UNIVERSITY OF HAWAII

1965-1966 GRADUATE SCHOOL BULLETIN
1965-66 CALENDAR

First Semester

September 7-18, Tuesday through Saturday .......................... Academic advising, registration, orientation of freshmen
September 20, Monday ......................................................... Instruction begins
September 24, Friday .......................................................... Last day of registration for credit
October 18, Monday ............................................................ Last day of withdrawal from courses without grade penalty
November 11, Thursday ....................................................... Veterans' Day (holiday)
November 12, Friday ........................................................... Deficiency reports due
November 24, Wednesday ..................................................... Last day for removal of “Incompletes”
November 25-27, Thursday through Saturday ......................... Thanksgiving recess
December 6, Monday ........................................................... Last day for withdrawal from courses
December 6-18, Monday through Saturday .............................. Pre-registration
December 18, Saturday .......................................................... Last day before Christmas recess
January 3, Monday .............................................................. Instruction resumes
January 15, Saturday ........................................................... Last day of instruction, first semester
January 17, Monday ............................................................. Final examinations begin
January 22, Saturday ........................................................... First semester ends

Second Semester

February 3-5, Thursday through Saturday .............................. Academic advising, registration
February 7, Monday ............................................................. Instruction begins
February 11, Friday ............................................................. Last day of registration for credit
February 22, Tuesday .......................................................... Presidents' Day (holiday)
March 7, Monday ............................................................... Last day of withdrawal from courses without grade penalty
March 23, Wednesday ........................................................... Last day for removal of “Incompletes”
March 25, Friday ................................................................. Holiday (Friday before a holiday falling on Saturday)
March 26, Saturday .............................................................. Prince Kuhio Day (holiday)
April 1, Friday ....................................................................... Deficiency reports due
April 8, Friday ....................................................................... Good Friday (holiday)
April 9-16, Saturday through Saturday .................................... Easter recess
May 2, Monday ...................................................................... Last day for withdrawal from courses
May 26, Thursday ................................................................. Last day of instruction
May 27, Friday ...................................................................... Final examinations begin
May 30, Monday ................................................................. Memorial Day (holiday)
June 7, Tuesday ................................................................. Second semester ends
June 12, Sunday ................................................................. Commencement

Summer Session

June 20, Monday ................................................................. Registration for 1st Six Weeks
August 1, Monday ............................................................... Registration for 2nd Six Weeks

1966-67

September 6-17, Tuesday through Saturday ............................ Academic advising, registration, orientation of freshmen
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*For information write to Dean of the Graduate School, University of Hawaii, Honolulu, Hawaii 96822; or see insert.*
Graduate School Staff

Wytze Gorter, Ph.D., Dean
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Faith K. K. Osurman (Mrs. T. L.), Stenographer for American Student Records
Andrea A. Matsuda (Mrs. R. M.), Stenographer for Foreign Student Records
Margaret J. Nacnac (Mrs. R.), Receptionist
The University of Hawaii is located in the city of Honolulu on the island of Oahu. Because of the geographic position of the Hawaiian Islands near the center of the Pacific Ocean, it enjoys one of the most equable climates of the world. Multiple, peaceful migrations of people from many portions of America, Asia, and Europe have resulted in an extremely varied, cosmopolitan population which is renowned for its lack of racial, religious, or other social frictions and a resulting social and cultural amalgam which is unique.

The University has many natural advantages for excellence in various fields of intellectual interest. Because of its position and the nature of the population, Hawaii is truly a gateway between Asia and America. Many facets of both cultures can, therefore, be experienced as well as studied in a benign milieu. Because the Islands have a highly developed mechanized industry, including agriculture, it is also possible to experience and study modern technical and scientific fields. Graduate programs are approved only in fields in which the University can offer a program of high quality. The various fields in which the master's and doctoral degrees are offered are listed under the discussion of the degrees.

The University library contains approximately 400,000 bound volumes, and 1,000,000 unbound parts and pamphlets. It serves as a depository for U.S. government and United Nations publications. Included in the library are extensive collections of research materials relating to the Pacific. The University is strong in materials on Asia, with over 160,000 items including 120,000 in Chinese, Japanese, and Korean, and 8,000 reels of microfilm of important Asian newspapers and archival sources. Other excellent collections in Honolulu open to graduate students are the Library of Hawaii, a general public library in downtown Honolulu; the reference library at the Bishop Museum; the Hawaiian Mission Children's Library, with material on missionary activities in the Pacific; the Public Archives, emphasizing Hawaiian history; the library of the Honolulu Academy of Arts; and the scientific libraries of the Hawaiian Sugar Planters' Association, the Honolulu County Medical Association, the Pineapple Research Institute, and the Honolulu Biological Laboratory of the U.S. Fish and Wildlife Service.

Various organized research activities of the University offer outstanding possibilities for graduate study and research. Among these are the Hawaii Marine Laboratory which, through its branches at Waikiki and
Kaneohe Bay, provides facilities for experimental and inshore research in
the various aspects of marine biology. The newly completed building of the
Pacific Biomedical Research Center includes facilities for research in gene­
tics, microbiology, biochemistry, parasitology, and experimental psychol­
ogy. The Hawaii Institute of Geophysics offers excellent facilities for
research in the solid earth sciences, meteorology, oceanography, and astro­
physics. The Institute also houses the University's Statistical and Comput­
ing Center.

Graduate Faculty

The Graduate Faculty is composed of those members of the instruc­
tional and research staff of the University who, because of training, inter­
rest, experience, and scholarly activity, are selected to assist candidates for
advanced degrees in their endeavors. The resident Graduate Faculty is
supplemented in many Fields of Study by scholars in other research insti­
tutions in Honolulu. These persons constitute the Affiliate Graduate Fac­
ulty and serve in all capacities of the resident faculty except as chairman
of a thesis or program committee. Members of the Graduate Faculty are
listed under the appropriate Field of Study. All members are eligible to
serve on program and thesis committees in any Field of Study with the
approval of the chairman of that field.

Admission

Admission to the Graduate School simply permits registration in grad­
uate courses for which the student's previous training has prepared him
and does not insure admission to candidacy for an advanced degree.

Applications for admission must be received by July 15 or December
15 to ensure consideration for admission for the succeeding semester.

American Residents. Students with baccalaureate degrees from accred­
ited American institutions of higher learning may be admitted to the Grad­
uate School. Persons who do not intend to work for an advanced degree
may be admitted as unclassified students, and in lieu of official transcripts
may submit a certification of their having been awarded the baccalaureate
degree. A form for such certification may be obtained from the Office of
the Graduate School. Those wishing to work for an advanced degree must
submit a formal application and official transcripts of undergraduate and
previous graduate records to the Dean of the Graduate School. Failure to
submit all records of previous study may constitute basis for disqualifica­
tion for further registration at the University of Hawaii. Upon acceptance
the intended candidate must supply a second set of official transcripts to
the Chairman of his chosen Field of Study for use in advising. The Grad­
uate School records are not available for this purpose. No one will be
admitted as an intended candidate unless he can demonstrate an adequate
undergraduate background in the major and related fields in which the
degree is to be taken, and has an average grade of B or better for all
undergraduate courses in the major, or in all courses taken during the last
two years of undergraduate work. Those who fail to meet these standards
may be allowed to register as probational unclassified graduate students
for a semester in order to demonstrate whether or not they can do satis­
factory work at the graduate level. If this semester's work is adequate,
the Graduate Faculty of the Field of Study may recommend that the
undergraduate grade requirement be waived. Graduates of institutions
other than the University of Hawaii may also be requested to supply the
results of the Graduate Record Examination. Various of the Faculties
require the Graduate Record Examination of all applicants. Admission
to the Graduate School simply permits registration in graduate courses for
which the student's previous training has prepared him.

