMILY DECISION-MAKING. (1957-58).  
 HOME MANAGEMENT: PHILOSOPHY OF HOMEMAKING. (1958-59).  
 HOME MANAGEMENT: TIME PROBLEMS IN MANAGEMENT. (1957-58).  
 HOME MANAGEMENT: WORK SIMPLIFICATION. (1958-59).
- HAd 508. **Workshop.** Terms and hours to be arranged.

## Foods and Nutrition

The Foods and Nutrition Department in its first nutrition course aims to teach the student the relation of nutrition to health and ways of meeting the nutritive allowances by good food selection. In courses in food preparation, applications of scientific principles are taught. The student is then able to plan and prepare meals which will be adequate nutritionally, attractive in taste and appearance, and economical of both money and time. Advanced courses prepare the student for the professional fields of high school teaching, hospital dietetics, school lunch administration, public health nutrition, food demonstration, test kitchen work, and graduate work leading to research and college teaching. Service courses are offered for the nonmajor in home economics or for home economics students not working for a degree.

Laboratories are provided for instruction in food preparation and meal service, for dietetic and animal nutrition work, and for chemical studies related to foods and nutrition.

### Lower Division Courses

- <sup>4</sup>FN 211, 212, 213. **Foods.** 3 hours each term. 2 ① 2 ②  
 Principles involved in the preparation of food; standards for judging food products; planning, preparing, and serving meals. Prerequisite or parallel: one year of biological or physical science and FN 225.
- FN 218, 219. **Food Preparation.** 3 hours each term. 1 ① 2 ②  
 For women students not majoring in home economics. Basic principles of food preparation, menu making, and meal service.
- <sup>4</sup>FN 220, 221, 222. **Foods.** 3 hours each term. 2 ① 2 ②  
 The application of chemical and physical principles in food preparation; menu planning and meal service. Prerequisite: Ch 101, 102, 103. Prerequisite or parallel: FN 225, Ch 221.
- FN 225. **Nutrition.** 3 hours any term. 3 ①  
 Principles of nutrition from the standpoint of newer scientific investigations; selection of an optimal diet for health; present day problems in nutrition.
- FN 240. **Food Selection and Preparation (For Men).** 2 hours winter and spring. 1 ① 1 ②  
 Open to men in all schools interested in food preparation, meal planning and serving. Aids men who are managers of living groups or are preparing their own meals.

<sup>1</sup> Home practice in food preparation is required of students who have completed FN 213 and FN 222, the character and amount of practice being arranged with the instructors in charge. This practice must be completed before an advanced course in foods may be taken.

- FN 250. Camp Cookery (For Men).** 2 hours. 1 ① 1 ③  
 Planning and preparing palatable and nutritious products from foods available in camps; use of reflectors and other camping utensils.

**Upper Division Courses**

- FN 321. Nutrition.** 4 hours fall and winter. 2 ① 2 ②  
 Fundamentals of nutrition; application of biochemistry and physiology to nutrition of individual and family; animal experimentation. Prerequisite: FN 225, Ch 250, Z 331. Associate Professor Hawthorne.
- FN 325. Family Nutrition.** 2 hours. 2 ①  
 Principles of nutrition applied to family; maternal nutrition, nutrition of infants and children through growth period; geriatric nutrition. Prerequisite: FN 213, 225. Professor Fincke, Assistant Professor Garrison.
- FN 401. Research.** Terms and hours to be arranged.
- FN 403. Thesis.** Terms and hours to be arranged.
- FN 405. Reading and Conference.** Terms and hours to be arranged.
- FN 407. Seminar.** Terms and hours to be arranged.
- FN 408. Workshop.** Terms and hours to be arranged.
- <sup>1</sup>FN 410. Food Demonstrations.** 3 hours spring. 2 ① 2 ②  
 Principles and techniques for commercial and classroom demonstration with practical experience before audiences. Prerequisite: FN 213 or 222, Sp 111 or Ed 416, or equivalent. Assistant Professor Hunter.
- <sup>1</sup>FN 411. Food Purchasing.** (g) 3 hours winter and spring. 2 ① 2 ②  
 Practical and intelligent food buying for family; cost factors, food laws, quality standards; home adaptation of new trends in food manufacturing and packaging. Prerequisite: FN 213 or 222, Ec 212.
- <sup>1</sup>FN 412. Food Management.** 3 hours fall and winter. 2 ① 1 ②  
 Advanced food preparation with emphasis on time, energy, and money management. Prerequisite: FN 213 or 222.
- <sup>1</sup>FN 414. Home Food Preservation.** (g) 3 hours fall. 2 ① 2 ②  
 Common home methods of preserving foods with emphasis on freezing, canning, curing, pickling, and preserving with sugar. Prerequisite: FN 213 or 222, Bac 204. Offered alternate years. Not offered 1957-58. Associate Professor Charley.
- FN 420. Nutrition in Disease.** (G) 3 hours spring. 2 ① 1 ②  
 Dietary adjustments for abnormal conditions. For students who plan to become hospital dietitians or nutrition specialists or who desire to broaden their training in nutrition. Prerequisite: FN 321. Professor Storvick.
- HEd 420. Field Work in Community Nutrition Programs.** (G) 3 hours spring. 3 ①  
 Agencies, organizations, and movements concerned with community nutrition; individual and group projects in cooperation with agencies interested in nutrition-health programs. Prerequisite: FN 321 or 325, Ed 312. Assistant Professor Garrison.
- FN 421. Child Nutrition.** (G) 3 hours winter. 3 ①  
 Nutritional needs from prenatal life through childhood; maternal dietary requirements. Prerequisite: FN 321. Professor Fincke.
- FN 425. Recent Advances in Foods.** (G) 3 hours fall. 2 ① 1 ②  
 Consideration of major areas in the field with emphasis on underlying chemical and physical principles involved; review of literature and some experimentation. Prerequisite: FN 222. Associate Professor Charley.
- <sup>1</sup>FN 435. Experimental Cookery.** (G) 3 hours winter. 2 ① 2 ②  
 Experimental method applied to problems in food preparation; literature in field. Prerequisite: FN 222. Associate Professor Charley.

<sup>1</sup> Home practice in food preparation is required of all students who have completed FN 213 or 222 before taking advanced courses in foods.

- FN 481. Readings in Nutrition.** (G) 3 hours fall. 3 ①  
 Research studies in nutrition reviewed; interpretations and significance. Prerequisite:  
 FN 321. Professor Fincke.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G)  
 may be taken for graduate credit.

- FN 501. Research.** Terms and hours to be arranged.
- FN 503. Thesis.** Terms and hours to be arranged.
- FN 505. Reading and Conference.** Terms and hours to be arranged.
- FN 507. Seminar.** Terms and hours to be arranged. Professor Fincke and staff.
- FN 508. Workshop.** Terms and hours to be arranged.
- FN 522, 523. Methods in Nutrition Research.** 3 hours each term. Students may register for one or two terms. 2 ③  
 Introduction to methods and special techniques in nutrition research, emphasizing those methods used in human nutritional studies; blood studies; vitamin and/or mineral analyses; balance methods; special problems. Prerequisite: FN 321, Ch 233 or 234. Professor Storvick, Associate Professor Hawthorne.
- FN 531, 532. Food Preparation Investigation.** 3 or 5 hours each term. 2 ③  
 Independent investigations. Prerequisite: FN 435. Offered alternate years. Professor Mackey.
- FN 551. Selected Topics in Nutrition.** 3 hours. 3 ①  
 Prerequisite: FN 481. Professor Fincke.

## Home Economics Education

Professional preparation for prospective teachers of home economics is provided by the Department of Home Economics Education which is a joint department within the School of Home Economics and the School of Education. A student in either school may meet qualifications for certification to teach homemaking. *Any student who has not taken her home economics courses at Oregon State College will be required to have at least one course in each home economics subject matter department at this institution before she will be allowed to register for student teaching.* Before registering for teacher training courses, every student should receive permission for registering and guidance for selection of courses from the Home Economics Education Department staff members. (For information regarding specific requirements for the State Teacher's Certificate see SCHOOL OF EDUCATION.)

#### Upper Division Courses

- HEd 401. Research.** Terms and hours to be arranged.
- HEd 403. Thesis.** Terms and hours to be arranged.
- HEd 405. Reading and Conference.** Terms and hours to be arranged.
- HEd 407. Seminar.** Terms and hours to be arranged.

STUDENT TEACHING ROUNDTABLE  
 PLANNED HOME EXPERIENCES  
 PLANNED WORK EXPERIENCES

- Ed 408. **Special Secondary Methods.** Terms and hours to be arranged.  
Professor DuBois.
- Hed 420. **Field Work in Community Nutrition Programs.** (G) 3 hours. 3 ①  
Agencies, organizations, and movements concerned with community nutrition; individual and group projects in cooperation with agencies interested in nutrition-health programs. Prerequisite: FN 321 or 325, Ed 312. Assistant Professor Garrison.
- Hed 422. **Organization and Administration of Homemaking Education.** (G) 3 hours. 3 ①  
Typical organizations of homemaking departments on both vocational and nonvocational bases with special attention to equipment and management. Prerequisite: Ed 408. Associate Professor McQuesten.
- Hed 440. **Adult Education in Home Economics.** (G) Hours to be arranged.  
Problems in the adult-education program authorized under the vocational education program; field work in promoting, organizing, observing, and teaching adult classes. Prerequisite: Ed 408. Associate Professor McQuesten.

**Graduate Courses**

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Hed 501. **Research.** Terms and hours to be arranged.
- Hed 503. **Thesis.** Terms and hours to be arranged.
- Hed 505. **Reading and Conference.** Terms and hours to be arranged.
- Hed 507. **Seminar.** Terms and hours to be arranged. Professor DuBois, Associate Professor McQuesten, Miss Wohlgenant.  
PROBLEMS OF BEGINNING TEACHERS  
HOME AND COMMUNITY EXPERIENCES  
SUPERVISION OF HOMEMAKING EDUCATION  
AUDIO-VISUAL AIDS FOR TEACHING HOMEMAKING  
CURRENT METHODS IN TEACHING HOMEMAKING  
EVALUATION OF HOMEMAKING INSTRUCTION  
STUDIES IN HOME ECONOMICS EDUCATION
- Hed 554. **Community Programs in Homemaking.** 3 hours. 3 ①  
Planning, organizing, coordinating, directing, and appraising total community programs in family life education; emphasis on adult education. Prerequisite: Hed 440.

## Institution Management

The curriculum in Institution Management is planned to provide professional preparation for positions in school lunch, college, industrial and other types of food services. Students entering this field may wish to take a hospital, restaurant, or college administrative internship following graduation. The department has laboratories and facilities in large group housing and food service adequate for undergraduate and graduate work.

**Upper Division Courses**

- IM 311. **Quantity Cookery.** 3 hours fall. 1 ① 2 ②  
Use of standardized formulae and procedure; use of equipment; menu planning; preparation and service of foods in quantity. Prerequisite: FN 213 or consent of instructor. Assistant Professor Mulhern.
- IM 320. **Cafeteria Management.** 3 hours. 3 ①  
For prospective teachers who will manage a school cafeteria. Menu study; cafeteria plans; accounting. At present offered alternate summer sessions only.

- IM 401. **Research.** Terms and hours to be arranged. Assistant Professor Mulhern.
- IM 403. **Thesis.** Terms and hours to be arranged. Assistant Professor Mulhern.
- IM 405. **Reading and Conference.** Terms and hours to be arranged. Assistant Professor Mulhern.
- IM 407. **Seminar.** Terms and hours to be arranged. Assistant Professor Mulhern.
- IM 408. **Workshop.** Terms and hours to be arranged.
- IM 430. **Institution Organization and Administration.** (g) 2 hours fall. 2 ①  
Principles of organization and administration as applied to various types of institutions; discussion of employment problems and training, labor laws, office records. Prerequisite: IM 311 or permission of instructor. Assistant Professor Mulhern.
- IM 440. **Purchasing for Institutions.** (g) 3 hours. 3 ①  
Selection, design and materials, cost and arrangement of equipment; sources, standards of quality, grades, methods of purchase, care and storage of food. Prerequisite: IM 311 and IM 430 or consent of instructor. Assistant Professor Cleaveland.
- IM 450. **Institution Experience.** (G) 4 hours spring. 1 ① 3 ②  
Practice work in residence halls including daily food production and service, business office procedure, catering, and banquet service. Prerequisite: IM 311, 430, 440. Assistant Professor Mulhern.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- IM 501. **Research.** Terms and hours to be arranged.
- IM 503. **Thesis.** Terms and hours to be arranged.
- IM 505. **Reading and Conference.** Terms and hours to be arranged.
- IM 507. **Seminar.** Terms and hours to be arranged.
- IM 508. **Workshop.** Terms and hours to be arranged.

## Home Economics (General)

Following courses are available normally only in Summer Session.

- HEc 408. **Workshop.** Terms and hours to be arranged.
- HEc 508. **Workshop.** Terms and hours to be arranged.



# School of Pharmacy

## Faculty

GEORGE EDWARD CROSSEN, Ph.D., Dean of the School of Pharmacy.

Pharmacy: Professor CROSSEN (department head), Professor ZIEFLE (emeritus), Associate Professor FORSLUND, Assistant Professor SISSON, Instructor KNOTT.

Pharmaceutical Analysis: Assistant Professor PETERSEN.

Pharmacology and Pharmacognosy: Associate Professor McCUTCHEON, Associate Professor SCIUCHETTI, Assistant Professor TSAO.

## General Statement

**U**NDER the provisions of public health laws, it is required that the pharmacist be licensed before he is permitted to compound and supply drugs and medicines on the prescriptions of doctors, dentists, and veterinarians. One of the principal prerequisites to such license is that of graduation from an accredited school of pharmacy.

The School of Pharmacy at Oregon State College is fully accredited and is rated as a class A college by the American Council on Pharmaceutical Education. This is a national recognition, hence graduates of this school are privileged to become licensed either by examination or reciprocity in all states except New York.

The curriculum of the School of Pharmacy is designed to give the student a sound general education as well as to train him for all positions in the profession of Pharmacy; it aims to provide a background for both pharmaceutical competency and cultured, responsible citizenship. The first two years of the curriculum are devoted to studies in the arts and basic sciences, in preparation for the period of intensive professional training which follows. During this latter time, the student is provided opportunity for selection of electives which will best fit him for practice in that portion of the field in which he intends to function after graduation. The program is set up to lead to the Bachelor of Science degree, but the Bachelor of Arts may also be taken by those who meet the College requirements in arts and letters.

Applicants for admission as undergraduate students must meet the general admission requirements. Appropriate advanced standing is granted to those transferring with acceptable records from other accredited institutions of collegiate rank. However, any applicant permitted to enter with advanced standing but having no previous training in an accredited school of pharmacy is required to be in residence in this school for a minimum of nine academic terms before becoming eligible for graduation, regardless of his previous academic status.

In order to be eligible for final examination for credit, students in Pharmacy must attend at least seven-eighths of the classes of each course for which they have registered. Excessive absences incurred because of illness or other unavoidable circumstances may be cancelled by special arrangement with the instructor concerned and completion of all work missed during such absence. Completion of the prescribed curriculum and satisfaction of all College requirements are prerequisite to the granting of the baccalaureate degree.

Graduate work leading to the degrees of Master of Science, Master of Arts, and Doctor of Philosophy is offered in each of the areas of Pharmacy, Pharmacology, Pharmaceutical Analysis, and Pharmacognosy. Candidates for

admission to study at the graduate level must hold a bachelor's degree in Pharmacy from Oregon State College or its equivalent from another accredited institution. In addition, they must have attained a creditable scholastic average in their undergraduate work and have determined a definite objective to be attained through the advanced study. All advanced degrees are granted through and in accordance with the regulations of the Graduate School.

The curriculum as outlined below includes more than the necessary 36 term hours of science for a B.S. degree. If desired, the student may qualify for a second degree, the B.A., by proper selection of elective courses in arts and letters and foreign language.

## Curriculum in Pharmacy

### *B.A., B.S. Degrees*

	Term hours		
	F	W	S
<b>Freshman Year</b>			
English Composition (Wr 111, 112, 113) .....	3	3	3
Extempore Speaking (Sp 111) .....	3	.....	.....
Mathematics (Mth 100, 101) .....	.....	4	4
United States history and/or government .....	3	3	3
Biological Science Survey (GS 101, 102, 103) .....	4	4	4
Air or Military Science .....	1	1	1
<sup>1</sup> Physical Education .....	1	1	1
	15	16	16
<b>Sophomore Year</b>			
Principles of Economics (Ec 201, 202, 203) .....	3	3	3
Abridged General Physics (Ph 211, 212) .....	.....	3	3
General Psychology (Psy 201, 202) .....	3	3	.....
Applied Psychology (Psy 205) .....	.....	.....	3
Elective .....	3	.....	.....
General Chemistry (Ch 204, 205) .....	5	5	.....
Qualitative Analysis (Ch 206) .....	.....	.....	5
Air or Military Science .....	1	1	1
Physical Education .....	1	1	1
	16	16	16
<b>Junior Year</b>			
History of Pharmacy (Phr 212) .....	3	.....	.....
Fundamentals of Pharmacy (Phr 213, 214) .....	.....	3	3
Pharmacognosy (PhP 231, 232, 233) .....	3	3	3
Quantitative Analysis (Ch 234) .....	5	.....	.....
Organic Chemistry (Ch 226, 227) .....	.....	5	5
Physiology (Z 331, 332) .....	.....	3	3
General Bacteriology (Bac 204) .....	3	.....	.....
Electives .....	3	3	3
	17	17	17
<b>Senior (Fourth) Year</b>			
Pharmaceutical Preparations (Phr 319, 320, 321) .....	3	3	3
Inorganic Pharmaceuticals (Phr 311) .....	4	.....	4
Organic Medicinal Products (Phr 312, 313) .....	.....	4	4
Pharmaceutical Qualitative Analysis (PhA 321) .....	4	.....	.....
Pharmaceutical Quantitative Analysis (PhA 327) .....	.....	4	.....
Prescription (Phr 323) .....	.....	.....	3
Pharmacology (PhP 391, 392, 393) .....	3	3	3
Electives .....	3	3	3
	17	17	16

<sup>1</sup> General Hygiene (PE 150, 1 term hour for men; PE 160, 2 term hours for women) is taken one term in place of physical education.

	Term hours		
	F	W	S
Senior Year			
Prescription Compounding (Phr 454, 455, 456) .....	3	3	3
Pharmacy Seminar (Phr 407) .....	1	1	1
First Aid (PE 358) .....	3	.....	.....
Toxicology (PhA 441) .....	.....	3	.....
Pharmacological Standardization (PhP 494) .....	.....	.....	3
Biological Products (PhP 495) .....	3	.....	.....
Proprietary Specialty Products (Phr 451) .....	.....	3	.....
Pharmacy Law (Phr 450) .....	.....	.....	3
Pharmacy Administration (Phr 447) .....	3	.....	.....
Approved electives .....	3	6	6
	16	16	16

## Pharmacy

In the Department of Pharmacy are offered basic and advanced courses in theoretical pharmacy, pharmaceutical processes, and commercial pharmacy.

