All study beyond the bachelor's degree at Oregon State University 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 and 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 University, the academic deans, the chairman of the 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 chairman of the Graduate Committees of the several schools. 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 degrees (A.M.) in 1876. In 1897 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 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 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 on this campus to the Graduate School.

The Doctor of Philosophy degree is offered in about 75 fields of study, distributed through 30 departments of instruction. The Doctor of Education degree is offered in Education and Guidance and in Science Education. Master's degrees are offered in the doctoral fields and in 19 additional fields as listed on following pages.
GRADUATE COUNCIL


GRADUATE COMMITTEES


Agriculture: R. Bogart (chairman), C. E. Bond, R. F. Cain, E. N. Castle.


Home Economics: Margaret Fincke (chairman), May DuBois, Ida Ingalls, Clara A. Storvick, Helen Wells.


General Studies and Nonmajor Fields: H. H. Plambeck, Sociology (chairman); W. R. Crooks, Psychology; R. F. Fuquay, Political Science; L. G. Harter, Jr., Economics; J. K. Putnam, History; L. B. Strickler, Business Administration.

JOINT-CAMPUS PROGRAM

Regularly enrolled graduate students at Oregon State University may enroll in graduate courses of the University of Oregon in Eugene when these courses are a part of their approved graduate programs. The joint-campus program offers the graduate student enrolled at OSU access to the specialized instructional and research resources of two major universities through a single matriculation and registration.

In a similar manner, graduate students at the University of Oregon may take graduate courses at Oregon State University without additional tuition. Students participating in the joint-campus program are considered students of their home university.

Students follow the standard advising and registration procedures, irrespective of whether work is taken on one or both campuses. Courses to be taken at the University of Oregon will be identified on registration materials by the symbol "JC 510 UO" preceding the course prefix, number, and title as listed in the U of O catalog. Credit earned on either campus by OSU students will be recorded in the OSU Registrar's Office. Tuition and fees will be the same as if all courses were taken at Oregon State University. Students participating in this program are responsible for their own transportation.

ADVANCED DEGREES

The degrees granted through the Graduate School of Oregon State University and the fields in which programs of study leading to the respective degrees are offered are listed below.

Doctor of Philosophy (Ph.D.)

School of Science fields

BOTANY: anatomy, cytology, ecology, genetics, morphology, mycology, nematology, plant pathology, palynology, physiology, physiology of parasitism, systematic botany

CHEMISTRY: analytical chemistry, biochemistry (including agricultural chemistry), forest products chemistry, inorganic chemistry, organic chemistry, physical chemistry, radiochemistry (organic and inorganic)

ENTOMOLOGY: applied entomology, forest entomology, general entomology, systematic entomology

GENERAL SCIENCE: radiation biology, radiological physics, biophysics

GENETICS: formal genetics, cytology and cytogenetics, evolution and speciation, quantitative genetics, microbial genetics, plant genetics and improvement, animal genetics and improvement, forest genetics
GEOLOGY: areal geology, economic geology, geomorphology, invertebrate paleontology, micropaleontology, palynology, petrology, sedimentology, stratigraphy

MATHEMATICS: analysis, algebra, applied mathematics, computer science and technology, geometry

MICROBIOLOGY AND HYGIENE: dairy microbiology, food microbiology, hygiene and sanitation, industrial microbiology, marine microbiology, microbial genetics, microbial physiology, microbiology of water and sewage, pathogenic bacteriology, soil microbiology, virology

OCEANOGRAPHY: biological oceanography, chemical oceanography, geological oceanography, physical oceanography, geophysics

PHYSICS: applied physics, atomic physics, meteorology, modern physics, nuclear physics, solid state, theoretical physics

STATISTICS: statistics

ZOOLOGY: cellular biology, embryology and anatomy, genetics, invertebrate zoology, natural history and ecology, parasitology, physiology

School of Agriculture fields

AGRICULTURAL ECONOMICS: agricultural finance, agricultural marketing, agricultural policy, agricultural prices, farm management, land economics, econometrics and mathematical economics, natural resource development, production economics, transportation economics