Graduate students carrying a course load of 10 or more credits must
file a medical record form with the Student Health Service.

**Foreign Residents.** Students with baccalaureate degrees from accred­
ited institutions of higher learning may be admitted to the Graduate
School. All foreign students must submit a formal application and two
copies of official transcripts of previous educational records to the Dean
of the Graduate School. A record indicating a minimum level of achieve­
ment of B or the equivalent is required for admission. For graduates of
Indian and Pakistani universities, a consistent score of 56 per cent or higher
for four years beyond the Intermediate is required. In very unusual cir­
cumstances, a student who fails to meet these standards may be allowed
to register as a probational unclassified graduate student for a semester
in order to demonstrate whether or not he can do satisfactory work at the
graduate level. If this semester’s work is adequate, the Graduate Faculty
of the appropriate Field of Study may recommend that the requirement
be waived. Students who have a record adequate for admission but whose
previous academic work was in an institution which is not recognized by
the University of Hawaii may be admitted on a probational unclassified
basis upon the recommendation of the Graduate Faculty of the appropriate
Field of Study.

In addition to the academic requirements for admission to the Grad­
uate School, all foreign students must have a proficiency in oral and written
English which will allow them to pursue work at the graduate level.
Therefore, all applicants from foreign countries where the English lan­
guage is not the usual means of communication are required to take the
*Test of English as a Foreign Language* administered three times a year—in
January, May, and October. Applications for admission will not be proc­
cessed until the Graduate School has received the TOEFL results. To take
the test, students should write to TOEFL Educational Testing Service,
Princeton, New Jersey, for testing locations.
After arrival at the University, all foreign students are referred to the Director of the University's English Language Institute for determination of their proficiency in the English language. Those found to need further training in English may be assigned to the Institute for a full-time or part-time program. The Institute offers intensive training in reading, writing, speaking, and listening. Students linguistically capable of carrying on graduate-level work will be so certified to the Dean of the Graduate School and allowed to enroll for a full-time credit program. Students assigned full time to the Institute must pay $70.00 in special course fees in addition to regular tuition and fees. Students assigned to the Institute on a part-time basis will pay a smaller amount for special course fees.

Registration in the English Language Institute is limited to students who have been admitted to degree programs in the Graduate School. Students interested in attending the University for the sole purpose of improving their English will be denied admission to the University.

In order to be admitted, all foreign students must present positive evidence of adequate financial support during their expected stay at the University. They must also submit results of a medical examination on a form provided by the University. Examination of the form and approval by the University medical doctor is required before admission is completed. In addition, foreign students must carry accident and medical insurance coverage during their stay at the University.

**Admission as Special Student**

Persons who do not have previous training which will admit them as a regular student at the University of Hawaii (e.g., do not have a high school diploma) or who may have had adequate prior education but are unable to present official evidence of such training (e.g., refugees) may be admitted to the University as Special Students. Such admission is for a specified course or courses and carries no commitment whatever for subsequent admission to any regular status or consideration for a degree in the University. Persons may be admitted as Special Students only by request to the Director of Admissions by the East-West Center or an academic department and the Dean concerned. The category of Special Student may not be used as a probationary status for students who have a bachelor's degree but whose previous record is inadequate for admission to the Graduate School.

**Admission to Candidacy**

Admission to candidacy for an advanced degree, after the student has enrolled in the University, requires the recommendation of the graduate faculty of the major field of study. Intended candidates must indicate this
intention at registration, so that the Graduate Faculty may be notified of this intention and a preliminary conference can be scheduled.

The Graduate Faculty of the Field of Study or a committee of the Faculty shall at a preliminary conference: (1) determine whether the student seems to have the ability to pursue graduate work within the particular field of study, (2) determine through scrutiny of the student's record whether his undergraduate background in the field is adequate, (3) specify any courses that the candidate should take in order to meet inadequacies in undergraduate preparation or to complete the requirements for the advanced degree. The faculty or committee shall further (1) supervise the general examination required before admission to candidacy in the master's programs, (2) recommend to the Dean of the Graduate School that the applicant be either admitted to candidacy or denied admission to candidacy, (3) approve the approximate title of the thesis research, and suggest the composition of the thesis committee.

Intended candidates for advanced degrees will not be admitted to candidacy if they obtain more than two grades below B in courses taken in their major or related fields as graduate students, including those taken at the University of Hawaii to remove undergraduate deficiencies. Because of special difficulties sometimes encountered by foreign students, this rule may be waived for such students the first semester of attendance at the University upon request of the Graduate Faculty of the Field of Study.

Any graduate student who, having been admitted to candidacy for an advanced degree, fails to obtain a grade of B or better in any two of the courses forming part of his program for the advanced degree is automatically dropped from candidacy. A student thus dropped from candidacy reverts to unclassified status and may only be readmitted to candidacy after consideration by the entire Graduate Faculty of the Field of Study, approval of a majority of such faculty, and successful reperformance on the general examination.

Registration and Grades

Sixteen credit hours in a semester and 7 in a six-week summer session are considered a maximum course load and may be exceeded only with the approval of the Dean. The minimum full-time load is 12 credit hours (6 for graduate assistants and research assistants). Graduate teaching assistants and assistants in research, whose duties ordinarily require 20 hours per week, are restricted to 9 hours of course work for credit (including thesis research 800). Minimum registration is for one credit hour. No noncredit registration in 800 is allowed.

Registration after the officially designated period is permitted only in exceptional cases for valid reasons, and the procedure is as follows: (1) during the first seven days following the last official day of registration,
written approval must be obtained from the Dean of the Graduate School.
(2) subsequent to the seventh day, written approval must be obtained
from the Dean and the instructor concerned, and students may enroll only
for individual reading or research courses, the thesis course (800), or as
auditors.

Change of registration is made on an official blank issued by the
Office of the Graduate School. This blank must be returned to the Office
of Admissions and Records bearing the required signatures.

Complete withdrawal from the University is applied for on a form
issued by the Office of Admissions and Records, and this blank must be
returned to that office with the proper signatures. During the first three
weeks of a semester, a formal withdrawal is marked W on the student's
record. A withdrawal at a later date, but prior to the last four weeks of
class instruction in a semester, is marked W if the work of the student
in the course was passable; otherwise, it is marked F (for failure). No
withdrawals from courses are permitted during the last four weeks of
instruction in a semester, but the Dean may permit complete withdrawal
from the University for legitimate reasons. A student who ceases to attend
a course without complying with the official withdrawal procedure receives
a failure in the course.