### Lower Division Courses

- Phr 212. **History of Pharmacy.** 3 hours fall. 3 ①  
Evolution and development of profession from earliest times to present.
- Phr 213, 214. **Fundamentals of Pharmacy.** 3 hours each term. 2 ① 1 ③  
Metrology, pharmaceutical calculations, fundamental principles and practices. Prerequisite: Phr 212, Ph 212, Mth 101.

### Upper Division Courses

- Phr 311. **Inorganic Pharmaceuticals.** 4 hours fall. 3 ① 1 ③  
Inorganic chemicals and their preparations used in medicine. Students make samples of chemicals; test for impurities. Prerequisite: Ch 206, Phr 214.
- Phr 312, 313. **Organic Medicinal Products.** 4 hours winter and spring. 3 ① 1 ③  
Organic chemicals and their preparations used in medicine; correlation between chemical constitution and physiological action. Prerequisite: Phr 311, PhP 233, Ch 227.
- Phr 319, 320, 321. **Pharmaceutical Preparations.** 3 hours each term. 2 ① 1 ③  
Preparations of U. S. Pharmacopeia and National Formulary. Prerequisite: Phr 214, PhP 233, Ch 206, 227.
- Phr 323. **Prescription.** 3 hours spring. 3 ①  
The prescription as a document; methods of receiving, interpreting, compounding, and dispensing; ambiguities and incompatibilities. Prerequisite: Phr 311, 320, PhA 321, Ch 227.
- Phr 350, 351. **Manufacturing Pharmacy.** 3 hours winter and spring. 1 ① 2 ③  
Problems involved in manufacturing drug and related products on industrial scale. Prerequisite: Phr 313, 321, PhA 327.
- Phr 401. **Research.** Terms and hours to be arranged.
- Phr 403. **Thesis.** Terms and hours to be arranged.
- Phr 405. **Reading and Conference.** Terms and hours to be arranged.
- Phr 407. **Seminar.** One hour each term. 1 ①
- Phr 447, 448, 449. **Pharmacy Administration.** 3 hours each term. 2 ① 1 ③  
Establishing a store, arrangements, salesmanship, showcase and window trimming, inventory, narcotic and poison records, taking prescriptions over telephone, etc. Prerequisite: Ec 203, Phr 323.

- Phr 450. **Pharmacy Law.** 3 hours spring. 3 ①  
Oregon Pharmacy Law; promulgations of Oregon Board of Pharmacy; Federal Food, Drug and Cosmetic Act; Harrison Narcotic Act; other laws.
- Phr 451. **Proprietary Specialty Products.** 3 hours winter. 3 ①  
Preparations of pharmaceutical manufacturers; composition and therapeutic use. Text, *New and Nonofficial Remedies*, supplemented by literature and reports. Prerequisite: Phr 313, 321.
- Phr 454, 455, 456. **Prescription Compounding.** 3 hours each term. 1 ① 2 ③  
Supervised compounding of a wide variety of prescriptions selected from current files of practicing pharmacists. Prerequisite: Phr 313, 321, 323.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- Phr 501. **Research.** Terms and hours to be arranged.
- Phr 503. **Thesis.** Terms and hours to be arranged.
- Phr 505. **Reading and Conference.** Terms and hours to be arranged.
- Phr 507. **Seminar.** Terms and hours to be arranged.

## Pharmaceutical Analysis

Courses in drug analysis, qualitative and quantitative, are offered through the Department of Pharmaceutical Analysis. All the work is of upper division or graduate character.

#### Upper Division Courses

- PhA 321. **Pharmaceutical Qualitative Analysis.** 4 hours. 3 ① 1 ③  
Composition and identification of natural products, alkaloids, synthetic drugs, and newer remedies. Prerequisite: Ch 206, 227, Phr 214, PhP 233.
- PhA 327. **Pharmaceutical Quantitative Analysis.** 4 hours winter. 2 ① 2 ③  
Quantitative determination of purity of more common official and unofficial drugs. Prerequisite: Ch 227, 234, Phr 311, PhA 321.
- PhA 441. **Toxicology.** 3 hours winter. 2 ① 1 ③  
Detection of common inorganic and organic poisons; emphasis on alkaloids and synthetics. Prerequisite: PhP 233, 393, PhA 321, Ch 227.
- PhA 461, 462, 463. **Advanced Drug Analysis.** (G) 3 hours each term. 1 ① 2 ③  
Advanced quantitative methods, both chemical and physical. Students showing proficiency in this course may do special work in State Drug Laboratory. Prerequisite: PhA 327.

#### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- PhA 501. **Research.** Terms and hours to be arranged.
- PhA 503. **Thesis.** Terms and hours to be arranged.
- PhA 505. **Reading and Conference.** Terms and hours to be arranged.
- PhA 507. **Seminar.** Terms and hours to be arranged.  
Conducted jointly with Phr 507 and PhP 507.

## Pharmacology and Pharmacognosy

Courses in the identification of medicinal plants, together with all courses dealing with the physiological action of drugs and their therapeutic value, are included in the Department of Pharmacology and Pharmacognosy.

### Lower Division Course

PhP 231, 232, 233. **Pharmacognosy.** 3 hours each term. 3 ①  
Official botanical, animal, and synthetic drugs; macroscopic identification.

### Upper Division Courses

PhP 354, 355. **Advanced Pharmacognosy.** 3 hours winter and spring. 1 ① 2 ③  
Microscopy of vegetable and animal drugs; cultivation of drug plants. Prerequisite: PhP 233.

PhP 391, 392, 393. **Pharmacology.** 3 hours each term. 2 ① 1 ③  
Physiological action of drugs on human organism; toxicological aspects of poisonous drugs. Prerequisite: Ch 227, Phr 214, PhP 233, Z 332.

PhP 454. **Commercial Poisons.** (G) 3 hours fall. 3 ①  
Substances and materials used as commercial poisons; their composition, characteristics, and toxicities. Prerequisite: PhP 393.

PhP 494. **Pharmacological Standardization.** 3 hours spring. 2 ① 1 ③  
Biological assaying; methods of U.S.P.; certain unofficial but well-recognized procedures. Prerequisite: PhP 393, Bac 204.

PhP 495. **Biological Products.** 3 hours fall. 3 ①  
Official vaccines, serums, antitoxins, hormones, endocrine products, and other materials of biological origin. Prerequisite: Bac 204, PhP 393.

### Graduate Courses

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

PhP 501. **Research.** Terms and hours to be arranged.

PhP 503. **Thesis.** Terms and hours to be arranged.

PhP 505. **Reading and Conference.** Terms and hours to be arranged.

PhP 507. **Seminar.** Terms and hours to be arranged.  
Conducted jointly with Phr 507 and PhA 507.

PhP 520, 521, 522. **Advanced Pharmacology.** 3 hours each term. 2 ① 1 ③

Methods of pharmacological screening in development of new drugs; determination of dose levels, tolerance, and safety by animal experimentation. PhP 520: Anesthetics, general and local. PhP 521: Sedatives, analgesics, hypnotics, convulsants, anticonvulsants. PhP 522: Drugs affecting autonomic nervous system. Prerequisite: PhP 393, Ch 452, or equivalent. Associate Professor McCutcheon.

PhP 525. **Advanced Pharmacological Standardization.** 4 hours. 2 ① 2 ③

Biological standardization of drugs by methods representative of latest techniques; application of statistical methods to evaluation of experimental results. Prerequisite: PhP 393, 495, Mth 423, or equivalents. Associate Professor McCutcheon.

PhP 530, 531. **Advanced Toxicology.** 3 hours each term, fall and winter. 1 ① 2 ③

Classification of poisons; symptoms of poisoning; organs most commonly involved in poisonings and separation of poisons from organs; chemical and pharmacological methods of testing for poisons. Prerequisite: PhA 441, PhP 393, or equivalents. Associate Professor McCutcheon.

PhP 550, 551, 552. **Selected Topics in Pharmacognosy.** 3 hours each term. 3 ①

Nonsequence courses intended to acquaint student with recent advances in pharmacognosy and their application to specialized fields of study. PhP 550: Carbohydrates, glycosides, saponins. PhP 551: Alkaloids. PhP 552: Lipids, resins, and related compounds. Prerequisite: Phr 313, PhP 355, 393. Associate Professor Sciuchetti.

# Defense Education

## Reserve Officers Training Corps

*Air Science and Tactics*  
*Military Science and Tactics*  
*Naval Science*

### General Statement

INSTRUCTION in military tactics began at Oregon State College about 1872 in conformity with a requirement of the Federal Morrill Act of 1862 establishing the land-grant universities. Cadets trained in the early years saw service in the Spanish-American War. Another Act of Congress passed on June 3, 1916, brought about the reorganization, in 1917, of the Cadet Regiment into a Reserve Officers Training Corps unit. In World War I, World War II, and the Korean conflict, the number of former students who served with distinction in our armed forces has given proof of the high quality of their preparation for public service and the value to the Nation of such military instruction.

Oregon State College is one of the 34 institutions which maintain all three of the principal types of ROTC units. The oldest of these, the Department of Military Science and Tactics, trains officers for four branches of the Army: Infantry, Field Artillery, Corps of Engineers, and Signal Corps. The Department of Naval Science, which was commissioned on September 17, 1945, includes a program of training for Marine Corps as well as Naval officers. The Department of Air Science, activated on July 1, 1949, was one of the first Air Force ROTC units established; its program of study leads to flight training in a commissioned status or to a commission as a nonrated officer in the Air Force.

**Mission and Objectives.** The ROTC seeks to select and prepare young men, through a permanent program of instruction in civilian institutions, to serve as officers in the Regular and Reserve components of the Army, Navy, Air Force, and Marine Corps. Each of the units on this campus strives to develop in the student a capacity for leadership, to develop him morally, mentally, and physically, and to provide him with a basic knowledge of the military professions.

**Requirements.** Military instruction is required of all physically qualified freshman and sophomore men between the ages of 14 and 22 inclusive at the time of enrollment in the ROTC, who are citizens of the United States and who successfully complete such general survey or training tests as may be prescribed. Men who transfer from other institutions with advanced standing are required to pursue military instruction until they have completed 93 term hours of college work, except that those who are credited with 80 term hours or more of advanced standing at the time of enrollment are exempt.

Men who have served one year or more in the regular Army, Navy, Marine Corps, Air Force, or Coast Guard may be excused from an appropriate portion of the basic course according to their length of service. This excused portion of the basic course counts toward completion of the basic course and eligibility for the advanced course except that the Air Force ROTC requires veterans to take AFROTC during each term of undergraduate work.

Enrollment in ROTC does not preclude registering under the Universal Military Training and Service Act of 1951. All students enrolled and of age must register.

**Uniforms, Allowances, and Summer Camps.** Students in all three of the units receive uniforms to be worn at certain drill periods and on special occasions. In the third and fourth years, cadets in the Army and Air Force units and those in Naval Science called "contract students" receive in addition an allowance of approximately 90¢ a day for a period not to exceed 595 days. Between the third and fourth years, these students attend a summer camp or take a summer cruise of approximately six weeks duration. During this period they are messed and quartered at government expense and are paid at the rate of approximately \$78 per month. They also receive a travel allowance of 5¢ a mile to and from camp. "Regular students" in Naval Science receive additional allowances described on a later page.

Basic students who are members of the band drill with the band rather than with the squadrons or companies.

## Air Science

(Personnel detailed from United States Air Force)

Professor HESTON (Colonel, United States Air Force) Commandant.

Associate Professors FORBES (Lieutenant Colonel); BOWERS (Major); COTTLE, SCHLOTZ-HAUER, SEVERTSON, SKOW, WHEELER (Captains).

Administrative Assistants HERDT, LUND (Master Sergeants); BRAZEL, McELROY, MILES, PERRY (Technical Sergeants); ATCHISON (Staff Sergeant).

Students in Air Science pursue the Basic Course the first two years and receive 1 term hour of credit each term. Those who go on into the Advanced Course (the third and fourth years) receive 3 term hours of credit each term and 6 term hours for attending summer camp at an Air Force base. In all, the student on graduation will have a total of 30 term hours of credit in Air Science, 24 hours of which will be upper division. He may include SSc 441, 442, 443 to provide a comajor in Air Science with whatever other major he submits for a baccalaureate degree.

**Enrollment in Advanced Course.** Each student enrolled in the Advanced Course of the Senior Air Force ROTC must:

1. Be selected by the professor of air science and the President of Oregon State College.
2. Be eligible for commissioning prior to his 28th birthday.
3. Successfully complete such survey and general screening tests as may be prescribed.
4. Have completed the Basic Course or received credit in lieu thereof for having had previous honorable active service in the Army, Navy, Marine Corps, Coast Guard, or Air Force.
5. Be a citizen of the United States.
6. Be physically qualified under standards prescribed by the Department of the Air Force. Due allowance will be made for those defects that are correctible before the student becomes eligible for appointment as a commissioned officer.
7. Be accepted by Oregon State College as a regularly enrolled student.
8. Execute a written agreement with the Government to complete the Advanced Course, contingent upon remaining in college, and to attend the summer training unit at the time specified.
9. If physically qualified, agree to apply for flying training unless otherwise specifically exempt. Quotas for those not applying for flying training are quite limited.

To receive a commission a student must be between 21 and 28 years of age and must have completed requirements for a baccalaureate degree.

**Flight Training.** Eligible seniors are given sufficient flight training to qualify for a private pilot's license. Cadets who complete this flight training and the advanced course in Air Force ROTC are then qualified and eligible to participate in the USAF Pilot Flight Training Program as commissioned officers. Students determined eligible for other than pilot training will receive navigator or other training in the USAF as commissioned officers.

#### Lower Division Courses

- AS 111, 112, 113. **First-Year Basic Course.** 1 hour each term.  
Introduction to Air Force ROTC, introduction to aviation, fundamentals of global geography, international tensions and security organizations, instruments of national military security. Leadership laboratory.
- AS 211, 212, 213. **Second-Year Basic Course.** 1 hour each term.  
Elements of aerial warfare; targets, weapons, aircraft, bases, operations; careers in United States Air Force. Leadership laboratory.

#### Upper Division Courses

- AS 311, 312, 313. **First-Year Advanced Course.** 3 hours each term.  
Air Force commander and staff, problem-solving techniques, communications process and Air Force instructing, military law, courts and boards, applied air science (navigation, weather), Air Force base functions, leadership laboratory.
- AS 314. **Summer Camp.** 6 hours.  
Individual weapons, familiarization flying, field exercises, base activities and equipment, Air Base problems, drill and physical training.
- AS 411, 412, 413. **Second-Year Advanced Course.** 3 hours each term.  
Principles of leadership and management, career guidance, military aspects of world political geography, military aviation and evolution of warfare, briefing for commissioned service, leadership laboratory, moral responsibility of Air Force leaders.

## Military Science and Tactics

(Personnel detailed from United States Army)

Professor KNAPP (Colonel, Artillery) Commandant.

Associate Professors: Lieutenant Colonels JOHNSON (Adjutant), HURLEY (Director of Engineer Unit), LARSON (Director of Infantry Unit), WILLIAMS (Director of Artillery Unit), LAHM (Assistant Director Artillery Unit); Major HERON (Director of Signal Corps Unit).

Assistant Professors: Captains NORTON (Armor), GRIFFITHS (Signal Corps), STEWART (Corps of Engineers), STUBBS (Quartermaster Corps), WHITELOW (Armor); First Lieutenant WARDEN (Corps of Engineers).

Instructors: Master Sergeants BARTCHER, BINK, FELTS, FERREN, McCALL, NOE, SLOVER, WILLIAMS; Sergeants First Class McDERMOTT, MOSHER, WRISTON; Sergeant LOWE.

The first two years of military instruction requiring three hours a week (1 term hour credit) constitute the Basic Course. Students in the Advanced Course (third and fourth years) receive 3 term hours of credit per term and 6 term hours for summer camp. In all, the student on graduation will have a total of 30 term hours of credit in military science, 24 hours of which will be upper division. He may include SSc 441, 442, 443 to provide a comajor in military science with whatever other major he submits for a baccalaureate degree.



**Enrollment in the Advanced Course.** Each student enrolled in the Advanced Course of the Senior ROTC must:

1. Be selected by the professor of military science and tactics and the President of Oregon State College.
2. Not have reached 27 years of age.
3. Have successfully completed such survey and general screening tests as may be prescribed.
4. Have completed the Basic Course or received credit in lieu thereof for having had twelve months or more previous honorable active service in the Army, Navy, Marine Corps, Coast Guard, or Air Force.
5. Be a citizen of the United States.
6. Be physically qualified under standards prescribed by the Department of the Army. Due allowance will be made for those defects that are correctible before the student becomes eligible for appointment as a commissioned officer.
7. Be accepted by the College as a regularly enrolled student.
8. Execute a written agreement with the United States to complete the Advanced Course, contingent upon remaining in college and to attend the summer camp at the time specified unless deferred for cogent reasons.

**Commissions.** For a reserve commission a student must meet the following minimum requirements:

1. He must have received a baccalaureate degree.
2. In addition to his major in military science, he must have a comajor as follows:
  - (a) For commission in the Corps of Engineers, he must have a comajor in any academic course of instruction leading to an engineering, technical, or scientific degree.
  - (b) For commission in the Field Artillery or Infantry, he must have a comajor in any school or department at Oregon State College granting an academic degree.
  - (c) For commission in the Signal Corps any academic course leading to a degree in engineering, electronics, or physics. Students enrolled in courses other than these, however, may be admitted if marked ability, aptitude, or interest in technical fields of endeavor is demonstrated.

Students in scientific and technical courses who wish to be commissioned in branches of the Army not represented by units on this campus may, under certain circumstances, attend an ROTC summer camp of the appropriate branch and on graduation be recommended for commission in that other branch.

Distinguished Military Students and Distinguished Military Graduates have an opportunity to apply for appointment as commissioned officers in the Regular Army. In addition to possessing outstanding qualities of military leadership, high moral character, and definite aptitude for the military services, these men must be between the ages of 21 and 27 years and must meet certain physical standards.

**Flight Training.** A limited number of seniors in the advanced course will have an opportunity to take flight training leading to a private pilot's license and to an opportunity to attend the U. S. Army flight training program after graduation.

## **Courses for Freshman and Sophomore Years**

### **Lower Division Courses**

**MS 111, 112, 113. First-Year Basic Course.** 1 hour each term.

Common to all four branches: Infantry, Field Artillery, Corps of Engineers, Signal Corps. School of the soldier and exercise of command, organization of the Army and ROTC; individual weapons and marksmanship; American military history.

**MS 211, 212, 213. Second-Year Basic Course.** 1 hour each term.

Common to all four branches: Infantry, Field Artillery, Corps of Engineers, Signal Corps. School of the soldier and exercise of command; map and aerial photo reading; crew-served weapons and gunnery; basic tactics; elementary communication.