ANIMAL SCIENCE: dairy production, genetics, livestock management, nutrition, physiology, production, range management, reproduction

FARM CROPS: farm crop production, genetics, pasture production and management, plant breeding, range management, seed technology, weed control

FISHERIES AND WILDLIFE: fisheries, wildlife

FOOD SCIENCE AND TECHNOLOGY: food science

GENETICS: (See School of Science fields above)

HORTICULTURE: genetics, ornamental horticulture, pomology, vegetable crops

PULTRY SCIENCE: breeding, genetics, management, nutrition, reproduction physiology

RANGE MANAGEMENT: range management

SOILS: irrigation, forest soils, soil chemistry, soil fertility, soil genesis, soil physics

School of Education fields

EDUCATION: education, guidance, science education

School of Engineering fields

AGRICULTURAL ENGINEERING: crop processing, farm structures, power and machinery, soil and water

CHEMICAL ENGINEERING

School of Forestry fields

FOREST MANAGEMENT: fire control, forest economics, forest genetics, forest management, forest photogrammetry, forest tree physiology, silviculture, watershed management

FOREST PRODUCTS: wood conversion, wood science

School of Home Economics fields

FAMILY LIFE AND HOME MANAGEMENT: child development, family relationships

FOODS AND NUTRITION: foods, nutrition

School of Pharmacy fields

PHARMACEUTICAL CHEMISTRY: pharmacognosy

PHARMACEUTICAL SCIENCE: pharmacology

Doctor of Education (Ed.D)

School of Education fields

EDUCATION

GUIDANCE

Master of Arts (M.A.)

School of Science fields

BOTANY

CHEMISTRY

ENTOMOLOGY

GENERAL SCIENCE: history of science

GENETICS

GEOLGY

MATHEMATICS

Microbiology and Hygiene

School of Education fields

AGRICULTURAL EDUCATION

BUSINESS EDUCATION

EDUCATION

GUIDANCE

School of Engineering fields

AGRICULTURAL ENGINEERING: civil engineering, electrical engineering, industrial engineering, mechanical engineering, nuclear engineering

School of Home Economics fields

CLOTHING, TEXTILES, AND RELATED ARTS

FAMILY LIFE AND HOME MANAGEMENT

School of Pharmacy fields

PHARMACEUTICAL CHEMISTRY

PHARMACEUTICAL SCIENCE

PHARMACOLOGY

Master of Science (M.S.)

The Master of Science degree is offered in the same fields as listed above for the Master of Arts degree with the following additions:

School of Agriculture fields

AGRICULTURAL ECONOMICS

ANIMAL SCIENCE: livestock management, dairy production, meat, wool technology

FARM CROPS

FISHERIES

FOOD SCIENCE AND TECHNOLOGY

GENETICS

HORTICULTURE

WILDLIFE MANAGEMENT
Other Master's Degrees

The following additional master's degrees are offered in the fields indicated:

- Master of Agriculture: AGRICULTURE
- Master of Arts in General Studies: (See page 165)
- Master of Bioengineering: (See page 169)
- Master of Business Administration: (See page 165)
- Master of Education: AGRICULTURAL EDUCATION, BUSINESS EDUCATION, EDUCATION, GUIDANCE, HEALTH EDUCATION, HOME ECONOMICS EDUCATION, INDUSTRIAL ARTS EDUCATION
- Master of Engineering: (See page 169)
- Master of Forestry: forest engineering, forest management, forest products
- Master of Home Economics: clothing, textiles, and related arts; family life and home management; foods and nutrition; general home economics; home economics education; institution management
- Master of Material Science: (See page 166)
- Master of Pharmacy: pharmacy administration, hospital pharmacy

Engineer Degrees

<table>
<thead>
<tr>
<th>Degree</th>
<th>Department</th>
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<tbody>
<tr>
<td>Agricultural Engineer</td>
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<td>Chemical Engineer</td>
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<td>Metallurgical Engineer</td>
<td>Mechanical Engineering</td>
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<tr>
<td>Mining Engineer</td>
<td>Mechanical Engineering</td>
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</tbody>
</table>

Minors

Any of the fields listed above may be offered as minor fields of study as a part of a student's graduate study program. In addition graduate minors in the following fields are also offered.