The Graduate School reserves the right to deny further registration to
any student whose work is below the required level.

Seniors in the University of Hawaii may carry a limited amount of
work for graduate credit during their last semester as undergraduates pro-
vided (1) that the courses taken are in excess of the requirement for the
bachelor's degree, and (2) that the courses for which graduate credit is
desired carry graduate credit in the major field. For such graduate course
credit to be available for possible application toward an advanced degree
written approval of the Dean of the appropriate undergraduate College
and of the Graduate School must be obtained at the time of registra-
tion for the course.

Graduate students may obtain credit by examination in courses num-
bered 400–599 with the approval of the Qualifying Committee, Thesis
Committee or Program Committee, the instructor concerned, and the Dean
of the Graduate School, subject to the general University regulations and
procedures except that there shall be no limit on the number of such
examinations which a graduate student may take during any one semester.
Credit may not be obtained by examination in courses numbered 600 or
above.

No graduate credit is allowed for correspondence courses.

Under no circumstances are courses in directed research to be used to
make up undergraduate deficiencies.
Courses numbered 600-799 are intended primarily for graduate students. Courses numbered 400-599 are undergraduate courses which also may carry graduate credit. No course which is required for an undergraduate major may be used for graduate credit in that field of study.

Graduate students are graded on a scale of A to F. A grade of A or B must be earned in any course to secure graduate credit. No credit is granted for thesis research courses (number 800 in each field) until the thesis has been accepted. The thesis is graded S (satisfactory). Failure to make satisfactory progress on a thesis does not entitle a student to refund of tuition fees.

An I is given to a student who has failed to complete a small but important part of a semester’s work before the semester grades are determined, if the instructor believes that failure was caused by conditions beyond the student’s control and not by carelessness or procrastination. To receive credit for a course in which an I has been reported, the student must make up the incomplete work before the Thanksgiving or Easter recess of the next semester in which the student is in residence. If the work is not thus completed, the I will be changed to F at the end of the semester. If the work is completed, the instructor will report a semester grade, taking the completed work into consideration.

A candidate or an intended candidate for an advanced degree taking a course in the College of General Studies for which he desires credit toward his degree must have the approval of his advisor and the Dean of the Graduate School at the time of registration. Cards for indication of such approval are available from the Office of the Graduate School or the College of General Studies.

Responsibility

Students admitted to the Graduate School are assumed to be mature adults and are expected to comport themselves as such. Although the various advisory committees and individuals provided for in the operation of the various graduate programs are responsible for assisting the student, he has the primary responsibility for following the procedures and completing various steps in his program in good order and by the stipulated dates. Failure of an advisor to remind a student of a requirement or deadline date will not constitute an acceptable basis for waiver of the requirement. Requirements of the Graduate School, both procedural and substantive, may be waived only by written request of the committee concerned and must have the written approval of the Dean.

Tuition and Fees

(Tuition and fees subject to change)

Tuition and registration fees for graduate students are the same as
those for undergraduates. Students registered for 12 or more credit hours in any semester pay $85.00 for tuition and $10.00 for registration per semester. Students registered for fewer than 12 credit hours in any semester pay $8.00 per credit hour, including audited courses. Summer session students pay $10.00 per credit hour, a $10.00 registration fee, and an activities fee of $2.00. Students registered in the College of General Studies pay fees as indicated in the bulletins of that College. Laboratory and course fees vary with the individual course. All students registered for daytime courses pay a Student Health Fee of 75 cents each semester. Persons who register after the announced days of registration pay a late registration fee of $5.00.

A fee of $2.00 is charged for each change of registration after the official registration period, unless such changes are the result of actions of the University.

All recipients of advanced degrees are required to pay a diploma fee of $5.00 and in thesis programs an additional fee of $4.00 to cover the cost of binding two copies of the thesis.

**Living Accommodations and Expenses**

**Campus Housing**

Gateway House, a coeducational residence hall offers graduate and selected undergraduate students enrolled in a full program of study comfortable living in pleasant surroundings conducive to advanced study and exchange of ideas.

Two ten-story wings, which accommodate 104 persons each, make up the men's and women's living areas. The wings are joined by a central main lounge, lobby, administrative offices, and dining area. Each two double rooms connect with a bathroom shared by only four residents. Each twelve residents share a private living room. Room and board fee is $335 per semester (board includes ten meals per week).

**Off-Campus Housing**

The University maintains a file of off-campus rooming houses, single rooms in private homes, and apartments. Assistance in finding off-campus housing can be given to students only after the student arrives.

For further information on living accommodations, write to the Director of Student Housing, Johnson Hall A, University of Hawaii.

Minimum expenses of the off-Island student are estimated at $2,000 per academic year for board, room, tuition, registration, course fees, and books. These estimates do not include the cost of clothing, laundry, transportation, and other personal items.
Graduate Assistantships and Scholarships

The University offers a number of teaching assistantships to graduates of accredited institutions of higher learning who have satisfactory scholastic records, an adequate undergraduate background in the major field, and evidence of a high level of English proficiency. Graduate assistants serve as readers or part-time laboratory assistants and carry a limited program of study. The initial remuneration is $2,448 payable in twelve monthly installments. The period of service is September 1 to June 15. Applications should be addressed to the Dean of the Graduate School and should be filed before March 1. Each application must be accompanied by a transcript of academic record, a photograph, and three letters of recommendation from professors under whom the applicant has taken his major courses. A few half-time research assistantships are available for graduate students in agriculture. Inquiries and applications for these should be addressed to the Dean of the College of Agriculture. Half-time graduate teaching and research assistants are exempt from registration and tuition fees for a maximum of 9 credit hours; they must be registered in at least 6 credit hours of work each semester.

Half-time research assistantships are available in various fields in connection with research contracts or grants which are supervised by members of the faculty. Inquiries concerning such assistantships should be addressed to the Chairman of the appropriate Field of Study.

Special fellowships for students working toward the Ph.D. with an interest in systematics of insects of medical importance are available through the Bernice P. Bishop Museum in Honolulu. Interested students should write directly to the Museum or to the Chairman of the Department of Entomology, University of Hawaii.

In order to further cultural interchange between East and West, the East-West Center has made available a number of grants to students from the United States who are interested in those fields of study which relate to Asia and the Pacific. American students interested in applying for an East-West Center grant should write directly to the Director of Selection, East-West Center, University of Hawaii, Honolulu.

The only scholarships available for foreign students are those provided by the East-West Center. These are available to students from Asia (Japan to Pakistan) and the Pacific islands, including Australia and New Zealand. To apply for an East-West Center grant, a student from abroad should write or call upon the United States Information Service Office or some comparable American facility nearest to him.
Master's Degrees

The University of Hawaii confers the degrees of Master of Arts, Master of Business Administration, Master of Education, Master of Fine Arts, Master of Library Science, Master of Science, and Master of Social Work.