## Courses in Infantry

### Upper Division Courses

- MS 311, 312, 313. **First-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; maps and aerial photos; crew-served weapons and gunnery; mine warfare; field fortifications; patrolling; tactics of the rifle squad; tactics of rifle and heavy weapons platoons and companies; tactics of infantry battalion in attack and defense; leadership; military teaching methods.
- MS 314. **Advanced Summer Camp.** 6 hours.  
Practical and theoretical instruction of a specialized type. Prerequisite: MS 313.
- MS 411, 412, 413. **Second-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; organization; motors and transport; supply and evacuation; troop movement; maps and aerial photos; tactics of rifle and heavy weapons platoons and companies; new developments; psychological warfare; the military team; command and staff; tactics of infantry battalion; military administration; military justice; service orientation.

## Courses in Field Artillery

### Upper Division Courses

- MS 321, 322, 323. **First-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; leadership; military teaching methods; organization and capabilities; instruments; materiel; communications; gun section drill; survey; firing battery; observed fires; fire direction; antiaircraft artillery orientation; introduction to artillery tactics; operation of the field artillery battery.
- MS 324. **Advanced Summer Camp.** 6 hours.  
Practical and theoretical instruction for six weeks at Fort Sill, Oklahoma. Prerequisite: MS 323.
- MS 421, 422, 423. **Second-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; command and staff; military intelligence; employment of artillery in the combined arms team; supply and evacuation; troop movements; motor transportation; new developments; military administration; military justice; service orientation.

## Courses in Military Engineering

### Upper Division Courses

- MS 331, 332, 333. **First-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; basic engineer organization; use of explosives; construction materials; military structures; engineer computations and layouts; fortifications and camouflage construction; leadership; military teaching methods.
- MS 334. **Advanced Summer Camp.** 6 hours.  
Practical and theoretical instruction of a specialized type. Prerequisite: MS 333.
- MS 431, 432, 433. **Second-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; engineer logistics; construction management; engineer operations; military administration; military justice; service orientation.

## Courses in Signal Corps

### Upper Division Courses

- MS 351, 352, 353. **First-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; leadership; communications security; signal orders; field wire communications fundamentals; field radio communications fundamentals; applied signal communications (division); message center and communications center procedure; military teaching methods.
- MS 354. **Advanced Summer Camp.** 6 hours.  
Practical and theoretical instruction of a specialized type. Prerequisite: MS 353.
- MS 451, 452, 453. **Second-Year Advanced Course.** 3 hours each term.  
School of the soldier and exercise of command; signal corps logistics; wire communications materiel; radio communications materiel; higher echelon signal communication systems and equipment; signal corps photo activities; military intelligence; command and staff; military administration; military justice; service orientation.

# Naval Science

(Personnel detailed from United States Navy and Marine Corps)

Professor MILLER (Captain, USN) Commanding Officer.

Associate Professor MACKIE (Commander, USN); Assistant Professors McNULTY (Lieutenant Commander, USNR), RICHARDS (Captain, USMC), DREYER (Lieutenant, USN), DAGLE (Lieutenant (jg), USNR), ROE (Lieutenant (jg), USNR); Instructors LESTER (Master Sergeant, USMC), HOLCOMB (Chief Fire Control Technician, USN), ROYAL (Chief Quartermaster, USN), RUSSELL (Gunnersmate First Class, USN).

The NROTC Unit is composed of two types of students: *regular students* and *contract students*. The contract students receive the same type of allowances as do the cadets in the other ROTC units. They are selected by the Department of Naval Science at Oregon State College. The regular students fall under a different category, being provided for by a separate Act of Congress.

Regular students are appointed Midshipman, USNR. They have their tuition, fees, and textbooks paid for by the Navy for a period not exceeding four years, are uniformed at Government expense, and receive retainer pay at the rate of \$600 per year. They obligate themselves to complete the prescribed Naval Science curriculum, to attend three summer cruises of from six to eight weeks, to accept a commission as Ensign, U.S.N., or Second Lieutenant, U.S.M.C., on graduation, and to serve on active duty for four years after receiving commission, unless earlier released by the Navy Department. At the beginning of the fourth year after receiving commissions, they have the opportunity to apply for retention in the regular Navy or Marine Corps, and will be so retained if selected under the quotas then in force.

Students in this group are selected by means of a nationwide examination, which is administered by state or regional selection boards. This examination is given each year, generally in December, for entry the following fall term. Information relative to later examinations may be obtained from the Commanding Officer of the NROTC Unit.

**Requirements:** *Every acceptable candidate*, whether applying as a regular or contract student, must:

1. Be a male citizen of the United States.
2. Be a regularly enrolled student in good standing at a college of which the NROTC Unit is a part.
3. Have attained his 17th birthday on or before July 1 of the year in which enrolled, but must not attain his 25th birthday before July 1 of the year in which he would normally receive his first baccalaureate degree and be commissioned.
4. Be unmarried and agree to remain unmarried until commissioned or otherwise separated from the NROTC program.
5. Agree, with the consent of his parent or legal guardian, to undergo whatever period of training may be necessary to complete all requirements of the NROTC curriculum.
6. Agree to participate in required summer training courses and cruises.
7. Agree to accept the appropriate commission in the Navy, Marine Corps, Naval Reserve, or Marine Corps Reserve, when offered.
8. Meet general physical requirements as follows: *Height*, minimum 5 feet 6 inches, maximum 6 feet 4 inches. *Vision*, 20/20 each eye (except 20/40 correctible for contract students); color perception normal. *Weight*, in proportion to height. Teeth, a minimum of 16 vital, of which 8 must be in each arch. Other physical requirements as prescribed by the Manual of the Medical Department for candidates for commissions.
9. Be morally qualified and possess potential officer qualities, as evidenced, for example, by appearance, scholarship, and extracurricular activities.
10. Agree, with consent of parents or guardian, to serve on active duty in the Navy or Marine Corps, after receiving his commission for a period of three years (for Regular Student) or two years (for Contract Student).

**Status and Curriculum.** Students enrolled in the program are not on active duty. They wear the uniform only for drills, on special occasions, and during the summer training cruises.

The program of study covers four years and fits into curricula leading to first baccalaureate degrees. It includes the following requirements:

1. Thirty-six term hours of Naval Science. Each NROTC student must be enrolled in at least one three-hour course in Naval Science each term until graduation.
2. One year of college physics to be completed by the end of the sophomore year for regular students only. This course is a necessary background for the courses in naval engineering (NS 311, 312).
3. Mathematics courses through trigonometry, to be completed by the end of the sophomore year. This requirement is a necessary background for the courses in navigation (NS 312, 313).
4. Proficiency in written and oral expression. (One year of English is considered adequate.)
5. Two years of physical education. Each student must qualify as a swimmer and should be instructed in lifesaving and resuscitation.

Naval science (including summer cruise) pursued for four years in one of the undergraduate curricula constitutes a comajor with many of the majors offered in degree-granting divisions of schools. In addition, the Department of Naval Science offers a four-year curriculum with a major in naval science; in this curriculum the student may take considerable amounts of work in any of the schools but needs to complete a major only in naval science. The curriculum leading to a B.A. or B.S. degree in Naval Science is open only to those students enrolled in either the regular or contract programs. Interested students should confer with the Department of Naval Science.

### Description of Courses

- NS 111, 112, 113. **Naval Orientation and Sea Power.** 3 hours each term. 5 ①  
 Organization; customs and traditions of the Navy; highlights of Naval history from Salamis to Jutland; Naval history of World War II; leadership; discipline; introduction to Marine Corps; naval aviation, amphibious warfare, submarines, etc.; seamanship; maneuvers and tactics; rules of the nautical road.
- NS 211, 212, 213. **Naval Weapons.** 3 hours each term. 5 ①  
 Introduction to weapons and control equipment; principles of radar; fire control; anti-submarine warfare; new weapons; CIC; rockets and guided missiles; amphibious operations.
- NS 311, 312, 313. **Naval Machinery and Navigation.** 3 hours each term. 5 ①  
 Elements of a typical marine engineering plant: boilers, turbines, condensate system, feed water system, auxiliary equipment, diesel engines; ship stability; introduction to navigation: piloting, nautical astronomy, celestial navigation.
- NS 321, 322, 323. **Evolution of Art of War and Modern Basic Strategy and Tactics.** 3 hours each term. 5 ①  
 Evolution of the art of war from Alexander to the present time; basic strategy and tactics; small unit tactics; world strategy in World War II. For candidates for U.S. Marine Corps or U.S. Marine Corps Reserve.
- NS 411, 412, 413. **Naval Operations and Naval Administration.** 3 hours each term. 5 ①  
 Study of relative movement problems, rules of the nautical road; fleet tactics and maneuvers; fleet communications; administration; military justice; weather; and naval leadership.
- NS 421, 422. **Amphibious Warfare.** 3 hours fall and winter. 5 ①  
 Theory of amphibious warfare; analysis of amphibious operations in World War II and Korean conflict. For candidates for U.S. Marine Corps or U.S. Marine Corps Reserve.

# Division of Physical Education

## Faculty

CLAIR VAN NORMAN LANGTON, Dr.P.H., Ed.D., Director of the Division of Physical Education.

Physical Education for Women: Professor SEEN (department head); Associate Professors P. GILL, HARRISON, MILLIKEN, H. MORRIS, THOMPSON, WEIR; Assistant Professors GAYNOR, HUPFRICH, McALLESTER (emeritus), SCULLY; Instructors BLODGETT, POLING, SEYMOUR.

Physical Education for Men: Professors ADRIAN, ALLMAN, ANDERSON (chairman of hygiene and environmental sanitation), BERGSTROM (chairman of professional physical education), COLEMAN (chairman of service programs for men), A. T. GILL, KEENE, PROTHRO; Associate Professors COX, DIXON, FOSTER, RAABE, SWAN; Assistant Professors DAILEY, DELICA, FLOOD, GODDARD, KOSKI, MCKALIP, MOE, M. MORRIS, D. THOMAS.

Intercollegiate Athletics: Director R. S. KEENE; Athletic Business Manager and Golf Coach BARRATT. COACHES: COLEMAN (baseball), GILL (basketball), HARRIS (tennis), KOSKI (swimming), MOE (track), PROTHRO (football), ROBERTSON (trainer), STAPLETON (assistant football), D. THOMAS (wrestling), J. THOMAS (freshman football), TWENGE (assistant football), VALENTI (assistant basketball), WATSON (assistant football), ZELINKA (assistant football).

## General Statement

**A**LL instruction and related activities in the fields of physical education and hygiene are administered by the Division of Physical Education. Major work in hygiene and sanitation in the School of Science and health education in the School of Education is administered by the Division of Physical Education. Close cooperation is maintained with the Student Health Service and other student-welfare agencies of Oregon State College.

In addition to its service function, the Division of Physical Education offers major curricula leading to baccalaureate degrees through the School of Education or the School of Science. The major curriculum in physical education provides professional preparation for teaching and coaching. The major in health education or hygiene and sanitation provides professional work for specialists in these fields. Nonteaching major options are offered in recreation, youth agency leadership, prephysical therapy, and preoccupational therapy, which prepare graduates for these rapidly developing fields. Many opportunities exist for combining the major offerings with courses in the Schools of Science, Agriculture, Business and Technology, Education, Engineering, Forestry, and Home Economics.

Students majoring in other teaching fields or schools may take a minor in physical education, health education, recreation, camp education, or the dance by completing at least 27 term hours of professional courses in the respective field. See curricula under SCHOOL OF EDUCATION.

Requirements for the Oregon teachers certificates are listed under SCHOOL OF EDUCATION. Students who complete either the health education major or the physical education major include courses in these fields during their fifth year of preparation along with other courses according to their special objectives. Students who devote their fifth years to graduate work for a master's degree may major in education, science education, health education, hygiene, or other fields and include a graduate minor in physical education. Requirements for the master's degree can be completed with or without thesis. Advanced degrees are granted through the School of Education or the School of Science.

A comprehensive intramural sports program offers sports for all students of Oregon State College. Living organizations, clubs, individuals, classes, and institutional departments compete with friendly rivalry in many sports activities. The intramural sports program is separate and apart from intercollegiate athletics.

Professional physical education students belong to the Physical Education Club. Parthenia is an honor society sponsored by the Women's Physical Education Department. The Women's Recreation Association, sponsored by the Women's Physical Education Department, offers a program of competitive and noncompetitive physical activities of a social and recreational nature for women students. Women students who give outstanding service are elected to Orange "O," the honorary club for the Women's Recreation Association. Athletic organizations for men include the Minor "O" and Varsity "O" associations and the honor society, Sigma Delta Psi. The Varsity "O" Managers Association includes varsity team managers and the senior intramural sports manager.

A medical examination is required of all entering students. The Student Health Service advises with the Physical Education departments in the assignment of students to activities in accord with their physical needs. The following activity classification is made, based upon the medical examinations: (a) unlimited activity, (b) unlimited activity with observation, (c) restricted activity, (d) corrective gymnastics, (e) no activity.

The regular registration fee entitles every student to the use of gymnasium, pool, and showers, use of gymnasium suits and swimming suits and towels, and laundry service. Every student has a basket or locker in the gymnasium for his or her exclusive use and is urged to use the gymnasium facilities to the utmost.

A broad program of physical fitness and recreation is emphasized. All undergraduate men and women are required to enroll in and complete physical activity courses during the freshman and sophomore years unless excused by the college physician. Entering students are required to enroll in swimming unless they pass the divisional swimming test. Students must complete the following:

*Freshman year:* PE 151, 152, 153, Physical Education Activity, 1 term hour each for two terms (except in Nursing Education—1 hour each for three terms); and PE 160, General Hygiene, 2 term hours for women; PE 150 or PE 160, 1 or 2 term hours for men.

*Sophomore year:* PE 251, 252, 253, Physical Education Activity, 1 term hour each term for three terms.

Only one of the courses listed above may be taken in any one term.

The professional activity courses for students taking a major or minor in physical education (PE 124-126, 224-226) may be considered as fulfilling the physical education requirement for any term.

Required activity courses are regularly scheduled classes planned as instructional hours leading to a knowledge and appreciation of the technique involved and not merely to give opportunity for recreation or exercise. Ample opportunity for exercise and recreation is provided, and all of the facilities of the division are at the student's disposal outside the regular class hours.

Courses PE 351, 352, 353, PE 451, 452, 453 for men may be taken to the amount of one hour per term for juniors and seniors. A total of six hours in addition to the regular physical-education requirement may be elected.

## Curriculum in Physical Education

Students preparing for physical education teaching and coaching or related fields pursue the basic program of required courses listed below.

### Student's Basic Program

	Term hours		
	F	W	S
<b>Freshman Year</b>			
Human Biology (Z 114, 115, 116).....	3	3	3
English Composition (Wr 111, 112, 113).....	3	3	3
General Chemistry (Ch 101, 102, 103).....	3	3	3
Introduction to Physical Education (PE 121).....	3	.....	.....
Advanced Hygiene (PE 250).....	.....	3	.....
Introduction to Health Education (SEd 123).....	.....	.....	3
Pupil, Teacher, and Society (Ed 112).....	.....	3	.....
Camp Counseling (Ed 263) (women).....	.....	.....	3
Physical Education Laboratory (PE 124, 125, 126).....	2	2	2
Air, Military, or Naval Science (men).....	1	1	1
Electives (women).....	2	.....	.....
<b>Sophomore Year</b>			
Elementary Human Anatomy (Z 321, 322).....	3	3	.....
Applied Human Anatomy (Z 323).....	.....	.....	3
Physical Education Laboratory (PE 224, 225, 226).....	2	2	2
Social Science (Ec 212, PS 201, Soc 212).....	3	3	3
Literature.....	3	3	3
General Psychology (Psy 201, 202).....	3	3	.....
Speech.....	.....	.....	3
Organization and Administration of Intramural Sports (PE 350).....	.....	2	.....
Air, Military, or Naval Science (men).....	1	1	1
Electives.....	2	2	2
<b>Junior Year</b>			
Physiology (Z 331, 332).....	3	3	.....
Applied Human Physiology (Z 336).....	.....	.....	3
School in American Life (Ed 310).....	3	.....	.....
Educational Psychology: Learning (Ed 312).....	.....	3	.....
Special Secondary Methods (Ed 408h).....	.....	.....	3
Physical Education Technique (PE 333, 334, 335).....	2	2	2
Coaching of Basketball (PE 346) (men).....	2	.....	.....
Coaching of Football (PE 347) (men).....	.....	2	.....
Coaching of Baseball or Track and Field (PE 348 or PE 349) (men).....	.....	.....	2
Sports Officiating (PE 354) (women).....	.....	3	.....
Recreation Leadership (PE 240) (women).....	3	.....	.....
Electives.....	3-8	3-8	6-8
<b>Senior Year</b>			
School Health Education (SEd 321).....	3	.....	.....
School Health Services (SEd 322).....	.....	3	.....
First Aid (PE 358).....	.....	.....	3
School Programs and Organization (PE 411).....	5	.....	(5)
Evaluation of Physical Education (PE 412).....	.....	3	.....
Athletic Training and Conditioning (PE 361) (men).....	.....	2	.....
Adaptive and Corrective Physical Education (PE 413) (women).....	.....	.....	3
Supervised Teaching (Ed 416).....	9	(9)	(9)
Seminar (Supervised Teaching) (Ed 407).....	1-3	(1-3)	(1-3)
Electives.....	0-13	0-13	0-13

### Nonteaching Options

For curricula in recreation, youth agency leadership, prephysical therapy, and preoccupational therapy consult with advisers in the Division.

### Service Courses

#### Lower Division Courses

PE 150. **General Hygiene.** 1 hour any term. 2 ①  
 Principles and practices of health promotion; individual and physiological hygiene; disease prevention and control; community hygiene and public health. Satisfies hygiene requirement for men.

- PE 151, 152, 153. **Physical Education Activity.** 1 hour each term. 3 ①  
Physical activities taught for acquisition of skill and for adaptation in social life of the student.
- PE 160. **General Hygiene.** 2 hours any term. 2 ①  
Principles and practices of health promotion; individual and physiological hygiene; disease prevention and control; community hygiene and public health. Satisfies hygiene requirement; may be elected by both men and women.
- PE 250. **Advanced Hygiene.** 3 hours. 3 ①  
Personal health, exercise, weight control, prevention of infection, social hygiene, diet, stimulants, injurious popular remedies and fads, sunlight, air and ventilation, choosing a doctor, and life-extension problems.
- PE 251, 252, 253. **Physical Education Activity.** 1 hour each term. 3 ①  
Required of sophomores. Horseback riding (fee \$20) may be elected.

#### Upper Division Courses

- PE 351, 352, 353. **Physical Education Activity.** 1 hour each term. 3 ①  
A continuation of PE 251, 252, 253. Required of juniors.
- PE 451, 452, 453. **Physical Education Activity.** 1 hour each term. 3 ①  
A continuation of PE 351, 352, 353. Required of seniors.