- Biometry
- College and University Teaching
- Economics
- English
- Extension Methods
- History
- Music
- Operations Research
- Physical Education
- Political Science
- Psychology
- Sociology
- Speech
- Trade and Industrial Education
- Water Resources

GENERAL REGULATIONS

Admission

A student desiring to enter the Graduate School at Oregon State University will send (or arrange to have sent) to the Office of Admissions: (1) two completed admission forms; (2) a transcript of all his previous college or university work; and (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. To be considered for admission to the Graduate School, an applicant must have a baccalaureate degree from an accredited college or university, and a scholastic record and background and other evidence that indicate he is capable of doing satisfactory graduate work. The Admissions Office 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 whether departmental facilities are adequate for the expressed aims of the student. The recommendations of the department are reviewed by the Graduate Office. The student is then notified by the Office of Admissions as to the action taken.

Admission Status

Students may be admitted to the Graduate School under the following categories:

Regular Graduate Students

Those who have met the academic requirements may be either classified or unclassified.

- a. Classified are those who have been accepted by a major department to work toward an advanced degree.
- b. Unclassified are those who have graduated from an accredited institution but have not declared a major, or those who want to work toward certification for teaching or other professional work. These students may become classified candidates later, if accepted by a department.

Conditionally Accepted Graduate Students

- a. Provisional graduate students
  (1) Students from nonaccredited institutions must complete at least one term of satisfactory work at Oregon State, after which they may be admitted with full standing in the Graduate School and allowed graduate credit for courses they have completed acceptably while registered as provisional students.
  (2) Students whose preparation does not warrant full admission to the Graduate School but who may prove acceptable later. If at the end of two quarters of work they fail to show promise as graduate students they will be asked to terminate their work.

- b. Nondegree students. Students rejected as full graduate students because of poor undergraduate records and a lack of promise for graduate work. Students who are working toward teacher certification but who do not qualify as regular graduate students may be admitted to this category. As a condition to admission the student shall sign a statement that he understands that while work completed prior to and while under this category may not be used for a graduate degree, it may be used as a basis for reaplication for admission to the Graduate School. Normally, 15 hours with grades of B or better are required for reconsideration.

Graduate School
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 (60 hours for five-year baccalaureate requirements) 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 one year of upper division work in addition to foundation 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.

Qualifying Examinations

Graduate students working for advanced degrees in many departments are required to take an examination in their major and minor fields designed to determine their weaknesses, deficiencies, and overall preparation and background. This examination is in effect a guidance examination, the results of which are used in setting up the graduate study program. Poor showing in any of the areas tested may result in the student's taking undergraduate courses without graduate credit in order to give him the necessary background to go on with his graduate program.

The examination may be oral or written, or both, and must be taken during the first term of his graduate enrollment, preferably before the beginning of fall term, but not later than one month after the beginning of the term. In lieu of their own qualifying examination, departments may accept a satisfactory showing in the Graduate Record Examination or some other standard test.

A graduate of OSU 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. A student working toward the doctoral degree who has received his master's degree at Oregon State not more than three years before beginning doctoral work is not required to take the qualifying examinations unless his major has been changed. He is required, however, to take examinations in additional minors.

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 18 term hours (17 term hours on petition). For teaching and research assistants the maximum load is 12 term hours; for part-time assistants the maximum load is 15 term hours; fellows may carry the maximum load.

A graduate student using space and facilities or under supervision of a major professor must register for a minimum of 3 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 the major and the minor(s). Grades below C are not accepted for graduate credit.