The Master of Arts is offered in:

- American Studies
- Anthropology
- Art
- Asian Studies
- Chinese
- Drama and Theatre
- Economics
- English
- French
- Geography
- German
- History
- Japanese

- Linguistics
- Mathematics
- Music
- Overseas Operations
- Pacific Islands Studies
- Philosophy
- Political Science
- Psychology
- Sociology
- Spanish
- Speech
- Teaching of English as a Second Language

The Master of Science is offered in:

- Agricultural Economics
- Agricultural Engineering
- Agronomy
- Animal Science
- Biochemistry
- Botany
- Chemistry
- Civil Engineering
- Electrical Engineering
- Entomology
- Food Science
- Genetics
- Geological Sciences

- Horticulture
- Meteorology
- Microbiology
- Nursing
- Nutrition
- Oceanography
- Physics
- Plant Pathology
- Poultry Science
- Public Health
- Soil Science
- Zoology
The Master of Education is offered in:

- Educational Administration
- History and Philosophy of Education
- Educational Psychology
- Secondary Education
- Elementary Education
- Secondary Education

The Master of Fine Arts is offered for creative production rather than research in:

- Art
- Music
- Drama and Theatre

The Master of Library Science is offered by the School of Library Studies.

The Master of Social Work is offered by the School of Social Work.

Following are the minimum requirements for the master's degrees. Additional requirements are stated by fields of study in the latter portion of this Bulletin.

**Residence**

The minimum residence requirement is two semesters of full-time work or four six-week summer sessions. However, only the exceptionally well-prepared student is able to complete the requirements for the degree in this minimum time. For the Master of Social Work, four semesters of full-time work are required.

Foreign students generally take from two years to two-and-a-half years to complete a master's degree.

**Time Allowed**

Candidates for the master's degree who fail to complete all requirements within five years after admission to candidacy must be reconsidered by the appropriate Graduate Faculty and be readmitted to candidacy before they can proceed. All work must be completed within the seven years preceding the date upon which the degree is conferred.

**Course Requirements**

A maximum of 8 semester hours of graduate credit may be transferred from accredited institutions upon recommendation of the Graduate Faculty no later than admission to candidacy. For the M.A., M.B.A., M.Ed., and M.S., two plans of procedure are available.

**Plan A (Thesis)**

Plan A is available in all fields of study except the following: Overseas Operations, Public Health, and Teaching of English as a Second Language.
A minimum of 24 credit hours of course work and 6 credit hours of thesis research are required. In unusual cases, upon recommendation by the Thesis Committee no later than the registration period of the session during which the degree is conferred, either fewer credits or a maximum of 12 credits may be granted for thesis research. A minimum of 12 credits, exclusive of research methods courses, must be earned in courses numbered 600-799, including at least one graduate seminar related to the major field. A maximum of 4 credits may be allowed in directed research courses (699 and 799).

Candidates must be registered in the appropriate thesis research course (800) during the entire semester in which the work for the degree is completed except that candidates who complete all requirements for the degree during the regular six weeks summer term need not be registered during the subsequent fall semester. Candidates may finish their work during the summer only if their full Thesis Committee is present.

**Thesis Requirement.** When a thesis problem has been approved by the Graduate Faculty of the student's Field of Study, the chairman sends to the Office of the Graduate School the candidate's name, the proposed thesis title, and recommendations for a thesis committee, including one member from outside the major field of study. The Thesis Committee, appointed by the Dean of the Graduate School, subsequently approves the thesis outline and forwards three signed copies to the Office of the Graduate School for consideration by other referees and revision or approval. After approval of the outline, the candidate may register for the thesis research course (800). The thesis outline approved by the Thesis Committee must be submitted to the Office of the Graduate School by December 15 or May 15 of the session preceding the one in which the candidate expects to complete the requirements for the degree. Candidates who expect to finish their program during the summer session must submit the thesis outline to the Office of the Graduate School by the preceding February 1.

Upon request by the Thesis Committee, relevant work done by the student in directed research (course 699) may be utilized as part of the thesis research. In such instances, the total credit for such directed research (course 699) and thesis research (800) to be applied toward the minimum requirement for the degree shall not exceed the maximum specified for thesis credit (6).

A student may undertake a research problem when the subject is primarily in one field but has close relationship to other fields; in such an event, at the time the student submits his thesis proposal, it must be ensured that: (1) the student possesses sufficient knowledge of the related field or fields to be able to deal competently with the research and thesis.
and (2) a representative of the related field is placed on the student's Thesis Committee.

After the Thesis Committee has been appointed, the candidate should look to the chairman of this committee for primary direction regarding research methods and the preparation of results. It is the responsibility of the student to see that all members of the committee are kept informed of the scope, plan, and progress of both the research and the thesis. A brochure on instructions for thesis preparation is available at the Office of the Graduate School.

Copies of the completed thesis must be submitted to committee members at least two weeks prior to the date of the final examination. The original and first carbon copies must be deposited with the secretary of the Graduate School two weeks before the close of the session in which the degree is conferred.

A majority of the members of the Thesis Committee must approve both the thesis and the examination on the thesis. A minority member has the right of appeal to the Graduate School Council for a final decision. The chairman must ensure that the final form of the thesis, including revisions and amendments agreed upon, is acceptable to a majority of the committee. The committee members express their approval or disapproval on a special form issued by the Office of the Graduate School.

Chairmen of graduate Fields of Study have the privilege of being ex officio members of all thesis committees in the field.

Examinations. In addition to all examinations in courses for which he desires credit, a general examination in the chosen Field of Study is required of each intended candidate for the master's degree. It is intended to be not only evaluative, but also diagnostic in character and should therefore be taken as early in the program as possible so that areas of weakness discovered may be rectified. It should be completed by the end of the first semester, but in any case must be completed successfully before admission to candidacy. Students who fail the general examination may repeat it upon recommendation of the Graduate Faculty of the Field of Study and approval of the Dean. At least three months must elapse between the date of failure and such repetition. A second failure on the examination will deny the student further consideration for candidacy.

A final oral examination upon the thesis and related material, conducted by the Thesis Committee and open to all faculty members, is required. As an alternative, the committee chairman may have the candidate present the results of the thesis at a departmental graduate seminar, but all members of the Thesis Committee must be present. Candidates must notify the Office of the Graduate School at the beginning of the semester or summer session in which the work is to be completed, and
arrangements for the final examination must be made at least one month prior to the end of the term. Should a student fail to pass the final examination or seminar appearance satisfactorily he may be allowed to repeat such examination only upon recommendation of the Graduate Faculty concerned and the approval of the Dean. At least three months must elapse before such re-examination.