### Professional Courses

#### Lower Division Courses

- PE 121. **Introduction to Physical Education.** 3 hours. 3 ①  
Personal and professional qualifications for teaching and coaching; place of physical education and athletics in education; values of physical education to development of children and youth; general purposes of physical education program.
- Ed 121. **Introduction to Recreation.** 3 hours. 3 ①  
Concept of community recreation; growth and development of public recreation movement; types of recreation; role of organized recreation in present social order.
- PE 123. **Introduction to Therapy.** 2 hours. 2 ①  
Personal and professional qualification to become registered physical therapist or occupational therapist. Relationship of physical therapy and occupational therapy to field of medicine; values of physical therapy and occupational therapy.
- SEd 123. **Introduction to Health Education.** 3 hours. 3 ①  
Historical background and underlying philosophy of health education; statistical facts that indicate need for health education; survey of modern practice in and organization for health education; opportunity for professional work in field.
- PE 124, 125, 126. **Physical-Education Laboratory.** 2 hours each term. 1 ① 2 ②  
Methods, techniques, and basic skills in activities commonly found in physical education programs.
- PE 221. **Introduction to Dance Education.** 3 hours. 1 ① 1 ②  
Modern developments of dance in relation to general education; aims and objectives; history of dance in education; survey of modern practices; opportunities in field.
- PE 224, 225, 226. **Physical-Education Laboratory.** 2 hours each term. 1 ① 2 ②  
Methods, techniques, and basic skills in activities commonly found in physical education programs.
- PE 227. **Basic Rhythms.** 2 hours. 1 ① 2 ②  
Fundamental forms of locomotion; step patterns; social, folk, square, and contra dances; vocabulary of rhythm and dance; equipment; source materials.
- PE 240. **Recreation Leadership.** 3 hours. 3 ①  
Study and practice of games for family recreation, parties, picnics, clubs, and community centers. Lecture and laboratory.



- Ed 263. **Camp Counseling.** 3 hours. 3 ①  
Counselor training, responsibility in camp, camper problems, camp relationships. Three-day practical camping field trip.

#### Upper Division Courses

- Bac 321. **Sanitation.** 3 hours. 1 ② 1 ①  
Sanitation in home, school, city; control of communicable diseases and their relation to foods, rodents, swimming pools, eating establishments, insects, ventilation, industrial hygiene, etc. Prerequisite: one term of general bacteriology or equivalent.
- SEd 321. **School Health Education.** 3 hours. 3 ①  
Procedures, processes, and techniques in developing ability of public school student to understand and guide own health and to contribute to health of community. Prerequisite: SEd 123 or junior standing.
- SEd 322. **School Health Services.** 3 hours. 3 ①  
School procedures which contribute to development, maintenance, and protection of health of student; organization of services, examinations, screening, special services, communicable disease control, emergency care, school environment, forms and records. Prerequisite: SEd 123 or junior standing.
- PE 333, 334, 335. **Physical-Education Technique.** 2 hours each term. 4 ①  
Technique of teaching dancing and sports; problems of directed teaching. Prerequisite: PE 125, 126, 224.
- PE 340. **School Programs in Elementary Physical Education.** 3 hours. 3 ①  
Purposes in elementary school physical education; planning progressive programs for grades 1-8; methods of obtaining objectives; evaluation.
- PE 341. **Fundamentals of Body Movement and Conditioning Exercises.** 1 hour. 2 ①  
Progressive activity skills for all grades; fundamentals of body movement and conditioning exercises, stunts, and tumbling; practical instruction; opportunity to analyze performance of children of various ages.
- PE 342. **Rhythms and Dance.** 1 hour. 2 ①  
Progressive activity skills for all grades, including rhythms and dance; practical instruction; opportunity to analyze performance of children of various ages.
- PE 343. **Games, Relays, and Team Activities.** 1 hour. 2 ①  
Progressive activity skills for all grades, including games, relays, team activities; practical instruction; opportunity to analyze performance of children of various ages.
- PE 346. **Coaching of Basketball.** 2 hours. 2 ① 1 ②  
Coaching and training of basketball teams beginning with fundamentals, passing, dribbling, and pivoting; psychology of the game; various methods of defense and offense.
- Ed 347, 348, 349. **Field Work.** 2 hours each term. 2 ①  
Observation and participation in planning, operation, and administration of variety of recreation, youth-organization, and therapy programs under direction and supervision of trained leaders. Prerequisite: junior standing in one of nonteaching options.
- PE 347. **Coaching of Football.** 2 hours. 2 ① 1 ②  
Theory and practice, details of each position, training and managing, complete techniques of developing offensive and defensive tactics, comparison of various systems in American intercollegiate football.
- PE 348. **Coaching of Baseball.** 2 hours. 2 ① 1 ②  
Technique of batting, pitching, baseball strategy, how to play various positions; promoting the game; making schedules; points of inside baseball; care and construction of field; management.
- PE 349. **Coaching of Track and Field.** 2 hours. 2 ① 1 ②  
How to train for track and field events; form and technique; conduct of meets; construction, use, and assembling of equipment; development of certain types of individuals for certain events.

- PE 350. **Organization and Administration of Intramural Sports.** 2 hours. 2 ①  
 Intramural program for high schools and colleges; aims and objectives; organizing a program; units of competition; program of sports; methods of competition; scoring plans; administrative problems.
- PE 354. **Sports Officiating.** 3 hours. 3 ①  
 Rules, mechanics, and procedures of officiating in competitive sports; enforcement of rules; use of signals; personal appearance and conduct, public relations, duties of officials; suggestions for coaches and administrators, code of ethics, and qualifications for national official's rating.
- PE 358. **First Aid.** 3 hours. 2 ① 1 ②  
 Emergency treatment for various types of injuries; control of bleeding, artificial respiration, transportation, splinting, and bandaging. Students are required to teach first-aid projects. Course leads to Red Cross Standard, Advanced, and Instructor's Certificates. Open as a service course to all departments.
- Ed 360. **Safety Education.** 3 hours. 3 ①  
 Background and knowledge of all phases of safety; home, fire, industrial, water, rural, school, and traffic safety; elementary, secondary, and adult levels. Prerequisite: Ed 310, 312, 313.
- PE 361. **Athletic Training and Conditioning.** 2 hours. 3 ①  
 Prevention and treatment of athletic injuries; practical and theoretical aspects of massage, taping, and bandaging; diet and conditioning; various physical therapeutic procedures. Prerequisite: Z 323.
- Ed 364. **Laboratory Practice in Camping Skills.** 3 hours. 3 ①  
 Practical experience and development of skills in a variety of camping activities.
- Ed 365. **Camp Management.** 3 hours. 3 ①  
 Directed toward preparation for camp administration. Prerequisite: Ed 263, 364 or camp counseling experience.
- Ed 366. **Public School Camping.** 3 hours. 3 ①  
 Role of camping in education; school camp and its organization, administration, and leadership.
- PE 405. **Reading and Conference.** (g) Terms and hours to be arranged.<sup>1</sup>
- PE 407. **Seminar.** (g) Terms and hours to be arranged.<sup>1</sup>  
 PURCHASE AND MAINTENANCE OF EQUIPMENT.  
 PLANNING PHYSICAL EDUCATION PROGRAMS.  
 CURRICULUM DEVELOPMENT.  
 SUPERVISION.  
 CURRENT STUDIES IN ATHLETICS.
- PE 411. **School Programs and Organization.** 5 hours. 5 ①  
 Aims and objectives; selecting activities; typical programs and variations; athletics; standards; State and local requirements; administrative organization; policies and procedures; history and philosophy. Prerequisite: Ed 408 and senior standing.
- PE 412. **Evaluation of Physical Education.** 3 hours. 3 ①  
 Techniques for evaluating knowledge, skill, attitudes, appreciations, and organic vigor through physical education instruction. Prerequisite: PE 335.
- PE 413. **Adaptive and Corrective Physical Education.** 3 hours. 3 ①  
 Reconstructive health and physical education, including scoliosis, kyphosis, lordosis; methods of posture screen, orthopedic conditioning affecting posture, preventive measures, evaluation of visual aid materials in posture.
- PE 421. **Principles of Physical Education.** (g) 3 hours. 1 ① 1 ②  
 General philosophy and principles of physical education and their relation to general education. Prerequisite: PE 411.

<sup>1</sup> Credit for PE 405 plus PE 407 must not exceed 9 term hours.

- PE 422. **Tests and Measurements in Physical Education.** (g) 3 hours. 3 ①  
 Survey of field: special study of typical tests, methods of scoring, principles of test construction. Prerequisite: PE 412.
- PE 423. **Administration of Physical Education.** (g) 3 hours. 3 ①  
 Administrative problems; organization of departments and of instructional and recreational programs; supervision of both teaching and physical plant. Prerequisite: PE 411.
- Ed 423. **Organization and Administration of Recreation.** (g) 3 hours. 3 ①  
 Organizing, administering, and conducting recreation programs; study of problems in recreation. Prerequisite: Ed 347, 348, 349.
- Ed 425. **Youth Agencies.** (G) 3 hours. 3 ①  
 Survey of youth-serving organizations; organization and leadership. Prerequisite: senior or graduate standing.
- Ed 426. **Community Recreation.** (G) 3 hours. 3 ①  
 Developing philosophy of recreation, trends; organization and administration of recreation program in large, small, and rural communities. Prerequisite: senior or graduate standing.
- Bac 424, 425, 426. **Community Health Problems.** (g) 3 hours each term. 2 ① 2 ②  
 Application of the principles of hygiene to sanitary, statistical, governmental, epidemiological, sociological problems. Prerequisite: junior or senior standing.
- PE 431. **Current Trends and Problems.** (g) 3 hours. 3 ①  
 Trends and underlying forces in health, physical education, and recreation; implications of recent developments for administrative responsibility and planning for programs in schools and colleges. Prerequisite: PE 411.
- SEd 431, 432, 433. **School Health Problems.** (G) 3 hours each term. 3 ①  
 Maintenance of health of school children; communicable diseases; school sanitation; planning of school buildings; health of school child; hygiene of instruction. Prerequisite: upper division standing and one year of upper division biological science.
- PE 435. **Playground Leadership.** 3 hours spring. 3 ①  
 Nature and function of play; adaptation of activities; program making. Playground instruction management and supervision.
- SEd 441, 442, 443. **Health Education.** (G) 3 hours each term. 3 ①  
 Philosophy and principles of health education; organization and administration; health instruction in secondary schools and in adult health education. Prerequisite: upper division standing and one year of upper division biological science.
- Bac 453. **Epidemiology.** 3 hours spring. 1 ② 1 ①  
 Causes and behavior of communicable diseases in general population; factors influencing occurrences of epidemics; basic principles underlying control. Prerequisite: Bac 205 or equivalent.

**Graduate Service Courses**

Courses numbered 400-499 and designated (g) or (G) may be taken for graduate credit.

- SEd 501. **Research.** Term and hours to be arranged.
- SEd 503. **Thesis.** Terms and hours to be arranged.
- SEd 505. **Reading and Conference.** Terms and hours to be arranged.
- SEd 507. **Seminar.** Terms and hours to be arranged.
- \*SEd 521. **Physical Growth and Development.** 3 hours 3 ①
- \*Ed 523. **School Activities Program.** 3 hours. 3 ①
- \*Ed 578. **Camp Counselor Training: Group Behavior.** 3 hours. 3 ①
- \*Ed 583. **Camp Counselor Training.** 6 hours summer.

\* For course description see SCHOOL OF EDUCATION.

# Graduate School

HENRY P. HANSEN, Ph.D., Dean of the Graduate School.

## Graduate Council

HENRY P. HANSEN (chairman), RALPH COLBY, WILBUR T. COONEY, J. R. DILWORTH, E. C. GILBERT, J. G. KNUDSEN, R. S. MCCUTCHEON, MIRIAM G. SCHOLL, J. W. SHERBURNE, E. A. YUNKER, F. R. ZERAN.

## Graduate Committees

Science: E. C. GILBERT (chairman), W. B. BOLLEN, S. M. DIETZ, E. J. DORNFELD, J. G. JENSEN, A. T. LONSETH, P. O. RITCHER, W. D. WILKINSON, STANLEY WILLIAMSON, E. A. YUNKER.

Agriculture: WILBUR T. COONEY (chairman), RALPH BOGART, J. R. COWAN, WM. A. FRAZIER.

Education: F. R. ZERAN (chairman), DENIS BARON, G. B. COX, MAY DUBOIS, H. A. TEN PAS, S. E. WILLIAMSON.

Engineering: G. W. GLEESON (chairman), H. G. BARNETT, G. B. COX, G. W. HOLCOMB, LOUIS SLEGEL, J. S. WALTON.

Forestry: J. R. DILWORTH (chairman), G. H. BARNES, W. A. DAVIES, W. I. WEST.

Home Economics: MIRIAM G. SCHOLL (chairman), MAY DUBOIS, DOROTHY GATTON, BETTY HAWTHORNE, HELEN MULHERN, MARTHA PLONK, CLARA A. STORVICK.

Pharmacy: R. S. MCCUTCHEON (chairman), G. E. CROSSEN, H. C. FORSLUND, L. A. SCIUCHETTI.

General Studies: E. A. YUNKER (chairman), R. F. FUQUAY, H. H. PLAMBECK, W. D. WILKINSON.

Graduate Minors in Nonmajor Fields: RALPH COLBY (chairman), G. A. BAKKUM, J. L. LEMASTER, M. N. NELSON, J. A. PFANNER, J. M. SWARTHOUT.

## Graduate Faculty

### Departments Offering Majors for Master and Doctoral Degrees

Agricultural Economics: Professors WOOD (head), BLANCH, HOLLANDS, MUMFORD; Associate Professors DAVIS, KORZAN, PLATH; Assistant Professors BECKER, BROWN, CASTLE, CHRISTENSEN, SITTON.

Animal Husbandry: Associate Professor LANDERS (acting chairman); Professors BOGART, KRUEGER, MCKENZIE; Associate Professors CALVIN, HEDRICK, JOHNSON, OLDFIELD, OLIVER, POULTON, WESWIG; Assistant Professors ENGLAND, FOX; Instructors CHURCH, WU.

Bacteriology and Hygiene: Professors ELLIKER (chairman), C. L. ANDERSON, BOLLEN, LANGTON, PILCHER; Associate Professor GILMOUR; Assistant Professor A. W. ANDERSON.

Botany: Professors DIETZ (chairman), MILBRATH, MCWHORTER, SMITH, VAUGHAN, YOUNG; Associate Professors BELKENGREN, CHILCOTE, HARDISON, PHINNEY, ROTH, STEWARD; Assistant Professors HORNER, JENSEN, JONES.

Chemical Engineering: Professors WALTON (head), GLEESON; Associate Professors KNUDSEN, SCHULEIN; Assistant Professor WICKS.

Chemistry: Professors CHRISTENSEN (chairman), BUTTS, CALDWELL, CHELDELIN, DECIUS, GILBERT, GIFILLAN, HAAG, KURTH, MEHLIG (emeritus), PEASE, SCOTT; Associate Professors BUBL, FREED, FREUND, KING, LOGAN, NORRIS, REMMERT, SLABAUGH, TERRIERE, WANG, WILLIAMS; Assistant Professors FANG, HEDBERG, LOOMIS, MARVELL, NEWBURGH, PARSONS, REESE.

Civil Engineering: Professors HOLCOMB (chairman), COOPEY, MERRYFIELD, WANLESS; Associate Professors BEHLKE, KOFOID, MCCLELLAN; Assistant Professors LEONARD, SHORMAKER, WESTGARTH.

Dairying: Professors BRANDT (head), JONES, RICHARDSON, WILSTER; Associate Professors STEIN, WOLBERG.

Education: Professors ZERAN (dean), CLINTON, GOODE, MUNFORD, REICHART, REID, WILLIAMSON; Associate Professors BARON, GILL, PARKS, TEN PAS; Assistant Professors GAYNOR, HAHN, HALL, LELAND, MARKSHEFFEL, MULDOON,\* REES, STRAND.

Electrical Engineering: Professors BARNETT (chairman), ALBERT, COCKERLINE; Associate Professors FEIKERT, MAGNUSSON, STONE; Assistant Professors ENGLE, MICHAEL, SHIRLEY.

\*Member of graduate faculty on a limited basis.

- Entomology: Professors RITCHER (chairman), CHAMBERLIN (emeritus), THOMPSON (emeritus); Associate Professors CROWELL, MARTIN, ROSENSTIEL, RUDINSKY, SWENSON, TERRIERE; Assistant Professors GOULDING, KRANTZ, STEPHEN; Instructors HASBROUCK, LATTIN.
- Family Life and Home Administration: Professors READ (head), BRANDON (emeritus), KIRKENDALL; Associate Professors VAN HORN, WIGGENHORN; Assistant Professors AIKIN, PLONK, SCHALOCK; Instructor EMERSON\*.
- Farm Crops: Professors HILL (head), COWAN, FORE; Associate Professors FOOTE, HEDRICK, POULTON; Assistant Professor METZGER.
- Fish and Game Management: Professors DIMICK (head), DOUDOROFF; Biologist EINARSEN; Associate Professors BOND, KATZ, KUHN, LONG; Assistant Professor WARREN.
- Food Technology: Professors SCHULTZ (head), LITWILLER; Associate Professors CAIN, HARVEY, ONSDORFF, WORTHINGTON, YANG; Assistant Professors SAMUELS, WILDER; Instructor BOCKIAN.
- Foods and Nutrition: Professors FINCKE (head), MACKAY, STORVICK; Associate Professors CHARLEY, HAWTHORNE; Assistant Professors GARRISON, HUNTER, PETERSON (on military leave), WARE; Instructor FENNER\*.
- General Science: Professors HANSEN (chairman), GILFILLAN, WILLIAMSON; Associate Professors BEER, BURT; Instructor ANTON.
- Geology: Professors ALLISON (chairman), WILKINSON; Assistant Professors BOYD, KOCH, TAUBENECK; Instructor BOSTWICK\*.
- Horticulture: Professors APPLE (head), FRAZIER, HANSEN, HARTMAN; Associate Professors COMPTON, ROBERTS, ZIELINSKI; Assistant Professor BLANEY.
- Mathematics: Professors CLARK, HOSTETTER, LI, LONSETH, MILNE (emeritus), WILLIAMS; Associate Professors ARNOLD, BREWER, GOEHEM, KIRKHAM, POOLE, SAUNDERS, STONE; Assistant Professors LINK, MCLEOD; Instructor KIMME.
- Mechanical Engineering: Professors SLEGEL (chairman), HUGHES, PAUL, POPOVICH, THOMAS; Associate Professors HEATH, PAASCHE, Assistant Professors CHRISTENSEN, LARSON, THORNBURGH.
- Pharmacy, Pharmaceutical Analysis, Pharmacology and Pharmacognosy: Professor CROSEN (dean); Associate Professors FORSLUND, MCCUTCHEON, SCIUCHETTI; Assistant Professors PETERSEN, TSAO.
- Physics: Professors YUNKER (chairman), BRADY, DEMPFSTER, VARNER; Associate Professors BOLINGER, GARMAN, NICODEMUS, VINYARD; Assistant Professors CHURCH\*, DECKER, SCHECTER, TRIGG; Instructor TYNES\*.
- Poultry Husbandry: Professors PARKER (head), BERNIER; Associate Professor HARPER; Assistant Professor ARSCOTT.
- Soils: Professors CHENEY (head), HUNTER; Associate Professors EVANS, JACKSON, MARSH, YOUNGBERG; Assistant Professors ALBAN, DAWSON, HARWARD, KNOX.
- Zoology: Professors DORNFIELD (chairman), ALLMAN, DE LAUBENFELS, GORDON, HILLEMANN, KRUEGER, PRATT; Associate Professor STORM; Assistant Professors MOHLER, PRITCHARD.