Graduate Courses

All courses numbered in the 500's carry graduate credit, as do those in the 400's which have been approved by the Graduate Council. Approved courses in the 400's 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, 506, 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. Number 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) and Projects (506) are used for special work not given under a formal course number. They may include specified reading, laboratory work, field work, or compilation of information essential in the student's program. The work done under these numbers may be reported either in writing or orally to the instructor concerned. Seminar (507) is used both for departmental seminars and for special group work not given in a formal course.

Oral Examination Schedule

Oral examinations, both preliminary and final, will not be scheduled during any period when classes are not in session, including between the summer session and fall term.

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 not later than the first week of winter term preceding Commencement. Students in residence spring term are required to attend Commencement. Students who complete their work previous to the spring term but who cannot attend Commencement must petition the Academic Requirements Committee to receive their degrees in absentia.

Students who complete degree requirements in the summer session should apply for graduation at that time. Diplomas will be mailed early in September.

Graduate Fees

Graduate students registered for 8 term hours of work or more pay tuition and fees in accordance with the schedule printed in the General Information section of this Catalog. Graduate students do not pay the nonresident fee. Students holding teaching or research assistantships pay fees totaling $32 per term. Graduate students registering for 7 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 for the benefit of students.

Deposits. Persons who enroll for academic credit (except staff members) must make a deposit of $15 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 University holding rank above that of instructor cannot receive advanced degrees from Oregon State University. Full-time staff members may register normally for not more than 3 hours per term. As many as 5 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

A varying number of graduate teaching and research assistantships 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. Graduate assistants render service to the institution through teaching duties or research and pay fees amounting to $32 per term, which admit them to all services maintained by the university for the benefit of students. Graduate assistants may carry a maximum of 12 hours per term.

Teaching Assistantships. A teaching 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 hours per term. The stipend for a graduate assistant varies from $1,600 to $2,600.

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 teaching assistant.

Agricultural Experiment Station Graduate Research Assistantships. 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 $2,500 to $3,240 on a twelve-month basis.

Oregon State Game Commission Research Assistantships. Research assistantships in fisheries and wildlife are supported by the Oregon State Game Commission at stipends of $7,800 for two full years for the M.S. and $12,600 over a three-year period for the Ph.D. degree. Apply to the Oregon State Game Commission, Division of Wildlife Research, 303 Extension Hall, OSU.

Engineering Experiment Station Assistantships. A variable number of assistantships are available through the Engineering Experiment Station under which the student devotes one-third of his time as an assistant on an approved station project. Such projects are in operation in each department of engineering except engineering physics, agricultural engineering, and production technology. The current stipend is $2,100 on a nine-month appointment.

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. Application blanks are available from the Office of the Registrar. Applications, including transcripts of all academic work to date of application, should be forwarded to the Office of the President by March 1 of each year.

Fellowships. A number of Fellowships sponsored by industry, foundations, and government agencies are available to superior graduate students for graduate study in various departments at Oregon State University. These fellowships are awarded through the departments concerned, and application should be made by writing to the department. Fellowships render no service to the institution, may carry 15 credit hours, and pay the full fee of $110 per term. The following fellowships are open to Oregon State University graduate students:

Crown Zellerbach Foundation Fellowship in Resource Geography: $2,000 to assist an outstanding graduate student majoring in Resource Geography.

Dow Chemical Company Fellowship: $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: $1,200, plus fees, provided by the E. I. du Pont de Nemours Company for a graduate student in chemistry.

Evans Products Company Fellowship: $1,500 available to a student, with priority given to a student majoring in Forest Products.

General Foods Fund Fellowships: Two grants annually for doctorate or master’s degree study in any area of Home Economics; $3,000 for candidate on doctoral program and $2,000 for a student on a master’s degree program, provided by the General Foods Fund, Inc. of New York City.
Hyslop Agricultural Research Fellowship: $1,200 a year for research in farm crops in memory of Professor George B. 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 $3,000 annually.

Mary J. L. McDonald Fellowships in Forestry: Annual grants of $300 to $1,000 each to assist graduate students in forestry.