Summary of Procedure

1. Application for admission to the Graduate School
2. Filing of notice of intention to work for a degree
3. Preliminary conference
4. Appointment of interim advisor
5. General examination
6. Admission to candidacy
7. Approval of thesis problem
8. Appointment of Thesis Committee
9. Approval of thesis outline by Committee and Graduate School
10. Completed thesis submitted to Committee
11. Final examination
12. Final copies of thesis submitted to Graduate School
13. Granting of the degree

Plan B (Nonthesis)

Plan B is available only in the following fields of study:

- Agricultural Economics
- American Studies
- Art (Eastern art history)
- Asian Studies
- Biochemistry
- Civil Engineering
- Economics
- Education
- Electrical Engineering
- Entomology
- Food Science
- Geography
- Geological Sciences
- German
- History
- Horticulture
- Mathematics
- Microbiology
- Music Education
- Overseas Operations
- Philosophy
- Physics
- Plant Pathology
- Political Science
- Public Health
- Sociology
- Speech
- Teaching of English as a Second Language
- Zoology

A minimum of 36 (30 in Engineering) graduate credit hours is required. Of these at least 6 shall be earned in courses outside the major field. A minimum of 18 credits must be earned in courses numbered 600-799, including at least one graduate seminar related to the major field.
When the student is advanced to candidacy, the chairman of the Field of Study appoints a Program Committee of three members of the Graduate Faculty, one of which shall be from a Field of Study other than the major. The Program Committee plans and approves a coherent program of courses for the candidate and sends a copy of the program to the Graduate School. Courses taken which are not included in the approved program will not be counted toward the degree. The program is to be approved and submitted to the Office of the Graduate School before the student has completed more than 15 hours of credit which is to be part of the master's program.

**Examinations.** In addition to all examinations in courses for which he desires credit, a general examination in the chosen Field of Study is required of each intended candidate for the master's degree. It is intended to be not only evaluative, but also diagnostic in character and should therefore be taken as early in the program as possible so that areas of weakness discovered may be rectified. It should be completed by the end of the first semester, but in any case must be completed successfully before admission to candidacy. Students who fail the general examination may repeat it upon recommendation of the Graduate Faculty of the Field of Study and approval of the Dean. At least three months must elapse between the date of failure and such repetition. A second failure on the examination will deny the student further consideration for candidacy. Candidates shall make a seminar appearance near the conclusion of their program to which all members of the graduate faculty shall be invited, at which time they shall be examined by the Program Committee. Candidates must notify the Office of the Graduate School at the beginning of the semester or summer session in which the work is to be completed. Should a student fail to pass the final examination or seminar appearance satisfactorily he may be allowed to repeat such examination only upon recommendation of the Graduate Faculty concerned and the approval of the Dean. At least three months must elapse before such re-examination.

**Summary of Procedure**

1. Application for admission to Graduate School
2. Filing of notice of intention to work for a degree
3. Preliminary conference
4. Appointment of interim advisor
5. General examination
6. Admission to candidacy and appointment of Program Committee
7. Establishment of program of courses
8. Completion of course work
9. Seminar appearance and examination
10. Granting of the degree
Doctor of Philosophy

The degree Doctor of Philosophy is the highest conferred in course. It is a research degree and is conferred only for high scholarly attainment and an original contribution to knowledge in a special field. Only the exceptional applicant will be admitted to the doctoral program.

A student is admitted to candidacy for the Ph.D. only when the Graduate Faculty of his chosen Field of Study is satisfied that he is competent to undertake the rigorous schedule required. Advancement to candidacy may not occur until certification of proficiency in one foreign language is submitted to the Office of the Graduate School and it may be deferred until after satisfactory performance on the comprehensive examination.

Candidates are accepted only in Fields of Study in which the teaching staff, library, laboratory equipment, and co-operative relationships with other research institutions make it possible to offer thorough training. These are:

- Agricultural Economics
- Anthropology
- Biochemistry
- Botany
- Chemistry
- Entomology
- Genetics
- Geological Sciences
- History
- Horticulture
- Linguistics
- Meteorology
- Microbiology
- Philosophy
- Physics
- Political Science
- Psychology
- Soil Science
- Zoology

Minimum requirements are stated below. Additional requirements are stipulated by faculties of the Fields of Study.

Residence and Credit

The comprehensive knowledge expected of the student in his major field is such that the requirements for the degree demand not less than six semesters of full-time work or the equivalent, at least three of which must be in residence at the University of Hawaii. While the experienced and exceptionally prepared student may meet the requirements by completing a minimum of 72 credit hours of course work, including research (12 credit hours is the official minimum full-time load), many students will have deficiencies in preparation or have requirements for proper training such that a greater time will be necessary for the completion of the degree. At least three semesters of full-time course work must be completed at the University of Hawaii.

Additional requirements including specific course requirements are determined by the Graduate Faculty of each Field of Study. Their gen-
eral requirements are indicated under the headings of the various Fields of Study in this Bulletin. Additional requirements for programs of individual students are established by the Graduate Faculty and the Thesis Committee.

Two semesters' credits may be allowed toward the doctorate for a master's degree, if it is germane.

Candidates must be registered for the appropriate thesis research course (800) during the entire semester in which the work for the degree is to be completed.

Language Requirements

A knowledge of two foreign languages sufficient to make the literature in the languages available to the student is required. The Graduate Faculty of the Field of Study shall determine the languages most appropriate for each student and notify the Dean of the Graduate School of the languages selected. Examinations for proficiency in all languages are to be of a nature to determine that the student is able, with the aid of a dictionary, to read comprehensively and with reasonable speed research materials in his field of interest. The examiners (the faculty of the suitable language department) are to determine that the student is able to make a good, intelligent translation. Further, it is expected that the various Graduate Faculties will indicate suitable materials to the language departments for use in examinations. The language departments will attempt to determine that the materials used in different fields will require the same level of proficiency.

Examinations are given three times per year as announced by the Graduate Office.

Certification of proficiency in one of the required foreign languages must be obtained prior to admission to candidacy. Certification of proficiency in both required languages must be deposited in the Office of the Graduate School before the candidate will be permitted to take the comprehensive examination.

Doctoral candidates from foreign countries where the English language is not normally used in the school system may use English as one of the foreign languages required, upon petition of the Graduate Faculty concerned and approval of the Dean.

Examinations

In addition to the regular course examinations, doctoral candidates must pass a comprehensive examination and a final oral examination in defense of the thesis. The comprehensive examination, which may be oral or oral and written, must include an examination in the major field and one or more minor fields, the latter represented by a member or
members of the Thesis Committee. Students who fail the comprehensive examination may repeat it at the discretion of the Graduate Faculty concerned. At least three months must elapse before such re-examination. A second failure on the examination will deny the student further consideration for candidacy. At least eight months must elapse between the satisfactory completion of the comprehensive examination and the final examination. Arrangements for the final examination must be made at least one month in advance, and it must occur at least three weeks before the end of the session. Should a student fail to pass the final examination he may be allowed to repeat such examination with the approval of the Dean, after considering the recommendation of the Graduate Faculty concerned.

Thesis and Thesis Committee

The doctoral dissertation is expected to be a scholarly presentation of an original contribution to knowledge resulting from independent research and should be suitable for publication. When the thesis problem has been approved by the Graduate Faculty of the Field of Study, the chairman of the Field of Study sends to the Office of the Graduate School the candidate’s name, the proposed thesis title, and his recommendations for a thesis committee of at least five members including representatives of the minor field or fields. The Thesis Committee, appointed by the Dean of the Graduate School, determines necessary additional course work, advises in the research, and conducts the comprehensive and final examinations. The Committee also must approve the thesis outline and forward three signed copies to the Office of the Graduate School for consideration by other referees and revision or approval determined by the Dean. Information on the preparation of the thesis outline is available in the Office of the Graduate School. After approval of the outline, the candidate may register for the thesis research course (800).