### Departments Offering Majors for Master's Degrees Only

- Agricultural Education: Associate Professor TEN PAS (acting head); Assistant Professor AGAN.
- Agricultural Engineering: Professors RODGERS (head), LUNDE, SINNARD; Associate Professors CROPSEY, KIRK, WOLFE\*; Assistant Professor BONNICKSEN\*; Instructor RILEY\*.
- Business Education: Professor YERIAN (head); Associate Professors LARSE, WINGER.
- Clothing, Textiles, and Related Arts: Professors PETZEL (head), GATTON, PATTERSON; Associate Professors DIEDESCH, EDABURN, INGALLS; Assistant Professors GRANT, LEDBETTER, MOSER, WASSON\*.
- Forest Engineering: Professor DAVIES (head); Assistant Professors O'LEARY, WILSON.
- Forest Management: Professors DILWORTH (head), BARNES, MCCULLOCH, ROBINSON; Associate Professors KENISTON, NETTLETON, YODER; Assistant Professors ADAMS, FERRELL, KRYGIER, RANDALL, WHEELER.
- Forest Products: Professor WEST (head); Assistant Professor MCKIMMY\*.
- Home Economics Education: Professor DUBOIS (head), Associate Professor MCQUESTEN.
- Industrial Education, Industrial Engineering, and Industrial Arts: Professors COX (head), ENGESSER, JOHNSON, SHEELY; Associate Professors MEYER, ROBLEY; Assistant Professors CANNON, HAHN, LANGMO, SMITH, WILLIAMSON, WILSON\*.
- Institution Management: Assistant Professors MULHERN (chairman), CLEVELAND\*.
- Natural Resources: Professors JENSEN (chairman), HIGHSMITH; Associate Professor HEINTZELMAN.
- Science Education: Professor WILLIAMSON (chairman); Associate Professor MORRIS.
- Veterinary Medicine: Professors DICKINSON (head), SCHNAUTZ, SHAW, VAWTER.

\* Member of graduate faculty on a limited basis, authorized to teach a specialty.

### Departments Offering Courses Applicable Toward Graduate Minors Only

**Business Administration:** Associate Professor COOLIDGE (chairman); Professors CAMPBELL, LEMASTER, NEWTON, PFANNER; Associate Professors CRAIG, SEATON; Assistant Professors BIGGS, EASTON, GODDARD, STRICKLER.

**Economics:** Professor NELSON (head); Associate Professors BOWEN\*, FRIDAY, VATTER; Assistant Professors DAVENPORT, DOWNS.

**Extension Methods:** Professors BECK, CLINTON, MACK, SMITH.

**Physical Education:** Professors BERGSTROM (chairman), ALLMAN, ANDERSON, COLEMAN, LANGTON, SEEN; Associate Professors GILL, MILLIKEN, WEIR\*; Assistant Professor GAYNOR.

**Political Science:** Professors SWARTHOUT (chairman), SWYGARD; Associate Professors MADDOX, WALTER; Assistant Professor FUQUAY.

**Psychology:** Associate Professor CROOKS (head); Assistant Professors BARNES, MANNING, MILLS.

**Sociology:** Professors PLAMBECK (chairman), BAKKUM, DANN (emeritus); Associate Professor PARKS.

## General Statement

**A**LL STUDY beyond the bachelor's degree at Oregon State College is conducted through the Graduate School. The formulation of departmental graduate programs and the working out and direction of the programs of individual students are responsibilities of the departments, under the general rules or requirements of the Graduate School.

The Graduate School also administers the institutional program for the encouragement of research by members of the faculty, through the provision of necessary facilities and through grants-in-aid.

**Organization and Administration.** The Graduate Faculty consists of the President of the College, the academic deans, the chairmen of the several departments in which advanced degrees are offered, and other members of the faculty who have been elected to the Graduate Faculty. Formulation and administration of graduate school policies are carried out by the Graduate Council, which is composed of the chairmen of the several School Graduate Committees. Members of the Graduate Faculty are represented through their respective School Graduate Committees, which are made up of representatives from each of the several departments in the school. Members of the Graduate Faculty offer graduate courses, conduct seminars, serve on graduate committees, advise with students on their theses, and serve on preliminary and final examination committees. The Graduate Council meets on the first and third Thursdays of each month. The Dean of the Graduate School is chairman of the Graduate Council and an ex-officio member of all graduate committees.

Oregon State College granted its first advanced degree (A.M.) in 1876. In 1897 definite residence requirements for the master's degree were announced. In 1910 graduate study was placed under a standing committee of the faculty. In 1933 all graduate work in the State System of Higher Education was placed in an interinstitutional Graduate Division; graduate work at Oregon State College was placed under immediate charge of an associate dean and an institutional graduate council. The first degrees of Doctor of Philosophy were conferred by Oregon State College in 1935. In October 1946, the State Board of Higher Education returned to the institutions direct responsibility for their programs of graduate study, and assigned graduate work at Oregon State College to the Graduate School.

\* Member of graduate faculty on a limited basis, authorized to teach a specialty.

The Doctor of Philosophy degree is offered in about 70 fields of study, distributed through 29 departments of instruction. The Doctor of Education degree is offered in General Education and Guidance. Various types of Master's degrees are offered in the same fields as the doctoral and in 18 additional fields in 13 departments of instruction. Minors only on graduate degrees are offered in 7 departments. The departments of instruction are in 8 schools: Science, Agriculture, Business and Technology, Education, Engineering and Industrial Arts, Forestry, Home Economics, and Pharmacy, and the Lower Division of Liberal Arts.

## Advanced Degrees

Degrees granted, and fields in which programs of study leading to respective degrees are offered, are listed below:

**Doctor of Philosophy:** SCIENCE—bacteriology and hygiene, botany, chemistry, entomology, general science, genetics, geology, mathematics, physics, zoology. AGRICULTURE—agricultural economics, animal husbandry, dairying, farm crops, fish and game management, fisheries, food technology, genetics, horticulture, poultry husbandry, soils. ENGINEERING—chemical engineering, civil engineering, electrical engineering, mechanical engineering. HOME ECONOMICS—family life and home administration, foods and nutrition. PHARMACY—pharmacy, pharmaceutical analysis, pharmacology and pharmacognosy.

**Doctor of Education:** EDUCATION, guidance.

**Master of Arts (departmental):** SCIENCE—bacteriology and hygiene, botany, chemistry, entomology, general science, genetics, geology, mathematics, natural resources, physics, zoology. EDUCATION—education, guidance, agricultural education, business education, health education, home economics education, industrial arts education, science education. ENGINEERING—agricultural engineering, chemical engineering, civil engineering, electrical engineering, industrial engineering, mechanical engineering, nuclear engineering. HOME ECONOMICS—clothing, textiles, and related arts, family life and home administration, foods and nutrition, institution management. PHARMACY—pharmacy, pharmaceutical analysis, pharmacology and pharmacognosy.

**Master of Agriculture:** AGRICULTURE.

**Master of Arts in General Studies:** see page 378.

**Master of Science:** SCIENCE—bacteriology and hygiene, botany, chemistry, entomology, general science, genetics, geology, mathematics, natural resources, physics, zoology. AGRICULTURE—agricultural economics, agricultural engineering, animal husbandry, dairying, farm crops, fish and game management, fisheries, food technology, genetics, horticulture, poultry husbandry, range management, soils, veterinary medicine. EDUCATION—agricultural education, business education, education, guidance, health education, home economics education, industrial arts education, science education. ENGINEERING—agricultural engineering, chemical engineering, civil engineering, electrical engineering, industrial engineering, mechanical engineering, nuclear engineering. FORESTRY—forest engineering, forest management, forest products. HOME ECONOMICS—clothing, textiles, and related arts, family life and home administration, foods and nutrition, institution management. PHARMACY—pharmacy, pharmaceutical analysis, pharmacology and pharmacognosy.

**Master of Education:** education, guidance, business education, home economics education, industrial arts education, trade and industrial education.

**Master of Forestry:** forest engineering, forest management, forest products.

**Master of Home Economics:** clothing and textiles, family life and home administration, foods and nutrition, general home economics, home economics education, institution management. A major may be selected from among several fields within a department or may involve two or more related departments.

**Engineer:**

<i>Degree</i>	<i>Department</i>
Agricultural Engineer (A.E.).....	Agricultural Engineering
Chemical Engineer (Ch.E.).....	Chemical Engineering
Civil Engineer (C.E.).....	Civil Engineering
Electrical Engineer (E.E.).....	Electrical Engineering
Forest Engineer (F.E.).....	Forest Engineering
	Forest Management
	Forest Products
Industrial Engineer (I.E.).....	Industrial Engineering
Mechanical Engineer (M.E.).....	Mechanical Engineering
Metallurgical Engineer (Met.E.).....	Mechanical Engineering
Mining Engineer (Min.E.).....	Chemical Engineering

## General Regulations

Four classes of graduate students are recognized: (1) those wishing to become candidates for a master's degree; (2) those wishing to become candidates for a doctor's degree; (3) those desiring an engineer degree; and (4) those wishing merely to take work beyond the requirements for the bachelor's degree. Students of the first three classes follow programs organized in conformity with the rules stated below.

Students with baccalaureate degrees who are not working toward an advanced degree may register for courses in the Graduate School as unclassified. They may take courses, graduate or undergraduate, for which they have sufficient background, but credit for these courses may not necessarily be applied toward a degree. If later an unclassified student decides to work toward a degree, however, such courses may be used provided they are pertinent to his graduate study program. Before he is accepted he must pass the qualifying examinations for his major and minor or minors.

County extension and branch experiment station workers planning to enter under (1) are requested to write the graduate office for a registration procedure slightly modified from that described in the following pages.

**Admission to the Graduate School.** A student desiring to enter the Graduate School will send (or arrange to have sent) to the office of the Registrar: (1) two admission blanks completely filled out; (2) a transcript of all his previous college or university work; (3) a letter indicating the special fields in which he is particularly interested or a statement that he does not wish to become a candidate for a degree; and (4) a small, fairly recent photograph. A grade point average of 2.50 is required for entrance to the Graduate School. The Office of the Registrar will determine whether the general conditions for admission have been met. The major and minor departments indicated by the student will examine the material submitted to determine adequacy of scholastic background and to decide whether departmental facilities are adequate for the expressed aims of the student. The recommendations of the departments



are reviewed by the graduate office. The student is then notified by the Registrar as to the action taken.

A graduate of a nonaccredited institution may be admitted provisionally as an unclassified student. He must take such standard diagnostic tests as may be required by the Graduate Council and additional qualifying examinations when demanded; he must complete at least one term of satisfactory work at Oregon State College, after which he may petition for full standing in the Graduate School and for graduate credit for courses that he has completed acceptably while registered as an unclassified student.

*Provisional Status.* In some cases a student may be admitted to the Graduate School with a GPA below the requirements, provided he has shown improvement during his junior and senior years and has a sufficiently high GPA in his major. Such students are admitted under Provisional status and their work is closely scrutinized during their first two quarters. If they fail to show promise as graduate students they are asked to terminate their work at Oregon State College.

**Reserving Credits.** Graduate credit is not granted for undergraduate courses taken in excess of the requirements for a baccalaureate degree, but undergraduate students taking graduate courses in excess of baccalaureate requirements may have such credits reserved for possible future use under the following conditions: (a) Only credits with A or B grades, earned within 45 hours of graduation, may be reserved for graduate credit. (b) Request for reservation must be made early in the term in which the student completes baccalaureate requirements. (c) A maximum of 18 hours may be reserved for graduate credit. (d) Before more than 15 term hours of credit are earned, the student must select a graduate major and minor, pass qualifying examinations, be assigned a major professor, and formulate an approved graduate program. (e) A minimum of two terms of residence in the Graduate School is required regardless of the number of credits reserved.

**Preparation Required.** Preparation for a graduate major must be an undergraduate major in the same subject, or a fair equivalent. Preparation for a graduate minor must be at least a one-year sequence of upper division work in addition to foundational courses in the subject. Graduate credit may not be earned in courses for which the student does not show proper preparation by previous record or special examination.

**Term Credit Load.** The normal load for a graduate student devoting all of his time to graduate study is 15 term hours (including course work and thesis). The maximum load is 16 term hours (17 term hours on petition). For assistants and fellows the maximum load is 12 term hours; for part-time assistants and fellows the maximum load is 15 term hours.

The graduate program of each candidate should include a substantial amount of work with at least three faculty members offering graduate instruction.

**Grade Requirement.** A grade-point average of 3.00 (a B average) is required in both major and minor(s). Grades below C are not accepted for graduate credit.

**Graduate Courses.** All courses numbered in the 500s carry graduate credit, as do those in the 400s which have been approved by the Graduate

Council. Approved courses in the 400s are designated in the catalog by (G) or (g) following the course title. Courses designated (G) may form a part of either a major or minor; courses designated (g) may be taken toward a minor only. Blanket numbers 501, 503, 505, and 507 may be used repeatedly. Number 503 covers the thesis, both the research and the writing. Although thesis credit may be registered each term, the thesis grade is not given until the dissertation is presented at the final oral examination. 501 is for research which is not part of the thesis, and data obtained from such research should not be incorporated in the thesis. Reading and Conference 505 is used for special work not given under a formal course number. It may include specified reading, laboratory work, field work, or compilation of information essential in the student's program. The work done under this number may be reported either in writing or orally to the instructor concerned. Seminar 507 is used for seminars, both departmental and for special work not given in a formal course and where several students are concerned.

**Petitions.** A student who wishes to deviate from the normal graduate school regulations and procedures may present his problem in a letter addressed to the Graduate Council signed by himself and his major professor. The Graduate Council will consider the petition at the meeting following receipt of the petition presented in proper form. The student will be advised of the Council's decision. Action taken on petitions will not be considered as a precedent for any future action.

**Application for Degree.** Students expecting to complete requirements for advanced degrees should apply for graduation at the Registrar's Office during the Winter Term or early in the Spring Term preceding Commencement. Students in residence during the Spring Term are required to attend Commencement, while those wishing to be excused must petition.

**Graduate Fees.** Graduate students registered for seven term hours of work or more pay tuition and fees of \$65 a term. Graduate students do not pay the nonresident fee. Students holding graduate or research assistantships or fellowships pay fees totaling \$25 per term. Graduate students registering for 6 hours of work or less pay the regular part-time fee. Payment of the fee entitles the student to all services maintained by Oregon State College for the benefit of students.

**Deposits.** Persons who enroll for academic credit (except staff members) must make a deposit of \$10.00, payable once each year at the time of first registration. This is required as a protection against loss or damage of institutional property such as dormitory equipment, laboratory equipment, military uniforms, library books, locker keys. If at any time charges against this deposit become excessive, the student may be called upon to reestablish the original amount.

**Microfilming.** All doctoral candidates pay a fee of \$20 for microfilming of the doctoral dissertation.

**Graduate Work by Staff Members.** Staff members of Oregon State College holding rank above that of instructor cannot receive advanced degrees from Oregon State College. Full-time staff members may register normally for not more than three hours per term. As many as five hours may be permitted provided registration is not for more than one course. Approval for registration must be obtained from the Executive Office.

## Graduate Appointments and Fellowships

A varying number of graduate and research assistantships and fellowships are awarded annually to graduates of accredited universities and colleges who have superior records in their undergraduate work. All persons holding these appointments are expected to register in the Graduate School and to become candidates for advanced degrees. Assistants and fellows who render service to the institution through teaching duties or research pay fees amounting to \$25.00 per term, which admit them to all services maintained by the college for the benefit of the students. Assistants and fellows in this category may carry a maximum of 12 hours per term. Other types of fellows who render no service to the institution pay the full fee of \$65.00 and are permitted to carry a full graduate load of 16 hours.

**Graduate Assistantships.** A graduate assistant renders services amounting to not more than 15 hours a week—reading papers, handling laboratory and quiz sections, etc. He is permitted to enroll for a maximum of 12 term hours of course work. A graduate assistant commonly completes the work for a master's degree in four terms. The stipend for a graduate assistant varies from \$900 to \$1,500. Reappointment may be made for one additional year.

**Research Assistantships.** A research assistant aids a faculty member in carrying on a research project. Compensation and enrollment limitations are the same as for a graduate assistant.

**Teaching and Research Fellowships.** A fellow is normally a person proceeding toward the doctorate, with at least one year of markedly superior work toward that degree completed. The teaching fellow gives instructional assistance in his department. The duties of a research fellow are similar to the duties of a research assistant; a fellow is, however, expected to assume greater responsibility in connection with the research project to which he is assigned. Fellows are allowed to enroll for a maximum of 12 term hours of course work. The stipend varies from \$1,200 to \$1,700.

**Agricultural Experiment Station Graduate Research Assistantships and Fellowships.** Appointees are usually required to devote the equivalent of one-half time on approved Experiment Station projects; they normally spend two years on the Master of Science degree. Appointment and stipend are based on training, ability, and experience. The stipend varies from \$1,800 to \$3,000 on a twelve-month basis.

**State Scholarships.** A limited number of scholarships covering tuition and laboratory and course fees are available to graduate students. All applicants, to be eligible, must be in need of financial assistance, and must show evidence of superior scholarship. Applications should be made to the Registrar of Oregon State College, on official blanks furnished by his office, and must be filed before April 1.

**Other Fellowships.** The following fellowships are open to Oregon State College graduate students:

**BECHTEL CORPORATION SCHOLARSHIP:** \$500 provided by Bechtel Corporation for a graduate student in chemical engineering; selected by Chemical Engineering Department and Graduate Faculty.

**DOW CHEMICAL COMPANY FELLOWSHIP:** \$1,800 to \$2,500 provided by the Dow Chemical Company for graduate fellowships in chemical engineering; a senior may be selected.

**DU PONT POSTGRADUATE TEACHING ASSISTANTSHIP IN CHEMISTRY:** \$2,400 to a single student or \$3,000 to a married student, plus fees, provided by the E. I. du Pont de Nemours Company for a graduate student in chemistry.