Shell Oil Company Fellowship: $1,800 plus fees provided by Fellowship Committee of the Shell Oil Company Foundation for single student in chemistry; $2,100 for married student with one or more children.

South Santiam Educational Research Project Fellowships: Two $2,000-$3,000 fellowships for students in forest management provided by the Louis W. and Maud Hill Foundation.

Stauffer Fellowship: $2,000 for the recipient plus laboratory fees of $200 provided by the Stauffer Chemical Company in support of research in chemistry.

U. S. Bureau of Mines Research Fellowships: Stipends in chemistry, physics, geology, and engineering for research at the Albany, Oregon, plant. Master's degree candidates devote one year to research, doctoral candidates two years. Compensation based on up to 50% of GS-5 and GS-7 pay categories. Fellows may carry the normal fellowship load of classwork.

Weyerhaeuser Fellowships in Forest Management: Two $2,000 fellowships provided by The Weyerhaeuser Timber Foundation for graduate study and research in forest management.

Weyerhaeuser Fellowship in Pulp and Paper: One $2,000 fellowship provided by the Weyerhaeuser Company Foundation for graduate study and research in pulp and paper; administered by the School of Science.

Chester M. Wilcox Memorial Scholarship: Income from a trust fund left by A. D. Wilcox in honor of his brother to a graduate student for research in poultry science. Approximately $4,000 annually.

Research Grants: Various departments of the School of Science and other research organizations on the campus, including the Engineering Experiment Station and Agricultural Experiment Station, annually receive grants from Federal and State agencies, foundations, and private companies for research projects. Many of these grants include stipends for graduate students. Applications should be made through the department concerned.

The Science Research Institute has available a number of fellowships and grants ranging in value from $2,200 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, U. S. Department of Agriculture, American Heart Association, Oregon Heart Association, Nutrition Foundation, Life Insurance Medical Research Fund, and American Cancer Society.

National Science Foundation Cooperative Fellowships and Traineeships: Oregon State University participates in this Federal program for the support of graduate study in the natural sciences and engineering science.

National Defense Education Act Fellowships: (Title IV). Oregon State University participates in this Federal program and currently has a number of fellowships. The NDEA Title IV program will undoubtedly continue, and it is expected that additional areas of graduate study for the Ph.D. degree will be available.

National Aeronautics and Space Administration. Oregon State University has a number of three-year predoctoral traineeships in space-related science and technology.

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 including thesis and 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 Division of Continuing Education 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. Credit for extension courses from other schools is not accepted.

Transferred Credit

A maximum of 15 term hours of graduate work done at another accredited institution, or in the Division of Continuing Education 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. Courses more than ten years old are obsolete.
Qualifying Examinations. (see page 162)

Thesis

A copy of the master's thesis in final form must be presented to the Graduate Office for collating at least one week prior to the final oral examination. Copies of the thesis and abstract are then distributed to members of the examining 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, 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.)

Final oral examinations must be scheduled in the Graduate Office six weeks before June Commencement and must be completed four weeks before Commencement. Corrected copies of the thesis with three copies of the abstract must be in the Graduate School Office not later than two weeks before Commencement.

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's 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 theses based on research. Forty-five hours are required with a minimum of 9 hours in each of at least three agricultural fields with not more than 21 hours in any one field. At least 15 hours must be in 400 (G) or 500 courses.

An advisory committee selected from these departments 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 from the date the student registers under the program. No thesis is required but a paper demanding 3 to 5 hours of work must be submitted to be registered as Reading and Conference 505.

Master of Arts in General Studies

This degree is granted for the attainment of a broad advanced knowledge and cultural achievement rather than for work in a specialized field under the traditional program of the departmental master's degree. A minimum of 9 hours in each of three departments (at least one of which must be in a field in which graduate majors are allocated to the institution) is required, with not more than 21 hours in any one department. The course work must be integrated and organic.

Option A. Under option A, a thesis is required which provides the focus for the selection of program courses which serve to support it.