A graduate student may undertake a research problem when the subject is primarily in one field but has close relationship to other fields; in such an event, at the time the student submits his thesis proposal, it must be ensured that: (1) the student possesses sufficient knowledge of the related field or fields to be able to deal competently with the research and thesis, and (2) a representative of the related field is placed on the student’s thesis committee.

After the thesis committee has been appointed, the candidate should look to the chairman of this committee for primary direction regarding research methods and the preparation of results. It is the joint responsibility of the chairman and the student to see that all members of the committee are kept informed of the scope, plan, and progress of both the research and the dissertation. A brochure on instructions for preparation of the dissertation is available at the Office of the Graduate School.
Copies of the completed dissertation must be submitted to committee members at least four weeks prior to the date of the final oral examination. The original and first carbon copies must be deposited with the secretary of the Graduate School two weeks before the close of the session in which the degree is to be conferred.

A majority of the members of the thesis committee must approve both the thesis and the examination on the thesis. A minority member has the right of appeal to the Graduate School Council for a final decision. The chairman must ensure that the final form of the thesis, including revisions and amendments agreed upon, is acceptable to a majority of the committee. The committee members express their approval or disapproval on a special form issued by the Office of the Graduate School.

Chairmen of graduate Fields of Study have the privilege of being ex-officio members of all Thesis Committees in the field.

Summary of Procedure

1. Application for admission to the Graduate School
2. Filing of notice of intention to work for a degree
3. Preliminary conference
4. Appointment of interim advisor
5. Certification of proficiency in one foreign language
6. Admission to candidacy and appointment of Thesis Committee
7. Approval of thesis proposal
8. Certification of proficiency in second foreign language
9. Comprehensive examination
10. Final examination
11. Copies of dissertation filed in Graduate Office
12. Granting of the degree

The above order is that usually followed but at the pleasure of the Graduate Faculty of any Field of Study admission to candidacy and beginning of thesis research may be delayed until after successful performance on the comprehensive examination.

Professional Teaching Certificate

The Department of Education of the State of Hawaii issues the professional teaching certificate to teachers in the employ of the Department who, after receiving the Bachelor of Education degree or its equivalent, earn a total of 30 semester hours, 6 of which must be in graduate courses (600-799) in education. For purposes of such certification, the Bachelor of Education equivalent is defined as a bachelor's degree with 18 semester hours in education courses and practice teaching under the supervision of an accredited teacher training institution.
GRADUATE FIELDS OF STUDY

Faculties, Requirements, and Courses

Courses listed here numbered 400-599 are undergraduate courses available for graduate credit in the major field. Courses numbered 600 and above are graduate courses.

Only the number, title, and credit of courses are given. Course descriptions will be found in the University General Catalogue. Students should consult the time schedules issued prior to the opening of sessions for information on courses offered, credit, instructors, etc.

In addition to the minimum requirements stated in the forepart of this Bulletin, specific requirements are indicated here by Fields of Study.

Agricultural Economics

GRADUATE FACULTY

F. S. Scott, Jr., Ph.D. (Chairman)—marketing
L. Auer, Ph.D.—production economics
H. L. Baker, Ph.D.—forest economics
E. R. Barmettler, Ph.D.—marketing
J. T. Ishida, Ph.D.—marketing
A. B. Larson, Ph.D.—price analysis
C. W. Peters, M.S.—marketing
P. F. Philipp, Ph.D.—production economics
H. Spielman, Ph.D.—marketing

AFFILIATE FACULTY

P. P. Wallrabenstein, Ph.D.—statistics

Candidates for the M.S. degree must present a minimum of 18 hours of undergraduate credit in agricultural economics, general economics, or business, including a minimum of 12 hours in agricultural economics or general economics.

A thesis (Plan A) will be required for the M.S. program in most instances. A nonthesis program (Plan B) is permissible in special cases. For Plan A, a minimum of 12 hours, exclusive of thesis must be selected from the agricultural economics courses listed below. For Plan B, a minimum of 18 hours must be selected from courses listed below. The remaining course requirements may be elected from related fields with the approval of the program committee. Twelve hours, exclusive of thesis, must be in courses numbered 600 or above, at least 9 of which must be in agricultural economics.
Candidates for the Ph.D. in Agricultural Economics must meet requirements specified for admittance to candidacy for the M.S. in Agricultural Economics.

AGRICULTURAL ECONOMICS

423 Agricultural Cooperatives (3)
424 Marketing of Tropical and Subtropical Agricultural Products (3)
425 Marketing of Livestock, Poultry and Dairy Products (3)
426 Agricultural Economics Extension (3)
428 Production Economics (3)
429 Agricultural Policy and Planning (3)
430 Agricultural Finance (3)
431 Forest Economics (3)
433 Advanced Farm Management and Plantation Economics (3)
624 Marketing Research (3)
625 Economics of Agriculture: Tropical Countries and Asia (3)
626 Collection of Economic Data in Agriculture (3)
629 Product Economics (3)
630 Market Development for Agricultural Products (3)
631 Seminar: Consumer Economics and Food Distribution (3)
632 Economics of Agricultural Processing Industries (3)
634 Advanced Agricultural Prices and Statistical Analysis (3)
636 Seminar: Agricultural Policy (3)
637 Economics of Agricultural Resource Development (3)
638 Seminar: Land Use in Developing Countries (3)
639 Financing Agriculture in Developing Countries (3)
699 Directed Research (ar.)
800 Thesis Research (ar.)

Agricultural Engineering

GRADUATE FACULTY
J. K. Wang, Ph.D. (Chairman)—farm processing, power and machinery
H. M. Gitlin, M.S.—cooling and handling of farm products
D. M. Kinech, Ph.D.—power and machinery, farm processing

AFFILIATE FACULTY
W. N. Reynolds, M.S.—irrigation

Intended candidates for the M.S. must present a bachelor’s degree in an accredited agricultural, civil or mechanical engineering program or the equivalent.

Courses available for graduate credit are listed below. Courses from the related fields of Civil Engineering, Mechanical Engineering, Mathematics, Physics, Food Science, Agronomy and Soil Science may be approved in a degree program. The only required course from related fields is Mathematics 402. Candidates may specialize in farm processing, power and machinery, or soil and water conservation. Required courses are marked with an asterisk.

AGRICULTURAL ENGINEERING

411 Methods of Post Harvest Handling of Agricultural Products (3)
631 Analysis of Implement Design (3)
635 Farm Irrigation System Design (3)
Agronomy

GRADUATE FACULTY
L. D. Swindale, Ph.D. (Chairman)—soil management
H. F. Clements, Ph.D.—sugar cane agronomy
R. L. Fox, Ph.D.—soil and crop management
D. L. Plucknett, Ph.D.—crop management
P. P. Rotar, Ph.D.—plant breeding
G. D. Sherman, Ph.D.—soil and crop management
G. H. Stanford, Ph.D.—sugar cane agronomy
M. Takahashi, M.S.—tropical range management
O. R. Younge, Ph.D.—soil and crop management

AFFILIATE FACULTY
N. S. Hanson, Ph.D.—weed control
W. G. Sanford, Ph.D.—agronomy
J. N. Warner, Ph.D.—sugar cane breeding

Intended candidates for the M.S. must present a minimum of 18 undergraduate credits in agronomy which shall include 9 credits in agronomy and 9 credits in general soil science, plant physiology, and genetics or plant breeding. The undergraduate program must also include basic courses in botany, microbiology, chemistry, and statistics.