- EASTMAN KODAK FELLOWSHIP IN CHEMISTRY:** \$1,400 plus fees to a single student or \$2,100 plus fees to a married student with children, provided by the Eastman Kodak Company for research in chemistry.
- GREELEY FELLOWSHIP:** \$1,000 a year provided by the Industrial Forestry Association for a fellowship or lectureship in forestry in memory of the late Colonel W. B. Greeley.
- HYSLOP AGRICULTURAL RESEARCH FELLOWSHIP:** Granted for research in farm crops in memory of Professor George R. Hyslop.
- JOHNSON RESEARCH FELLOWSHIP:** Income from a trust fund left by the late Robert Johnson, placed with First National Bank of Portland, to graduate student for study, research, and investigation in agricultural economics and allied fields. Current income about \$2,400 annually.
- MARY J. L. McDONALD FELLOWSHIPS IN FORESTRY:** Annual grants of \$400 to \$600 each to assist graduate students in forestry.
- MONSANTO FELLOWSHIP IN CHEMISTRY:** \$1,500 to a student, plus fees, provided by the Monsanto Chemical Corporation for research in biochemistry.
- SHELL OIL COMPANY FELLOWSHIP:** \$1,500 provided by the Fellowship Committee of the Shell Oil Company, for a student in mechanical engineering.
- STANDARD OIL COMPANY OF CALIFORNIA GRADUATE FELLOWSHIP:** \$1,500 provided by the Standard Oil Company of California, for a graduate student in mechanical engineering.
- UNITED STATES PLYWOOD CORPORATION:** \$1,000 for a fellowship in forestry.
- WEYERHAEUSER FELLOWSHIPS IN FOREST MANAGEMENT:** Two \$1,000 fellowships provided by The Weyerhaeuser Timber Foundation, for graduate study and research in forest management.
- WILDLIFE FELLOWSHIPS:** Grants of \$1,200 per year plus quarters and travel expenses for two-year periods provided by Oregon Cooperative Wildlife Research Unit and other wildlife agencies for graduate students who show aptitude for careers in wildlife conservation and management.
- RESEARCH GRANTS:** Various departments of the School of Science and other research organizations on the campus, including the Engineering Experiment Station, Agricultural Experiment Station, Forest Experiment Station, and Oregon Forest Products Laboratory, annually receive grants from Federal and State agencies, foundations, and private companies for research projects. Many of these grants include stipends for graduate students. Application should be made through the department concerned.
- THE SCIENCE RESEARCH INSTITUTE** has available a number of fellowships and grants ranging in value from \$1,600 to \$3,600 for research in biochemistry. Funds for these grants come from such companies and organizations as the National Science Foundation, Atomic Energy Commission, Office of Naval Research, U. S. Public Health Service, Oregon Agricultural Experiment Station, and U. S. Department of Agriculture.

## Degree Programs

### Master of Arts and Master of Science

**Credit Requirement.** For the departmental Master of Arts or Master of Science degree, the student must complete a program of study totaling not less than 45 term hours in courses approved for graduate credit. Approximately two-thirds of the work (30 term hours) must be in the major and one-third (15 term hours) in the minor. No correspondence credits may be included. Of the 45 term hours a maximum of 6 term hours may be earned under "in absentia" registration, but no thesis credit may be thus registered.

**Residence Requirements.** The residence requirement for the M.A. and M.S. degrees is one academic year or fair equivalent. A maximum of 15 term hours earned in graduate courses in the General Extension Division of the Oregon State System of Higher Education or at the University of Oregon may be counted as credit earned in residence toward the departmental master's degree. If adequate course offerings are available, all the work toward the Master of Arts (General Studies) degree may be earned at the Portland Center.

**Transferred Credit.** A maximum of 15 term hours of graduate work done at another accredited institution, or in the General Extension Division

of the Oregon State System of Higher Education, may be transferred, provided that: (1) the work fits into a logical program for the degree; (2) the transfer is approved by the department and by the Graduate Council; (3) grades of A or B have been earned. Credit granted for work done at another institution is tentative until validated by work in residence.

**Language Requirements.** For the Master of Arts degree, the student must show, by examination or by adequate undergraduate courses (not less than two years), a reading knowledge of one foreign language, preferably French or German. By petition to the Graduate Council, *before* any language examination is taken, a student may be permitted to substitute another language, if it is equally relevant to his program of graduate studies. A candidate for a master's degree who passes the regular reading-knowledge examination need not repeat such examination if he proceeds toward his doctorate within a reasonable time. For a Master of Science degree there is no foreign-language requirement, unless a language is needed in the individual student's program.

**Graduate Study Program.** As soon as feasible a study program for the master's degree should be filed in the Graduate Office. The program is worked out under the guidance of the major and minor professors, entered on the card for that purpose and signed by the major and minor professors and the chairman of the school graduate committee before filing in the Graduate office. The master's degree program should be filed during the first term of the student's residence.

**Time Limit.** All work counted toward the master's degree (including work for which credit is transferred from another institution, the thesis, and the final examination) should be completed within a period of seven years, but work taken between seven and ten years before the program is completed may be validated under the supervision of the department, usually by assigned readings or examination, or both.

**Qualifying Examinations.** A student wishing to become a candidate for the master's degree is required to take qualifying examinations in his major and minor fields, designed to test his basic training and his ability to pursue studies at the graduate level in his areas. This examination may be oral or written or both, and must be taken during the first term of his graduate enrollment, preferably during New Student Week, but not later than one month after the beginning of the term. Off-campus General Extension Division students must select their degree-granting institution by the time they have earned 9 hours. If Oregon State College is chosen, they must take the qualifying examination before completing 15 hours.

In lieu of their own qualifying examination, departments may accept a satisfactory showing in the Graduate Record Examination or some other standard test. If satisfactory knowledge and ability are demonstrated, the student is considered a candidate for the master's degree, subject to the approval of the dean of the Graduate School.

A graduate of Oregon State College who has maintained a grade-point average in major and minor fields of at least 3.25 throughout his undergraduate work may be exempted from taking the qualifying examination, at the discretion of the department concerned, but a report must be filed in the graduate office.

**Thesis.** A copy of the thesis in final form must be presented to the Graduate Office for collating at least two weeks prior to the final examination. Copies of the thesis and abstract are then distributed to members of the examin-

ing committee. After the examination the original and the first carbon copy (Library copies) and three copies of the abstract are deposited unbound in the Graduate Office, and the second carbon copy and an abstract with the major department. The student must obtain on the thesis approval page the signatures of the major professor, the head of the major department, the chairman of the school graduate committee, and the dean of the Graduate School.

Full information concerning the prescribed style for theses may be obtained at the office of the Graduate School.

The credit allowed for the thesis, including the research and the preparation of the manuscript, varies from 6 to 12 term hours. The Master of Science degree with a major in General Science is offered either with or without the thesis.

**Final Examination.** A final oral examination of not less than two hours is required of every candidate for the master's degree; when deemed desirable a written examination may also be required. (For the master's degree, the examining committee consists of at least four members of the faculty, two in the student's major field, one in the minor field, and one in a field not directly connected with the candidate's studies.)

The examining committee is nominated by the student's adviser, subject to the approval of the dean of the Graduate School, who is *ex officio* a member of all examining committees.

### Other Master Degrees

**Master of Agriculture.** The program for the Master of Agriculture degree provides a broader training in several fields for high school agriculture teachers, veterans' instructors, extension workers, and other professional agricultural workers who do not desire the specialized training of the departmental degree and the thesis based on research. Forty-five hours are required with a minimum of 9 hours in each of at least three agricultural fields. An advisory committee is selected from these departments, which will select the major professor from the department of the student's major interest. The program must be approved by the committee within three weeks after registration under this program. No thesis is required, but a paper of 3 to 5 term hours must be submitted. The general requirements, except for those relating to the thesis and written report, are the same as for the degree of Master of Science.

**Master of Arts (General Studies).** In addition to the regular Master of Arts (departmental) degree, Oregon State College offers the degree of Master of Arts (General Studies) in fields in which graduate work is allocated to the institution. This degree is granted for achievement in cultural scholarship, not for specialized work in one of the traditional fields of learning. The student pursues a program of study selected from the offerings of several departments. The requirements are flexible, but the work must be integrated and organic. The student's thesis provides the focus which determines the selection of courses for his program.

The credit requirement for this degree is 45 term hours, including credit for thesis. The thesis shall be the equivalent, in point of performance, of 9 term hours of course work. A committee may, on recommendation of the student's adviser, waive the foreign-language requirement.

**Master of Education.** The Master of Education is a professional degree, and satisfactory teaching experience is required. For the degree a minimum of 45 term hours in graduate courses must be completed; additional hours may be required depending on the needs and the undergraduate preparation of the candidate. Liberal provision is made for the earning of credits through the General Extension Division, but a minimum of 12 term hours of academic work (not thesis or field studies) must be earned on the Corvallis campus; this can be done in one summer session.

The candidate must qualify under one of the following plans: (a) He submits a thesis, which meets all standards for a master's thesis, on some applied or professional aspect of education. For the thesis he may receive from 6 to 12 term hours of credit. (b) He majors in guidance and completes 30 hours in this area, including 21 hours in prescribed courses. The other 9 hours are set up with a choice between two or three subjects. A minor of 15 hours in psychology is required with at least 6 hours in the field of psychological tests and testing. (c) He completes 45 term hours with 27 term hours in specific courses. No thesis or field studies are required. The remaining 18 hours are elective under the direction of the adviser. In addition to the final oral examination, a written comprehensive examination is required in the candidate's major field.

Under Plan C are offered Industrial Arts, Business Education, and Trade and Industrial Education majors which deviate from the requirements above in that they consist of a minimum of 30 hours in the respective fields with a minor of 15 hours in general education integrated around Research Procedures in Education and a sequence of not less than 9 hours in guidance and counseling or curriculum construction. In each case a minimum of 45 hours is required.

**Master of Forestry.** The professional Master of Forestry degree is intended for potential administrators and technologists in public and private organizations where men of broad ability are demanded. A minimum of 45 hours is required. Two optional plans of study are as follows: (a) Thirty hours, including 6 to 12 for a thesis, are to be within a chosen field in the School of Forestry. The remaining 15 hours may be a minor in forestry or in other related departments. The thesis may be based on findings of a research investigation, or on the application of technical knowledge for solution of a practical problem. (b) This is intended to provide a broader technical training. At least 21 hours are to be selected within a major field of forestry, and as many as 24 hours may be elected from other departments in the School of Forestry or from other related fields outside of forestry. The electives must contribute to a unified program which will meet the specific objective of the student. A thesis is not required under this plan, but at least two technical reports correlated with courses in the major fields or assigned or approved topics must be submitted.

**Master of Home Economics.** The Master of Home Economics is a professional degree which may be of interest primarily to high school teachers and extension personnel. A major is offered in general home economics and also in each of the departments of the School of Home Economics. A minor is required, to be selected from offerings in the School of Home Economics or from other schools and departments according to the student's needs.

A thesis is not required but at least one written report requiring reading, analysis, criticism, and organization of material shall be prepared and submitted to the Graduate Council and then filed with the department or departments concerned.

The general requirements, except for those relating to the thesis and written report, are the same as for the Master of Science degree.

## Engineer

For the degrees of Agricultural Engineer, Chemical Engineer, Civil Engineer, Electrical Engineer, Forest Engineer, Industrial Engineer, Mechanical Engineer, Metallurgical Engineer, and Mining Engineer, the candidate must meet one of the following sets of requirements:

(1) Those who hold a baccalaureate or master's degree from Oregon State College must have at least five years of successful professional practice following graduation. Graduate study, by Extension or otherwise, may be substituted for professional practice to a maximum of three years, and at the approximate rate of 12 term hours of graduate credit in lieu of each year of professional practice. No thesis credit will be permitted in such substitution, but the candidate must present a satisfactory thesis upon a subject of his professional experience and compatible with the designation of the degree.

(2) Those who do not hold baccalaureate or master's degrees from Oregon State College are subject to the same requirements as (1) with the additional stipulation that at least 12 term hours of graduate work must be completed in residence upon the Oregon State campus.

In both cases, on or before January 1 of the academic year in which the degree is desired, the candidate submits to the chairman of the appropriate department a complete statement of his professional experience and graduate academic credit since receipt of his last degree. Accompanying the statement should be a thesis title and sufficient description or outline of thesis content to provide a basis of evaluation. After the statement has been approved by the chairman of the department, the School Graduate Committee, and the Graduate Council, the candidate is instructed to prepare and submit his thesis. The thesis must be of high order and is subject to the same scrutiny and regulations as other graduate theses. Upon acceptance of the thesis, the candidate is recommended for the degree in the usual manner. The candidate registers for the degree with the Registrar of the College, either in person or by mail, not later than March 1.

## Doctor of Philosophy

**General Requirements.** The degree of Doctor of Philosophy is granted primarily for attainments and proved ability. There is no rigid credit requirement. It is the policy of the institution not to accept as a candidate for the Ph.D. degree any student whose academic training, both undergraduate and graduate, has been exclusively at Oregon State College.

**Graduate Study Program.** The study program should be filed in the Graduate Office during the first term of residence after the student completes a master's degree at Oregon State College, or during the second term if he enters from another school with a master's degree. The doctoral program consists of a major and two minors. If the major department offers several distinct areas of study, one minor may be in that department, subject to approval of the graduate dean. The study program is formulated under the guidance of the student's doctoral committee, composed of two advisers from the major, one from each of the minors, and the graduate dean or his representative. The committee is approved by the graduate dean. Approximately sixty per cent of the program is devoted to the major including the thesis and forty per cent to the minors. After the program has been accepted by the committee it is submitted to the Graduate Council, and if approved it becomes the obligation of the



student to complete the requirements as set up. In order to change the program in any way, approval of such changes must be obtained from the major and minor departments, the chairman of the school graduate committee, and the graduate dean. For college teaching minor see page 383.

**Residence.** For the doctor's degree, at least three years of fulltime work beyond the bachelor's degree or two beyond the master's degree are required, of which at least one year (usually the last) must be spent in residence at Oregon State College.

**Qualifying Examinations.** A student wishing to become a candidate for the doctor's degree must pass qualifying examinations in the fields of his major and minors. If he received his master's degree from Oregon State College not more than three years before beginning his doctoral work, he is not required to take the qualifying examination unless his major has been changed. He is required, however, to take qualifying examinations in additional minors.

Inasmuch as the purpose of the qualifying examinations is to determine in what areas the student is weak, and formulation of the doctoral program is dependent upon the results of the examination, it should be given early in the first term of the student's work toward the doctoral degree. Failure to take this examination at an early date may delay completion of degree requirements.

**Language Requirements.** For the Doctor of Philosophy degree, a reading knowledge of French and German must be demonstrated by a formal examination in each language. These examinations should be taken as early as possible after the beginning of graduate work, and must be passed before the preliminary examinations may be taken. By petition to the Graduate Council, *before* any language examination is taken, a student may be permitted to substitute another language if it is equally relevant to his program of graduate studies.

**Preliminary Examinations.** The student working toward the doctor's degree must pass a group of comprehensive preliminary examinations (at least partly oral) in his major and minor subjects not less than two terms before he takes the final examination. Advancement to candidacy is contingent on passing these preliminary examinations.

**Thesis.** Every candidate for the degree of Doctor of Philosophy must submit a thesis embodying the results of research, and giving evidence of originality and ability in independent investigation. The thesis must be a real contribution to knowledge, based on the candidate's own investigation. It must show a mastery of the literature of the subject, and be written in creditable literary form. It is expected that the preparation of an acceptable thesis will require at least the greater part of an academic year.

An abstract of the doctoral thesis of not more than 600 words will be published by University Microfilms in *Dissertation Abstracts*.

Regulations concerning the doctoral dissertation are the same as those for the master's degree, as outlined on a previous page.

**Microfilming Fee.** Candidates for the Doctor of Philosophy and Doctor of Education degrees pay a fee of \$20 for microfilming of the thesis in its entirety by University Microfilms. This includes publication of the doctoral abstract in *Dissertation Abstracts* by the same agency.

**Final Examination.** The final examination for the degree of Doctor of Philosophy may be written in part, but must include an oral examination of

at least two hours' duration. The oral examination is open to all members of the faculty and to advanced graduate students. Date of the oral examination is publicly announced at least one week before it is held. The examining committee consists of the candidate's advisory committee, including at least one not directly connected with the major and minor departments. Additional members may be appointed by the major professor, with the approval of the graduate dean. Unanimous vote is necessary for approval of the thesis.

In the oral examination the candidate is expected to defend his thesis and to show a satisfactory knowledge of his major and minor fields. The written examination, if given, is expected to cover aspects of the major and minor fields with which the thesis is not directly concerned.

The final oral examination must be taken within five years after preliminary examination. If more than five years elapse, the candidate will be required to take another preliminary examination.

### **Doctor of Education**

For the degree of Doctor of Education, procedures and requirements in respect to residence, preliminary and final examinations, and thesis are similar to those for the Doctor of Philosophy degree. Successful teaching experience is essential. A minimum of two years of teaching at either the elementary or secondary level is a definite requirement. There is no rigid credit requirement, but the total number of term hours of graduate credit including thesis will approximate 135.

Along with the educational major, one minor in a field of education and one minor in a field of study outside the School of Education are required. The College Teaching minor will not be accepted if the other minor is in education. Foreign languages are required if necessary in the dissertation problem.

## **Graduate Work at the Portland Extension Center**

If adequate course offerings are available for an integrated program in the fields in which the student wishes to work, he may complete all the requirements for the Master of Arts (General Studies) degree at Portland Extension Center. Of the 45 term hours of work required for the Master of Education degree, 33 hours may be earned in Portland. In a number of fields, one-third of the work for the Master of Arts (departmental) or the Master of Science degree may be earned in Portland. Graduate work beyond the master's degree is not offered at the Portland Center, except that in some instances arrangements may be made for a limited number of hours credit toward the Ed.D. degree. Graduate degrees, earned at the Portland Center are awarded by Oregon State College or the University of Oregon according to major subject, in harmony with the allocation of curricula and degrees.

## **Studies in College and University Teaching and Curriculum**

Most persons who qualify for master's and doctor's degrees engage in college and university teaching as part of their professional work. The Graduate School prepares students for college and university teaching as well as for research. It offers a group of courses dealing with the philosophy, functions,

and structure of higher education and problems of teaching, curriculum development, and student-faculty relationships. In all these courses, students have opportunity to delve into topics of special interest.

Maturity, background, and sincerity of purpose are the principal requisites. There are no course prerequisites in professional education. The program is not planned to fulfill requirements for a teaching credential in any state, although it may be supplemented with additional work to serve this purpose. The coordinator for studies in College and University Teaching and Curriculum is Professor Delmer M. Goode, Curriculum Consultant.

**Graduate Minor in College Teaching.** A minor in college and university teaching (15-18 term hours for a master's degree, 21-24 term hours for a doctor's degree) may be taken in conjunction with a subject-matter major. The core program, all of which is required for the teaching minor for a master's degree, consists of the following courses:

Ed 556. The College Student. 3 hours.

Ed 557. College and University Teaching. 3 hours.