Option B. Under option B, no thesis is required, but the course work must be integrated to provide a well-coordinated program. A minimum of 30 hours is required to be taken on the campus. This program offers an opportunity for secondary school teachers of humanities and social sciences to take graduate work in these areas. Students working toward the Master of Arts in General Studies are advised by the General Studies Committee.

Master of Business Administration

The Master of Business Administration degree is designed for the individual holding an undergraduate degree either in business administration or in a nonbusiness area who seeks professional education which will aid him ultimately to develop into a competent and responsible executive in business, industry, or government, or to carry on research related to business problems and operations. The program involves a broad study of the field of business administration rather than intensive work in any one specialized area.

The M.B.A. program consists of 45 term hours of graduate work, 12 of which may be devoted to a nonbusiness minor. Prerequisite to the MBA graduate courses is a body of undergraduate work in business and economics totaling 40 to 45 term hours.

The time required by a full-time student to complete the program varies from one to two years, depending upon the extent to which the prerequisites are met prior to admission. M.B.A. candidates whose undergraduate degrees were earned in the field of business administration normally will be able to complete the requirements for the M.B.A. degree within one year.

The M.B.A. degree requires comprehensive final written and oral examinations but no thesis is required.

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 earning credit through the Division of Continuing Education of the State System of Higher Education, but a minimum of 12 term hours (not to include thesis or field study) must be earned on the Corvallis campus in one complete eight- or eleven-week summer session or one academic-year quarter.

Credit for extension courses from outside the State System of Higher Education is not accepted except under unusual circumstances. In instances where it is accepted, prior approval must be obtained from the Dean of the Graduate School if such courses are to be submitted for program purposes. Where credit is transferred from another institution and the major is education or guidance, at least 6 term hours must be earned in the major on this campus. Where the minor is in education, administration, or guidance, at least 6 term hours must be earned in the minor on this campus. When the major and minor are in education or guidance, a minimum of 6 term hours in each must be earned on this campus.

A candidate for the Master of Education degree must qualify under one of these options:

- He must submit a thesis, which meets all standards for a master's thesis, on some applied or professional aspect of education. For the thesis he receives 6 term hours of credit.
b. He majors in guidance and completes 30 hours in this area, including 24 hours in prescribed courses and 6 hours selected from related courses. A minor of 15 hours in psychology is required with at least 6 hours in psychological tests and testing.

c. He completes 45 term hours with 24 term hours in specific courses. The remaining 21 hours are elective under the direction of an adviser. No thesis or field studies are required. The final examination will be either oral or a written comprehensive examination covering all courses in the student's program. Under Option C are offered industrial arts education, business education, and health 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 or Diagnostic and Remedial Instruction in Reading and a sequence of not less than 6 hours in administration, 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 and where broader technical training is needed. 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 department 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.

General requirements, except for those relating to the thesis and written report, are the same as for the Master of Science degree.

Master of Material Science

Graduate study in material science is organized on an interdepartmental basis under the direction of an Administrative Committee. The departments of Chemical Engineering, Chemistry, Mechanical Engineering, and Physics cooperate in the program. A minimum of 45 term hours is required for the degree, distributed approximately 30 hours to a major including thesis, and 15 hours to a minor or minors.

Master of Science in Nuclear Engineering

A Master of Science degree with a major in Nuclear Engineering is offered through all departments in the School of Engineering. Students will normally work through the department of their undergraduate major. Major work will consist of nuclear courses in any of the departments offering such courses, including chemistry, physics, mechanical or chemical engineering. Work in the minor field will normally be taken within a department. The thesis must be in the nuclear field, and, if possible, should be related to the subject matter of the major department of enrollment. The course work for the nuclear engineering degree has been approved by the Atomic Energy Commission for its graduate fellowship program.

Master of Pharmacy

The Master of Pharmacy is offered with majors in pharmacy administration and hospital pharmacy. A thesis is optional for either major.