Courses in the major field are to be selected from those listed below. All candidates must register for the seminar in agronomy and soil science (soil fertility). Courses may be taken in related fields: Botany, Climatology, Genetics, Horticulture, Agricultural Engineering, and Microbiology. Candidates may specialize in crop production or tropical range management.

AGRONOMY
501 Tropical Crop Production (3)
502 Principles of Agronomy (3)
503 Range Management (3)
510 Sugar Cane Agronomy (3)
699 Directed Research (ar.)
800 Thesis Research (ar.)

SOIL SCIENCE
687 Soil Science Seminar (1)
689 Advanced Soil Fertility (4)
690 Advanced Soil Chemistry (ar.)

American Studies

GRADUATE FACULTY
S. Lutzky, Ph.D. (Chairman)—history and social backgrounds
S. Brown, Ph.D.—politics and history of ideas
R. Denney, B.A.—literature and sociology
The program in American Studies is designed as an interdisciplinary approach to the study of the United States. Although the program itself is flexible, intended candidates for the M.A. should present a broad undergraduate preparation in either the humanities or the social sciences that is acceptable to the American Studies faculty.

Admission to candidacy is based on (1) the quality of the undergraduate record; (2) proficiency in written and spoken English determined by an English language and oral examination; (3) performance in the evaluative and diagnostic examination required by the Graduate School.

Both Plan A (thesis) and Plan B (nonthesis) are available.

A minimum of 12 semester credits in American Studies seminars, including a methods seminar, is required of candidates under either plan. In addition, candidates must submit a program which includes courses in the following associated fields:

1. Literature and the Arts
2. History and Philosophy
3. Other social sciences

Plan A: In addition to the required 12 hours in American Studies, the thesis program should include a minimum of 12 hours in one of the associated fields and three hours in a second field.

Plan B: In addition to the required 12 hours in American Studies, the nonthesis program should include a minimum of 12 hours in one of the associated fields and a minimum of 12 hours from the other two fields.

Courses available for graduate credit in American Studies are listed below.

**AMERICAN STUDIES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>655-686</td>
<td>Contemporary American Civilization (3-3)</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>Seminar: Asia-America (2)</td>
<td></td>
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<tr>
<td>630</td>
<td>Criticism in the Mass Media Age (3)</td>
<td></td>
</tr>
<tr>
<td>660</td>
<td>Seminar: Presidential Leadership and American Civilization (3)</td>
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<tr>
<td>685-686</td>
<td>Seminar: The Nature of American Society (3-3)</td>
<td></td>
</tr>
<tr>
<td>690</td>
<td>Introduction to Contemporary America (3)</td>
<td></td>
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<tr>
<td>699</td>
<td>Directed Research (ar.)</td>
<td></td>
</tr>
<tr>
<td>700</td>
<td>Methods in American Studies (3)</td>
<td></td>
</tr>
<tr>
<td>750</td>
<td>Seminar: The Interaction of Asia and America (3)</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research (ar.)</td>
<td></td>
</tr>
</tbody>
</table>

**Animal Science**

**GRADUATE FACULTY**

- E. H. Cobb, Ph.D. (Chairman)—animal breeding and genetics
- J. H. Koshi, Ph.D.—dairy science
- K. K. Otagaki, Ph.D.—animal nutrition
- R. W. Stanley, Ph.D.—animal nutrition
- O. Wayman, Ph.D.—physiology
Intended candidates for the M.S. must present a minimum of 18 hours of undergraduate credit in animal science and related fields. The related subject matter fields are Agronomy, Biochemistry, Botany, Chemistry, Genetics, Home Economics, Horticulture, Mathematics, Microbiology, Poultry Science, and Zoology.

Courses available for graduate credit are listed below.

**ANIMAL SCIENCE**

- 442-443 Physiology of Domestic Animals (4-4)
- 444 Animal Nutrition (4)
- 445 Animal Breeding (3)
- 446 Animal Diseases and Their Control (3)
- 641 Seminar in Animal Science (1)
- 642 Ruminant Nutrition (2)
- 643 Physiology of Reproduction and Milk Secretion (3)
- 645 Advanced Animal Breeding (2)
- 699 Directed Research (ar.)
- 800 Thesis Research (ar.)

**Anthropology**

**GRADUATE FACULTY**

- T. W. Maretski, Ph.D. (Chairman)—East Asia, psychological and applied anthropology, culture change
- A. Dewey, Ph. D.—Indonesia and Oceania, social anthropology
- S. A. Howard, Ph.D.—Polynesia, social and psychological anthropology, ethnoscience
- H. Ikeda, Ph.D.—Japanese culture, folklore studies
- R. R. Jay, Ph.D.—Indonesia and Malaysia, social anthropology, social change
- W. P. Lebra, Ph.D.—East Asia, social anthropology, religion
- K. Luomala, Ph.D.—Polynesia, ethnology and folklore studies
- L. E. Mason, Ph.D. (Chairman, Dept. of Anthropology)—Micronesia, ethnology, applied anthropology, culture change
- W. G. Solheim, II, Ph.D.—Southeast Asia, archaeology
- K. E. Emory, Ph.D.—Polynesia, archaeology, ethnology

**AFFILIATE FACULTY**

- R. W. Force, Ph.D.—Oceania, culture change
- Y. H. Sinoto, D.Sc.—Polynesia and Japan, archaeology

Intended candidates for the M.A. or Ph.D. need not have an undergraduate background in anthropology. Students with the B.A. in related fields are particularly welcome. All students are expected to acquire a common knowledge of the four basic areas in the field, biological anthropology, linguistics, archaeology, social and psychological anthropology, during the first year of graduate work. Anthropology 650–651 is designed to review these subjects. While this course is not required, passing the final examination which is given at the end of each semester is mandatory for all candidates. A familiarity with the historical development of anthropology as a formal discipline and anthropological methods is also expected of all students.
The graduate program is designed to allow specialization within two broad fields of anthropology, social and psychological anthropology, and archaeology. Specialized interests in biological anthropology may be pursued by working closely with the Department of Human Genetics. Anthropologists who wish to concentrate on linguistic studies may work in a program jointly with the Department of Linguistics. A broad base in related courses in the social sciences, humanities, and natural sciences is strongly recommended for all students and specializations are expected to cross disciplinary lines in all cases.

The M.A. candidate has a choice of a thesis program (plan A consisting of 24 semester hours and thesis) or a nonthesis program (plan B consisting of 36 semester hours, a minimum of 18 in graduate courses in Anthropology, and a minimum of 6 in related fields). After a common core of anthropological knowledge has been established for the first year, students are left to develop their specialized interests. All students are required to take Anthropology 510, 700, and two offerings of 750. Also required is a course in statistics (Anthropology 500) or passing the final examination for this course. All students must demonstrate reading knowledge of one foreign language useful in the candidate's research. Candidates will be tested for their area of specialization in anthropology in a written comprehensive examination.