Ed 558. American Higher Education. 3 hours.

..... 507. Seminar (Teaching Procedures). 3 hours.

(Registration in major departments. By special arrangement, registration may be in CC 507. Ed 557 and either Ed 556 or Ed 558 are prerequisite.)

CC 506. College Teaching Studies. 3 hours.

For doctoral candidates, additional electives are chosen in appropriate areas to form an integrated program in college teaching.

**Studies in Teaching and Curriculum.** Studies or projects in curriculum development and improvement of teaching may be engaged in by individuals or faculty groups. Graduate students are encouraged to join these studies since the association of college teachers with students interested in curriculum and teaching is of mutual advantage.

Credit may be earned in the courses listed below. Whenever the nature of the work warrants, credit so earned may be applied toward a graduate major or minor in a department.

#### Graduate Courses

CC 505. Reading and Conference. Terms and hours to be arranged.

CC 506. College Teaching Studies. 3 hours any term.

Reading, conference, and preparation of written reports related to, but distinct from, a teaching assignment at college level. Ordinarily no credit is given for the teaching itself. Open to graduate students who have teaching assignments concurrent with the course. Special arrangements may be made for those who have already taught in college or university. Prerequisite: Ed 556, 557, 558.

CC 507. Seminar. Terms and hours to be arranged.

CC 509. College Curriculum Studies. Terms and hours to be arranged.

Joint study with staff assistance in any aspect of college curriculum, including problems of teaching, guidance, and coordination. Seminar or workshop procedures are used according to aims of group.

## Genetics

A program for a major or minor in genetics is offered for the master's and doctor's degrees. Opportunity for specialization in pure and applied genetics is offered in the schools of Science and Agriculture. The course work is drawn from the biological departments of these schools. The genetics program is

designed to acquaint the student in all the principal phases of genetics, and at the same time permit him to emphasize his research interests in this field. All graduate study in genetics is coordinated through a special committee nominated by the deans of Science and Agriculture and approved by the dean of the Graduate School. The seminar listed below serves an important purpose in unifying all genetic studies.

#### Graduate Courses

Gen 503. **Thesis.** Terms and hours to be arranged.

Gen 507. **Seminar.** Terms and hours to be arranged.

## Graduate Work at Los Alamos and Richland

Arrangements have been made whereby a very restricted number of students may complete theses for the Ph.D. degree at Los Alamos, New Mexico.

Oregon State College is one of four northwestern universities cooperating with the Graduate School of Nuclear Engineering of the General Electric Company at Richland, Washington. Credits toward the master and doctoral degrees may be earned at Richland. In addition to the departmental majors, a major in nuclear engineering will be offered. The minimum residence requirement at Corvallis is one term for a master's degree and two terms for a doctor's degree.

The studies pursued at Richland vary for different students and fields but are subject to approval in each case by the Graduate Council. A plan is followed whereby the course number 509 is used, preceded by the appropriate departmental designation, followed by the name "Richland Studies" with the title of the particular study placed in parentheses.

#### Graduate Courses

Ch 509. **Richland Studies.** Terms and hours to be arranged.

ChE 509. **Richland Studies.** Terms and hours to be arranged.

EE 509. **Richland Studies.** Terms and hours to be arranged.

ME 509. **Richland Studies.** Terms and hours to be arranged.

Mth 509. **Richland Studies.** Terms and hours to be arranged.

Ph 509. **Richland Studies.** Terms and hours to be arranged.

# Research

**A**DVANCEMENT of human knowledge and technical and technological service to the commonwealth are recognized functions of institutions of higher learning. Advancement of knowledge through research at Oregon State College is encouraged and assisted by several institutional agencies, including the General Research fund, the Science Research Institute, the Agricultural Experiment Station, the Engineering Experiment Station, the Forest Experiment Station, and the Oregon Forest Products Laboratory. Problems for the Government, industry, or other sponsors are undertaken on special contract.

## General Research

General Research includes faculty research, especially of a fundamental nature, that does not fall into the organized and directed programs of other research agencies of Oregon State College. The Graduate Council prepares and submits annually a budget for the support of general research and is authorized to receive, examine, and act upon requests for grants-in-aid from the funds allowed. The school graduate committees are advisory bodies, assisting in the examination and evaluation of the projects for which funds are requested. Applications are received from individual staff members, or groups, of the rank of instructor or higher. Grants-in-aid are awarded for problems that give promise of results of general significance to learning. The grants will supply some apparatus, certain supplies, wages for some types of assistance, and if the project has advanced sufficiently, a part-time or full-time research assistantship or fellowship. Grants are not intended to provide data for theses leading to advanced degrees, or subject matter for a specific course, or information of restricted though useful nature for administrative functions. Each recipient of a grant is required to present a written progress report to the dean of the Graduate School on January 1 and June 1 each year. Productive projects may receive assistance for several years.

## Agricultural Experiment Station

FREDERICK EARL PRICE, B.S., Director of the Agricultural Experiment Station.

ROBERT W. HENDERSON, Ph.D., Assistant Director in Charge.

ROBERT M. ALEXANDER M.A., Assistant Director.

LYLE DAVID CALVIN, Ph.D., Statistician.

ROBERT G. MASON, M.S., Editor.

The research program of the Agricultural Experiment Station is aimed at the development of the technical "know-how" needed to produce more and better food and fiber at reasonable prices to the consumer.

The Station was first organized July 2, 1888, in accordance with the Hatch Act of 1887. At the present time it includes a central station at Corvallis and eight branch stations and five experimental areas so located as to cover the varying agricultural conditions of Oregon.

**Central Station.** About 1,200 acres of land at the central station are used by workers engaged in scientific investigations of problems presented by the different branches of agriculture. The Station includes the following research departments: Agricultural Chemistry; Agricultural Economics; Agricultural Engineering; Animal Husbandry; Bacteriology; Botany and Plant

Pathology; Dairying; Entomology; Farm Crops; Fish and Game Management; Food Technology; Home Economics; Horticulture; Poultry Husbandry; Soils; Statistics; and Veterinary Medicine.

Much of the research program of the Station is cooperative with the U. S. Department of Agriculture, the U. S. Department of the Interior, and other Federal and State agencies. A number of Federal scientists are located in Oregon working on problems of a regional nature.

Scientific investigations of the state staff strongly support the instruction given in classroom and through the Extension Service. Aside from the original investigations of economic significance to agriculture, the work affords daily object lessons in modern farm methods. To the students in the various fields of study the value of the investigative work can hardly be overestimated. To the State, from the point of view of economic progress, its value has been greater, in the estimation of many people, than the entire cost of Oregon State College to the commonwealth. The work of the Experiment Station is fundamental in the agricultural development of the State. Oregon's soil and climatic conditions present many problems that are unique and that must be solved before the State can develop its great potential agricultural wealth.

**The Branch Stations and Experimental Areas.** The eleven branch stations, at Astoria, Burns, Hermiston, Hood River, Klamath Falls, Medford, Moro, Ontario, Oregon City, Pendleton, and Union, and the experimental area at Redmond conduct experiments on the major agricultural problems in their sections of the State.

*The John Jacob Astor Branch Experiment Station* at Astoria has as its major problems of investigation: dairy and beef cattle production in the Coastal area; the improvement of forage crops through variety testing; pasture management: soil fertility and management for Coast conditions; testing of small fruits and specialty horticultural crops.

*The Central Oregon Experimental Area* located at Redmond conducts research on general farming problems in Crook, Deschutes, and Jefferson Counties. Current emphasis is on problems related to production of potatoes, alsike, and Ladino clover seeds, cereals, and hay. All research is conducted on privately owned land under cooperative agreements with the owners.

*The Eastern Oregon Branch Experiment Station* at Union has research projects with both farm flock sheep and commercial beef cattle production, conservation and improvement of timbered and open ranges in the higher rainfall areas in eastern Oregon, and soil fertility and crop varietal testing in northeastern Oregon. The Station has a section of valley floor land and a 2,000-acre tract of summer range.

*The Klamath Branch Experiment Station* consists of two experimental tracts, one located southeast of Klamath Falls on mineral soil and the other located south of Klamath Falls on muck soil. In addition to research in reclamation of problem soils in this irrigated district this experimental area is engaged in research on production problems with potatoes, cereals, and forage crops in the Klamath Basin.

*The Malheur Branch Experiment Station* research program near Ontario is aimed at finding the best methods of crop production and the crops and crop varieties best suited to the areas of the Vale-Owyhee irrigation project. Major emphasis is given to studies of production and utilization of forage crops for livestock. The U. S. Department of Agriculture cooperates actively with the State in certain phases of the program.

*The Mid-Columbia Branch Experiment Station*, with facilities at Hood River and The Dalles, deals with orchard pests, diseases, irrigation, soil management, plant nutrition, post harvest investigations, and other problems relating to commercial fruit production in the important orchard section of Hood River and Wasco Counties.

*The Pendleton Branch Experiment Station* is situated in the heart of an important wheat and pea production area. In cooperation with the U. S. Department of Agriculture it has concentrated on the development of improved wheat varieties and crop practices, including crop rotation, weed eradication, and control of soil erosion. Recently an intensive project on erosion control has been initiated in cooperation with the U. S. Department of Agriculture.

*The Red Soils Branch Experiment Station* near Oregon City is centering attention on rebuilding depleted red hill soils, of which there are approximately 800,000 acres in the Willamette Valley. Utilization of grasses and legumes for seed production and forage has been emphasized in the station's soil-building program.

*The Sherman Branch Experiment Station* at Moro, operated cooperatively with the United States Department of Agriculture, is conducting investigations on the major problems of cereal production under eastern Oregon dryland conditions with special reference to the development of new and improved varieties, rates and dates of seeding, summer fallow, fertility, and soil conservation.

The *Southern Oregon Branch Experiment Station*, with facilities at Medford and at two locations near Talent, conducted cooperatively with the United States Department of Agriculture, is centering attention on problems of fruit and crop production.

The *Squaw Butte-Harney Range and Livestock Station* near Burns consists of 16,000 acres of sagebrush-bunchgrass and semiarid rangeland and 661 acres of native flood meadowland. Research is under way in range improvement and management, increasing yield and quality of native meadows for winter feed, and improving livestock production through better nutrition, breeding, and management. The station's combination of range and meadowland makes a typical southeastern Oregon livestock unit and provides feed resources for the station-owned herd for the entire year. The research program is conducted jointly with the United States Department of Agriculture.

The *Umatilla Branch Experiment Station* at Hermiston, conducted cooperatively with the United States Department of Agriculture, is studying production problems of crops under irrigation on the Umatilla Reclamation Project and similar lands of the Columbia River Basin.

## Engineering Experiment Station

### Administrative Officers

RUDOLPH E. KLEINSORGE B.S., M.D., President, Oregon State Board of Higher Education.  
 JOHN REESE RICHARDS, Ph.D., Chancellor, Oregon State System of Higher Education.  
 AUGUST LEROY STRAND, Ph.D., President, Oregon State College.  
 GEORGE WALTER GLEESON, Ch.E., Dean, School of Engineering, and Director, Engineering Experiment Station.  
 MILOSH POPOVICH, M.S., Assistant Dean, School of Engineering, in charge, Engineering Experiment Station.  
 JAMES KENNETH MUNFORD, Ed.D., Director of Publications.

### Station Staff

ARTHUR LEMUEL ALBERT, M.S., E.E., Communication Engineering.  
 HOWARD GLEN BARNETT, Electrical Engineering.  
 HARVEY DEVON CHRISTENSEN, M.S., Aeronautical Engineering.  
 MARTIN PORTMAN COOPEY, B.S., Highway Engineering.  
 WILLIAM FREDERIC EGESSER, B.S., Industrial Engineering.  
 GRANT STEPHEN FEIKERT, M.S., E.E., Radio Engineering.  
 JOHN BERNARD GRANTHAM, M.S., Wood Products.  
 CHARLES OSWALD HEATH, M.S., Engineering Materials.  
 GLENN WILLIS HOLCOMB, M.S., Structural Engineering.  
 ARTHUR DOUGLAS HUGHES, M.S., Heat, Power, and Air Conditioning.  
 JOHN GRANVILLE JENSEN, Ph.D., Industrial Resources.  
 JAMES GEORGE KNUDSEN, Ph.D., Chemical Engineering.  
 PHILIP COOPER MAGNUSON, Ph.D., Electrical Engineering Analysis.  
 FRED MERRYFIELD, M.S., Sanitary Engineering.  
 ROBERT RAY MICHAEL, M.S., Electrical Materials.  
 OLAF GUSTAV PAASCHE, M.S., Metallurgical Engineering.  
 WILLIAM HOWARD PAUL, M.S., Automotive Engineering.  
 JEFFERSON BELTON RODGERS, A.E., Agricultural Engineering.  
 MILTON CONWELL SHEELY, B.S., Manufacturing Processes.  
 JOSEPH SCHULEIN, B.S., Electrochemical Engineering.  
 LOUIS SLEGEL, Ph.D., Mechanical Engineering.  
 LOUIS NELSON STONE, B.S., Servomechanisms and Controls.  
 JESSE SEBURN WALTON, B.S., Chemical and Metallurgical Engineering.

By act of the Board of Regents of Oregon State College on May 4, 1927, the Engineering Experiment Station was established at Corvallis to serve the State in a manner broadly outlined by the following policy:

- To serve the industries, utilities, professional engineers, public departments, and engineering teachers by making investigations of significance and interest to them.
- To stimulate and elevate engineering education by developing the research spirit in faculty and students.
- To publish and distribute through bulletins, circulars, and technical articles in periodicals the results of such studies, surveys, tests, investigations, and research as will be of greatest benefit to the people of Oregon, and particularly to the State's industries, utilities, and professional engineers.

The Engineering Experiment Station is an integral part of the School of Engineering. All staff members and laboratory facilities of the Engineering

School are available for the investigative work of the station to the extent of funds allocated or contributed for this purpose. Much of the work of the station has been made possible by the assistance of industries and state and national associations. Many cooperative projects have been carried through in past years and such projects are always under way. Inquiries concerning cooperative projects are welcomed.

The dean of engineering is the director of the Engineering Experiment Station and guides the operation of the station to conform with state and institutional policies. The assistant dean of engineering acts as the administrator in charge, technical editor of publications, and as chairman of the station executive council composed of senior station staff representing the various departments of the School of Engineering. The active staff is composed of members of the instructional staff who may be interested in various specific research projects, or of research fellows who are pursuing graduate study and are assigned to part-time work in the station. Experts who are especially qualified by training and experience to advise on the investigations in certain fields have been appointed to the staff as special technical counselors. Among these are executives and engineers representing major industries of Oregon and the Northwest, prominent consulting engineers, and leading engineers of Federal agencies and state departments. Some technical assistants have been supported by manufacturers and industrial associations interested in working out specific problems.

## Forest Experiment Station

### Station Staff

WALTER FRASER McCULLOCH, Ed.D., Dean, School of Forestry, and Director of Station.  
 GEORGE HECTOR BARNES, Ph.D., Associate Director.  
 ROBERT FERNALD KENISTON, M.S., Forest Economics.  
 MILFORD D. MCKIMMY, Ph.D., Forest Products.  
 WARREN R. RANDALL, M.S., Forest Management.  
 JULIUS ALEXANDER RUBINSKY, Ph.D., Forest Entomology.  
 CHESTER THEODORE YOUNGBERG, Ph.D., Forest Soils.  
 LEWIS F. ROTH, Ph.D., Forest Pathology.

### Cooperating Agencies

Agricultural Experiment Station  
 Bureau of Land Management  
 Oregon State Board of Forestry  
 Research Division  
 Oregon State Forest Products Laboratory  
 Pacific Northwest Forest and Range  
 Experiment Station

Oregon State College Departments:  
 Agricultural Chemistry  
 Agricultural Engineering  
 Animal Husbandry  
 Soils  
 Botany (and Plant Pathology)  
 Entomology  
 Farm Crops  
 Fish and Game Management

By act of the State Board of Higher Education on April 26, 1954, the Forest Experiment Station was established at Corvallis to serve the State of Oregon in a manner broadly outlined by the following policy:

- To serve the industries, landowners, public departments, professional foresters, teachers, and the public, primarily in Oregon, by making investigations of significance and interest to them in fields of and related to the conservation of forest resources.
- To cooperate with other research agencies and efforts of private and public nature, and to coordinate the forest research and related activities of Oregon State College.
- To stimulate and elevate forest resource education by developing the research spirit in faculty and students.



• To publish and distribute through bulletins, circulars, leaflets, and technical articles in periodicals the progress and results of such studies, surveys, tests, investigations, and research as will be of greatest benefit to the people of Oregon, and particularly to the State's industries and professional foresters.

The Forest Experiment Station is an integrant of the School of Forestry. All staff members and laboratory facilities are available for the investigative work of the station to the extent of funds allocated or contributed for this purpose. Much of the work of the station has been made possible by the assistance of industries and of state and national associations. Many cooperative projects have been carried through in the past years and such projects are always current. Inquiries concerning cooperative projects are welcomed.

The active staff is composed of members of the college instructional and research staff who are interested in or associated with various specific research projects, and research fellows or assistants who are pursuing graduate study and are assigned to part-time work in the station. Experts who are especially qualified by training and experience to advise on investigations in certain fields will from time to time be appointed to the staff as special technical counselors. Through the cooperation of departments in the Schools of Science and Agriculture, research studies may be organized in fields related to forestry and placed under the direction of a competent specialist in the specific field of interest. The departmental heads serve as coordinators between research personnel and the Forest Experiment Station.

## Oregon Forest Products Laboratory

### Staff

JOHN BERNARD GRANTHAM, M.S., Managing Director.  
DOUGLAS WILLIAM GLENNIE, Ph.D., Acting Chief, Chemical Research.  
LEIF DEDRICK ESPENAS, M.S., Chief, Physical Research.  
JAMES DODD SNOGRASS, M.S., Associate Chief, Physical Research.  
MARION LEWIS HORTON, B.S., Business Manager.  
GEORGE H. ATHERTON, B.S., In Charge, Engineering and Milling.  
CHARLES HENRY BURROWS, B.S., Research Assistant.  
STANLEY EUGENE CORDER, B.S., Mechanical Engineering.  
RAYMOND ALAN CURRIER, M.S., Research Associate.  
RONALD GERALD FRASHOUR, B.S., In Charge, Manufactured Products.  
ROBERT DOUGLAS GRAHAM, M.S., In Charge, Wood Preservation.  
ARLAND DUANE HOFSTRAND, M.S., Research Assistant.  
JAMES WENDELL JOHNSON, M.S., In Charge, Timber Mechanics.  
DONALD JAMES MILLER, M.F., Research Assistant.  
JAMES LAFAYETTE OVERHOLSER, B.S., Technical Editor.  
JACK RUSSEL PFEIFFER, M.F., In Charge, Wood Seasoning.  
ROBERT MARTIN SAMUELS, B.S., In Charge, Pulping Research.