Engineer

For the degrees of Agricultural Engineer, Chemical Engineer, Civil Engineer, Electrical Engineer, Industrial Engineer, Mechanical Engineer, Metallurgical Engineer, and Mining Engineer, the candidate must meet one of the following sets of requirements:

a. Those who hold a baccalaureate or master’s degree from Oregon State University 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.

b. Those who do not hold baccalaureate or master’s degrees from Oregon State University are subject to the same requirements as (a) with the additional stipulation that at least 12 term hours of graduate work must be completed in residence on 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 applies for the degree with the Registrar of Oregon State University either in person or by mail not later than March 1.

Doctor of Philosophy

The degree of Doctor of Philosophy is granted primarily for attainments and proved ability. There is no rigid credit requirement. Normally, a student who has had all of his undergraduate training and also has completed his master's degree at Oregon State, may not become a candidate for a doctoral degree. In justified cases, however, he may petition to the Graduate Council to do all of his work through the doctorate at Oregon State University.

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, 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. Normally, one minor must be outside the major department. The study
program is formulated under the guidance of the student's doctoral committee which is composed of two professors from the major field, one from each of the minors, and the graduate dean or his representative. The committee is approved by the graduate dean. Approximately sixty percent of the program, including the thesis, is devoted to the major, and forty percent 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 set. 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 next page.

Residence

For the doctor's degree, the equivalent of at least three years of fulltime work beyond the bachelor's degree is required, of which at least one year (usually the last) must be spent in continuous residence at Oregon State University with a minimum of 56 hours of formal course work.

Qualifying Examinations. (see page 162)

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. If a foreign student is permitted to substitute his native language, he must pass a written examination to demonstrate his ability to translate it into English. He may not substitute his native language for German.

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. Most departments require a written comprehensive examination to be taken before the oral preliminary examination. Oral preliminary examinations will not be scheduled for the period between four and six weeks before June Commencement.

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. Credit for the doctoral dissertation may range from 25 to 45 term hours, although the preparation of an acceptable dissertation will require not less than one academic year.

Regulations concerning the doctoral dissertation are the same as those for the master's degree, as outlined on a previous page, except that the final draft must be presented to the Graduate Dean at least two weeks prior to final examination. An abstract of the doctoral thesis of not more than six hundred words will be published by University Microfilms in Dissertation Abstracts.

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 the 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 the preliminary examination. If more than five years elapse, the candidate will be required to take another preliminary examination.

Final oral examinations must be scheduled in the Graduate Office six weeks before June Commencement and must be completed four weeks before Commencement. Corrected copies of the dissertation with three copies of the abstract must be in the Graduate School office not later than two weeks before Commencement. Oral preliminary examinations will not be scheduled for the period between six and four weeks before June Commencement.

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 education 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 School 167
The following special and interdepartmental programs are offered by the Graduate School of Oregon State University. Courses and degrees which apply specifically to these programs are listed here rather than in other sections of this catalog.

### COLLEGE TEACHING MINOR

Delmer M. Goode, coordinator  
C. L. Anderson, F. M. Beer, J. K. Munford, H. D. Schalock

**Studies in College and University Teaching and Curriculum**

Many 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.

**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 College Student (CC 556), College and University Teaching (CC 557), American Higher Education (CC 558), College Teaching Procedures Seminar (CC 507), and College Teaching Studies (CC 506).

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.

Courses in Studies in College and University Teaching and Curriculum are as follows:

**Graduate Courses**

- **CC 556:** The College Student. 3 hours.  
  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.

- **CC 557:** College and University Teaching. 3 hours.  
  Evaluation, aims, procedures, and outcomes in college and university teaching; professional relationships and interests; individual studies according to student's field. Prerequisite: graduate standing.

- **CC 558:** American Higher Education. 3 hours.  
  The American college and university; the old liberal arts college; influence of German university, rise of American university; structure and curriculum; international higher education. Prerequisite: graduate standing.

### GENERAL STUDIES

The General Studies program at Oregon State University is supervised by a special committee of which Dr. H. H. Plambeck is chairman. In addition to courses chosen from the offerings of the several schools and departments, the following courses are available for the general studies student.

**Graduate Courses**

- **GST 501:** Research. Terms and hours to be arranged.
- **GST 503:** Thesis. Terms and hours to be arranged.
- **GST 505:** Reading and Conference. Terms and hours to be arranged.

### GENETICS

RALPH BOGART, Director of Genetics Institute


Graduate work in Genetics as a major or a minor can lead to the degrees of Master of Arts, Master of Science, and Doctor of Philosophy. Graduate studies in genetics are coordinated by the Genetics Board and the Director of the Genetics Institute, representing the genetics graduate faculty who are attached to many departments in the schools of Agriculture, Forestry, and Science.

In addition to the specific courses carrying a Genetics (Gen) number, graduate courses in formal genetics, cytology and cytotgenetics, evolution and speciation, quantitative genetics, microbial genetics, plant genetics and improvement, animal genetics and improvement, and forest genetics are offered in various departments.

The following undergraduate courses in genetics are offered:

- Genetics (Z 341), Plant Breeding (FC 415), Horticultural Plant Breeding (Hrt 413), Poultry Breeding (P 441).

**Graduate Courses**

- **Gen 501:** Research. Terms and hours to be arranged.
- **Gen 503:** Thesis. Terms and hours to be arranged.
- **Gen 505:** Reading and Conference. 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 University is one of three northwestern universities cooperating with the University of Washington Center for Graduate Study at Hanford, which is located in Richland, Washington. Employees of the General Electric Company at the Hanford Atomic Products Operation, who are qualified, may earn graduate credits toward advanced degrees 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

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<tr>
<th>Course</th>
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<tr>
<td>Ch 509</td>
<td>Richland Studies</td>
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<td>ChE 509</td>
<td>Richland Studies</td>
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<td>Ph 509</td>
<td>Richland Studies</td>
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GRADUATE WORK AT PORTLAND

Thirty-three of the 45 term hours of work required for the Master of Education degree may be earned at the Portland Continuation Center of the Division of Continuing Education. In a number of fields, one-third of the work for the Master of Arts 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. Graduate degrees earned at the Portland Center are awarded by Oregon State University or University of Oregon according to major subject, in harmony with allocation of curricula and degrees.

Master of Bioengineering

This degree is offered under authorization of off-campus instruction (Portland Continuation Center) and in cooperation with the Oregon Primate Research Center. Students are concerned with the application of engineering knowledge, principles, and techniques in the areas of biological and medical research. The program extends for a minimum of two years with each student assigned as a staff research engineer on a part-time basis in the laboratories at the Primate Center. He will normally spend six months in each of four different laboratories selected upon advisement. Graduate work will be under the direction of a major professor selected from among the members of the graduate faculty. A minimum of 45 term hours of work will be required for the degree, divided approximately 30 hours in the major, including thesis, and 15 hours in the minor or minors.

Master of Engineering

This degree is applicable only to those engaged in authorized off-campus graduate instruction at the Portland Continuation Center. A minimum of 45 term hours is required, divided into approximately 30 hours for a major and 15 hours for a minor or minors. Included for a variable number of hours within the major will be a formal report in lieu of thesis, the scope and content of the report to be by approval of the major professor. Prerequisite to study for the degree will be a degree from an undergraduate curriculum in engineering and admission to the Graduate School. The general requirements for the degree are the same as for the Master of Science except for those related to the thesis and for the formal report.

GRADE TRANSCRIPTS

Students who complete graduate courses through the Portland Continuation Center must make arrangements to have transcripts of their grades sent to the Graduate School Office and the Registrar's Office at Oregon State University. Students expecting to complete degree requirements for the June Commencement must have transcripts in the Graduate Office not later than two weeks before Commencement. Students expecting to complete degree requirements during the regular summer session and to receive diplomas in September, must have their transcripts in the Graduate Office not later than two weeks before the end of the regular summer session.