### Cooperating Departments and Divisions

Agricultural Engineering Department  
Agricultural Experiment Station  
Botany Department  
Chemical Engineering Department  
Chemistry Department  
Engineering Experiment Station  
Forest Engineering Department  
Forest Management Department  
Forest Products Department  
Mechanical Engineering Department

The 1941 Oregon Legislature authorized a program of research in the utilization of forest products to be carried on through the State Board of Forestry in cooperation with the School of Forestry. This Act was revised in 1945, establishing a forest products laboratory on the campus of Oregon State College and authorizing cooperation with public agencies and private industries.

The law created an advisory committee to guide the policy of the program. The Committee is composed of representatives of the following agencies: West Coast Lumbermen's Association, Willamette Valley Lumbermen's Association, Western Pine Association, Oregon Plywood Interests, Pacific Northwest Forest and Range Experiment Station, and the School of Forestry. The Governor of Oregon is chairman and the State Forester is secretary.

## Science Research Institute

VERNON H. CHELDELIN, Ph.D., Director, Science Research Institute; Professor of Chemistry.  
ERVIN F. KURTH, Ph.D., Professor of Chemistry.  
FRIEDRICH E. BRAUNS, Ph.D., Professor of Chemistry.  
TSOO E. KING, Ph.D., Associate Professor of Chemistry.  
CHIH H. WANG, Ph.D., Associate Professor of Chemistry.  
WALTER D. LOOMIS, Ph.D., Assistant Professor of Chemistry.  
ROBERT W. NEWBURGH, Ph.D., Assistant Professor of Chemistry and Chemist, U.S.D.A.  
VICTOR JACK BROOKES, Ph.D., Research Associate in Entomology and Chemistry.  
SUDHA JOSHI, Ph.D., Research Assistant (Instructor) in Chemistry.  
BOBBY A. MOHLER, B.S., Research Assistant (Acting Instructor) in Biochemistry.  
JOAN D. ARMSTRONG, B.S., Research Assistant (Acting Instructor) in Biochemistry.

The growth of scientific research on this campus during the past twenty years, coupled with a steady increase in support of research by outside agencies, resulted in the establishment in 1952 of the Science Research Institute. The Institute, operating within the framework of the School of Science, has three functions: first, to assist scientists at Oregon State College in obtaining support for research projects; second, to aid in expediting their research programs and to promote interdepartmental research; and third, to pursue an active research program along the lines of interest and competence of the Institute staff.

The Institute is at present housed in laboratories in Chemistry Hall. Current studies by the Institute staff include fundamental projects in biochemistry, organic chemistry, bacteriology, entomology, and plant pathology, which derive their support from Oregon State College, government research agencies, research foundations, and industrial concerns.

Staff members of the Science Research Institute receive joint appointments in the Institute and the appropriate teaching departments. Research Assistants and Research Fellows employed by the Institute also receive appointments in the departments in which their advanced degrees are sought.

# Summer Session

FRANKLIN ROYALTON ZERAN, Ph.D., Director of the Summer Session.

**O**REGON State College conducts an eight-week summer session which serves several groups of students: undergraduate and graduate students who wish to shorten time for completing degree requirements; mature students from all parts of the country who have the summer free for study and travel; junior-college graduates and transfer students who need to make some adjustment in their programs before entering advanced or professional training; recent high-school graduates who desire additional study before starting a regular curriculum; and others who find the campus of Oregon State College a pleasant and profitable place for summer studies in many fields.

Instead of the eight-week program followed in other schools and departments, the School of Home Economics operates on a six-weeks basis in the Summer Session. A student may earn up to 9 term hours in this period.

**Summer Courses.** Eight schools and divisions participate. The Lower Division offers basic courses in arts and letters and in social sciences. The School of Science offers undergraduate and graduate work in all departments. The School of Business and Technology offers courses in business administration, secretarial science, and business education. All departments of the School of Home Economics offer undergraduate and graduate courses. The School of Engineering offers a limited number of engineering courses. The Department of Industrial Education offers courses in industrial engineering, industrial arts, and industrial arts education. The School of Education provides basic and advanced course work in teaching theory, with stress on the training of guidance, testing, and counseling specialists. Workshops, seminars, and short courses in health education, guidance, Northwest resources, science, family life education, and special types of subject matter supplement the regular courses. The Division of Physical Education offers both recreational and professional course work.

**Credit and Fees.** Students may earn a total of up to twelve term hours of credit in the eight-week session. Under certain conditions an additional three credits of graduate work may be taken in a two-week post session in the School of Education. Full-time summer students pay a \$65 fee. Part-time students registering for not more than six hours pay fees at the rate of \$8 per term hour. There is no out-of-state fee. Ability to profit from the course work serves as the primary criterion of admission to summer classes. Candidates for degrees from Oregon State College must satisfy the regular requirements for admission.

**Summer Information.** For this year's summer session calendar see page 8. The summer-session bulletin and other special announcements may be obtained by writing the Director of the Summer Session, Oregon State College.

# Extension

**T**HROUGH extension services the benefits of all the Oregon state institutions of higher education are brought to the people of the State in their own communities. All divisions of the Oregon State System of Higher Education seek through every means possible, so far as resources and facilities permit, to serve the entire State. All extension activities are administered through the General Extension Division and the Federal Cooperative Extension Service. The latter includes all extension activities carried on jointly with the Federal Government.

## General Extension Division

JAMES W. SHERBURNE, Ph.D., Dean, General Extension Division.  
VIRON A. MOORE, Ed.D., Assistant Dean, Director State-Wide Services.  
JAMES C. CAUGHLAN, Ph.D., Assistant Dean, Director Portland Extension Center, and Portland Summer Session.  
DONALD R. LARSON, B.A., Assistant to the Dean, Director Information Services.  
HOWARD IMPECOVEN, Ed.D., Registrar, General Extension Division.  
LESLIE B. NEWHOUSE, M.B.A., Business Manager, General Extension Division.  
JEAN PHYLLIS BLACK, Ph.D., Librarian, General Extension Division.

### Portland Extension Center

JAMES C. CAUGHLAN, Ph.D., Assistant Dean, Director.  
CLARK P. SPURLOCK, Ed.D., Assistant Director.  
HUGH G. LOVELL, Ph.D., Head, Business and Labor Programs.  
ROBERT J. GRIDLEY, Ed.M., Workshop Coordinator.

### Department of State-Wide Services

VIRON A. MOORE, Ed.D., Assistant Dean, Director.  
HOWARD J. AKERS, D.Ed., Administrative Assistant, Head, Office of Correspondence Study.  
JOHN A. SCHULZ, Ed.D., Field Representative.  
CHARLES D. DEAN, Ph.D., Field Representative.

### Radio Station KOAC

JAMES M. MORRIS, Ed.D., Program Manager.

### Department of Visual Instruction

WILLIAM CURTIS REID, Ph.D., Director.

### Institute of International Affairs

DONALD R. LARSON, B.A., Assistant to the Dean, Head.

General Extension Division is the agency of the Oregon State System of Higher Education by which the various institutions comprising the system serve the people of Oregon through resident extension classes, short courses, correspondence study, visual instruction, radio and television programs, summer sessions, and special activities.

**State-Wide Services.** State-wide services consist of evening classes, correspondence study courses, conferences, and workshops. Any community in Oregon may become an extension-class center if a satisfactory meeting place is provided and sufficient enrollment is guaranteed to cover actual operating costs. Correspondence courses enable students to continue their programs of study when not in residence. Conferences are conducted for business and professional groups. In-service institutes and workshops are organized to assist school districts.

**Visual Instruction.** The Department of Visual Instruction of General Extension Division provides glass and film slides, microscopic slides, and 16 mm. motion picture films suitable for use by schools, community clubs, and other

organizations. A catalog is published listing materials available. Located on the campus of Oregon State College at Corvallis, the department is maintained jointly by General Extension Division and Federal Cooperative Extension Service.

**Radio Station KOAC.** Station KOAC is Oregon's state-owned station of which the State Board of Higher Education is managing agency. The station is located at Corvallis on the campus of Oregon State College, the licensee and operator of the physical plant. General Extension Division directs the program service. Program resources are drawn from Oregon State College, University of Oregon, Portland State College, Oregon College of Education, the two regional colleges, Portland Extension Center and from various departments of state government. Many other public agencies, organizations, and individuals contribute frequently to broadcasts. KOAC operates with 5,000 watts power on a frequency of 550 kilocycles by authority of the Federal Communications Commission. The station is operated in the interest of the Oregon public and programs are free from commercialism. Program schedules are issued periodically and will be furnished on request. Studios are located at Corvallis, Eugene, Monmouth, Portland, and Salem. "Tapes for Teaching" are provided for schools of Oregon as a special service.

**Portland Extension Center.** The Portland Extension Center extends the resources, curricula, and facilities of the system's institutions for those students who desire evening classes in the metropolitan area of Portland. It occupies the classroom building at 1620 S.W. Park Avenue, Portland 1, Oregon, which is the mailing address. The telephone number is CApitol 2-3201. Administrative, business, and registrar offices are in adjacent buildings.

Not authorized to grant degrees, Portland Extension Center, nevertheless, offers a diversified program of related graduate and undergraduate courses in many major fields of study which comprise the curricula at Oregon State College, University of Oregon, Portland State College, Oregon College of Education, and the two regional colleges. Work taken at Portland Extension Center may be applied toward graduation from any of these degree-granting institutions, providing their residence and other individual requirements are satisfactorily met.

In addition to the program of accredited college and university courses designed to meet degree requirements, Portland Extension Center participates with industry, labor, the professions, and other organizations in conducting cooperative courses in specific areas at the professional level. A program of courses concerned with the avocational interests of the community also is maintained.

Legislation which established Portland State College as a degree-granting institution within the system has affected Portland Extension Center only in that six campuses instead of five now are represented.

**Portland Summer Session.** The summer session is a daytime program only, offering a selection of both graduate and undergraduate courses from Oregon State College, University of Oregon, Oregon College of Education, the two regional colleges, and Portland State College. Particular emphasis is placed on elementary and secondary teacher education.

**Institute of International Affairs.** The institute serves to effect close cooperation with national, state, and civic organizations related to international affairs, and as a distribution point for U.S. State Department and UNESCO publications.

**Telecourses.** Produced to provide college credit as well as a worthwhile learning experience to noncredit television viewers, General Extension Division telecourses are offered in several localities in the State through public service facilities of commercial television outlets.

## Federal Cooperative Extension Service

### Administration

FREDERICK EARL PRICE, B.S., Director.  
 FRANK LLEWELLYN BALLARD, B.S., Associate Director.  
 CHARLES WESLEY SMITH, B.S., Assistant Director.  
 JEAN WILLARD SCHEEL, M.A., Assistant Director.  
 MABEL CLAIR MACK, M.S., Assistant Director.  
 JAMES RALPH BECK, B.S., Assistant Director.

### State Leaders and Agents

FRANCES ANN CLINTON, M.S., State Leader, Home Economics Extension.  
 BURTON SEYMOUR HUTTON, B.S., State 4-H Club Leader.  
 WINNIFRED KEIL GILLEN, M.S., State Extension Agent (4-H Club).  
 JOHN GORDON HOOD, B.S., State Extension Agent.  
 GENE M. LEAR, M.P.A., State Extension Agent.  
 CAL GRAHAM MONROE, M.S., State Extension Agent (4-H Club).  
 ROSALIE MUELLER WARRICK, M.Ed., State Extension Agent (4-H Club).  
 WILLIAM GERALD NIBLER, B.S., State Extension Agent.  
 MURLE SCALES, M.S., State Extension Agent.  
 BETTY JANE SEDGWICK, B.S., State Extension Agent.  
 CLIFFORD LOVEJOY SMITH, M.S., State Extension Agent.  
 ESTHER ADELIA TASKERUD, M.A., State Extension Agent.

Federal Cooperative Extension performs one of the three major functions of Oregon State College, which are: resident teaching, research, and extension teaching. It extends the available information of Oregon State College, the United States Department of Agriculture, and other appropriate State and Federal agencies to every portion of the State. A staff of men and women resident in the counties, cooperatively supported by Oregon State College, United States Department of Agriculture, and the counties, and a resident staff of subject-matter specialists in agriculture and home economics work on a project basis, all projects being approved by the appropriate administrative officers.

The work of the Extension Service is directed toward improvement of rural life. Its first objective is the rural home. Its program includes all forms of off-campus instruction and assistance in those phases of agriculture, home economics, and related subjects that can be practically adapted to the needs of the people of the State. Unique teaching methods have been developed through the years, important among which is organization for self-help to bring widespread application of the principles presented. Active cooperation with all other organized forces of betterment toward enrichment of the agricultural and home interests of Oregon characterizes the extension program. All counties of the State cooperate in the program, which is available in every community.

**Extension Projects.** In order to assure the maximum of efficiency, extension work is conducted on the basis of definitely planned projects. These require approval by the proper Oregon State College authority and the Secretary of the United States Department of Agriculture before Federal and State funds appropriated for the work may be expended.

The several distinct lines of work now covered by written projects, from which citizens of the State are receiving benefit, include:

- *General*—general administration and organization of the Extension Service: county agent work; home demonstration work; 4-H Club work;

preparation, printing, and distribution of bulletins; information; radio; and visual instruction supported jointly with General Extension Division.

• *Agriculture*—soils, irrigation and drainage; soil conservation; horticulture; animal husbandry; dairying; poultry husbandry; farm crops; hop production; agricultural economics, including marketing and the collection and dissemination of statistical and outlook information; agricultural engineering; rodent eradication; wildlife; land use planning; entomology; farm forestry; seed certification; plant pathology; and farm management.

• *Home Economics*—nutrition; home management; clothing and textiles; home furnishings; community social organization; consumer education.

• *4-H Club Work*—for boys and girls between 9 and 21 years of age; instruction in subject matter in agriculture and home economics; special attention to group skills, human relations, and good citizenship generally.

These projects are not assumed to cover all problems of importance within the State. It is the purpose to put into operation and to emphasize those lines of extension service that are fundamental to large and important interests of farm and home welfare, or to material agricultural development.

## Summary of Enrollment—1955-56

### ENROLLMENT BY CURRICULUM AND CLASS, REGULAR SESSION, 1955-56

Curriculum	Freshman year	Sophomore year	Junior year	Senior year	Graduate	Special	Sub-total	Total
<i>Liberal Arts and Sciences</i>								
Lower Division.....	406	155	.....	.....	.....	4	565	.....
School of Science								
General Science.....	33	44	38	37	9	.....	.....	.....
Bacteriology.....	6	7	4	5	16	.....	.....	.....
Botany.....	2	5	2	5	26	.....	.....	.....
Chemistry.....	26	16	9	15	68	.....	.....	.....
Entomology.....	2	1	3	1	15	.....	.....	.....
Geology.....	26	16	12	17	7	.....	.....	.....
Mathematics.....	6	7	1	6	20	.....	.....	.....
Medical Technicians.....	9	12	6	1	.....	.....	.....	.....
Nursing Education.....	30	17	2	.....	.....	.....	.....	.....
Natural Resources.....	4	5	5	3	7	.....	.....	.....
Physics.....	21	16	13	10	19	1	.....	.....
Pre-Dental.....	33	18	9	8	1	.....	.....	.....
Pre-Medicine.....	44	26	16	12	.....	.....	.....	.....
Science Education.....	4	12	6	7	.....	.....	.....	.....
Zoology.....	1	2	1	1	17	.....	.....	.....
Total, School of Science.....	247	204	127	128	205	1	912	.....
Total, Liberal Arts and Sciences, excluding duplicates.....	653	359	127	128	205	5	.....	1,477
<i>Professional Curricula</i>								
School of Agriculture.....	273	265	89	156	104	2	889	.....
School of Business and Technology.....	294	333	126	205	.....	.....	958	.....
School of Education.....	231	280	138	173	117	1	940	.....
School of Engineering.....	468	396	178	227	32	2	1,303	.....
School of Forestry.....	121	119	44	80	18	.....	382	.....
School of Home Economics.....	148	136	72	89	35	.....	480	.....
School of Pharmacy.....	41	40	37	64	1	.....	183	.....
Unclassified.....	.....	.....	.....	.....	63	.....	63	.....
Total, Professional Schools.....	1,576	1,569	684	994	370	5	5,198	5,198
Totals, (excluding duplicates).....	2,229	1,928	811	1,122	575	10	.....	6,675
Total Students, Regular Session.....								6,675

**ENROLLMENT BY SEX, ALL SESSIONS, 1955-56**

Session	Men	Women	Total
Summer Session 1955.....	878	414	1,292
Fall Term 1955-56.....	4,510	1,650	6,160
Winter Term 1955-56.....	4,361	1,595	5,956
Spring Term 1955-56.....	4,043	1,518	5,561
Net total, regular sessions 1955-56.....	4,909	1,766	6,675
Net total, all sessions, Oregon State College.....	5,787	2,180	7,967

**ENROLLMENT IN SUMMER SESSION, 1955**

	Men	Women	Total
Eight-Week Summer Session.....	876	411	1,287
Second Session.....	2	3	5
Totals.....	878	414	1,292
4-H Club Short Course.....	598	1,251	1,849

**ENROLLMENT IN GENERAL EXTENSION DIVISION  
(July 1, 1955-June 30, 1956)**

Classes	Under-graduate	Graduate	Total
<i>Extension Classes:</i>			
Portland Extension Center.....	3,920	2,053	5,973
State-Wide Classes (73 centers).....	2,832	2,739	5,571
Central Oregon Community College.....	239	50	289
Total, Extension Classes.....	6,991	4,842	11,833
<i>Correspondence Study:</i>			
New Registrations.....	2,177	.....	2,177
Old Registrations.....	2,923	.....	2,923
Total, Correspondence Study.....	5,100	.....	5,100
Total, General Extension Division.....	12,091	4,842	16,933

**SUMMARY OF DEGREES CONFERRED 1955-56**

<i>Advanced Degrees:</i>		
Honorary Degrees.....	2	.....
Doctors of Philosophy.....	54	.....
Doctors of Education.....	14	.....
Masters of Arts.....	6	.....
Masters of Science.....	96	.....
Masters of Agriculture.....	2	.....
Masters of Education.....	64	.....
Masters of Forestry.....	6	.....
Masters of Home Economics.....	5	.....
Professional Degree (Civil Engineer).....	1	.....
Total Advanced Degrees.....	.....	250
<i>Bachelors' Degrees:</i>		
<i>Bachelors of Arts:</i>		
Science.....	5	.....
Business and Technology.....	4	.....
Education.....	3	.....
Engineering.....	2	.....
Nursing Education.....	1	.....
<i>Bachelors of Science:</i>		
Science.....	98	.....
Agriculture.....	121	.....
Business and Technology.....	152	.....
Education.....	135	.....
Engineering.....	156	.....
Forestry.....	49	.....
Home Economics.....	87	.....
Nursing Education.....	17	.....
Pharmacy.....	23	.....
Total Bachelors' Degrees.....	.....	853
Total Degrees Conferred 1955-56.....	.....	1,103



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