In addition to the broad preparation in anthropology described as prerequisite for the M.A. degree, the doctoral candidate must demonstrate competence in anthropological theory construction, research design, and the collection and evaluation of data. He will be encouraged to undertake faculty supervised research prior to submitting his thesis proposal and conducting thesis research. He will also be expected to develop and demonstrate his abilities in teaching. While not all candidates will be teaching assistants, they are encouraged to give lectures or other presentations to undergraduate or graduate students and faculty. Required courses are Anthropology 510, 700, either 710 or 720-721 and four semester offerings of 750. All candidates must pass the examinations for Anthropology 650-651 and a comprehensive examination in their area of specialization. Reading knowledge in two foreign languages is required for all doctoral candidates. Upon recommendation of the supervisory committee, oral competence alone may be accepted for one of the two required languages. An intensive oral examination is given to all Ph.D. candidates prior to the beginning of field research. This examination covers the specialized subjects on which the individual student focuses his studies in graduate work. The doctoral dissertation must be based upon fieldwork in another culture; such fieldwork may take up one year and should not be less than eight months.

Courses for the graduate program may be selected from those listed below and from offerings in related Fields of Study as directed by the candidate's supervisory committee. A weekly seminar is scheduled for
the presentation of theoretical issues and original research by faculty, graduate students, and visiting anthropologists. Graduate students are expected to attend.

Applications for admission to the graduate program in anthropology should include the following information: 1. Two transcripts; 2. Graduate Record Examination scores; 3. Background information, including a detailed statement on the student's interest in anthropology, his plans for study and a career in the field. Application forms are available from the Department and the Graduate School. 4. Three letters of reference from faculty members who can evaluate the applicant's potential for graduate studies.

ANTHROPOLOGY

450 Regional Cultures of Oceania (3)
   (1) Hawaii
   (2) Micronesia
   (3) Polynesia
   (4) Melanesia

460 Regional Archaeology (3)
   (1) Asia and the Pacific
   (2) Europe, Africa, and the Near East
   (3) North and South America

Arts in Cultural Perspective
470 Folklore (3)
   (Art 474, Primitive Art, and Music 471, Music of Nonliterate Peoples)

500 Anthropological Statistics (3)
510 Foundations of Anthropological Method (3)
550 Anthropological Applications (3)
   (1) Dependency Administration
   (2) Health
   (3) Education (Ed HP 570)
   (4) Overseas Operations

650-651 Proseminar: General Anthropology (6-6)
660 Social Organization (3)
665 Psychological Anthropology (3)
670 Archaeology (3)
675 Anthropology of Religion (3)
690 Ecological Anthropology (3)
699 Directed Reading or Research (Ar.)
700 History of Anthropology (3)
710 Anthropological Techniques (3)
720-721 Archaeological Techniques (3-3)
750 Research Seminar (3)
   (1) Archaeology
   (2) Linguistics
   (3) Ethnography
   (4) Social Anthropology
   (5) Applied Anthropology
   (6) Psychological Anthropology
   (7) Biological Anthropology

800 Thesis Research (Ar.)
Anthropology Seminar (no credit)

Art

GRADUATE FACULTY
M. Turnbull, M.A. (Chairman)—painting
C. W. Anderson, M.A.—painting, design
J. Charlot, D.F.A.—Western art
J. H. Cox, M.A.—painting, Oceanic art
G. E. Ecke, Ph.D.—Asian art
A. B. Etherington, B.A.—architecture
M. T. Everson, M.F.A.—weaving, textile design
C. F. Horan, M.A.—ceramics
K. G. Kingrey, M.A.—design
S. Kimura, M.A.—illustration
H. O. McVay, M.A.—ceramics
P. Neogy, M.A.—Asian art
B. Norris, B.A.—painting
H. A. Robinson, M.A.—textiles
E. Stasack, M.F.A.—painting, printmaking

The M.A. is given only in the field of Far Eastern art history. Intended candidates must present the equivalent of an undergraduate major in the history of art including 24 credits in art history and related courses, and, in addition to English, a reading knowledge of one language in which a considerable body of relevant literature is published. The faculty will determine the suitability of plan A or B at the preliminary conference.

The M.F.A. (plan A only) is awarded for creative studio work in one or more of the following media: (1) drawing and printmaking, (2) painting, (3) weaving and textiles, (4) ceramics, (5) visual design. The thesis includes an exhibition of original work in the chosen medium. Intended candidates must present the equivalent of an undergraduate major in art including 18 credits in art history and theory. Evidence of ability to do creative work of superior quality must be presented by means of a portfolio or slides.

In view of the intensive character of the program of professional studies in art, students who are admitted to the Graduate School with a B.A. or B.S. degree are required to complete work which is comparable to that of a Bachelor of Fine Arts degree or its equivalent before admission to candidacy for the Master of Fine Arts degree. Ordinarily this will not exceed two semesters of study.

An otherwise deficient or incompatible undergraduate program will require, at the discretion of the graduate faculty, additional course work for either degree.

Courses available for graduate credit are listed below. A maximum of 10 hours may be earned in certain advanced courses in anthropology, classics, English, history, music, and philosophy, or other pertinent fields.

Art 689 and 800 are required courses for the M.A.
Art 690 and 800 are required courses for the M.F.A.

**ART**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>476</td>
<td>Italian Renaissance Painting and Sculpture</td>
<td>(3)</td>
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<tr>
<td>477</td>
<td>Northern Renaissance Painting and Sculpture</td>
<td>(3)</td>
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<tr>
<td>478</td>
<td>19th Century Painting and Sculpture</td>
<td>(3)</td>
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<tr>
<td>479</td>
<td>20th Century Painting and Sculpture</td>
<td>(3)</td>
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<tr>
<td>487</td>
<td>Arts of the Pacific</td>
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<tr>
<td>565</td>
<td>Visual Communication</td>
<td>(2)</td>
</tr>
</tbody>
</table>
Asian Studies

GRADUATE FACULTY

R. S. Anderson, Ph.D. (Chairman)—education
G. Akita, Ph.D.—history
G. Artola, Ph.D.—Asian and Pacific languages
R. Jay, Ph.D.—anthropology
P. H. Lee, Ph.D.—Korean
D. H. Kornhauser, Ph.D.—geography
W. Maurer, Ph.D.—Asian and Pacific languages
H. Mazumdar, D.Sc.—economics
G. Raymond Nunn, Ph.D.—history
Yao Shen, Ed.D.—Chinese
W. Vella, Ph.D.—history

Asian Studies is an interdisciplinary area program leading to the M.A. degree. Students may concentrate their studies in a particular country or region of Asia. Specialization is also possible on topical problems which cut across national boundaries. All students will be required to have control of an Asian language adequate for research in their special geographical area of interest. Written evidence of such control must be presented. They will also be expected to gain a broad basic knowledge of Asia, in addition to their specialty. This will be tested in a comprehensive examination during the last semester in residence.

Intended candidates for the M.A. in Asian Studies should present a minimum of 15 semester hours credit in Asian Studies at the undergraduate level, or comparable experience in the field sufficient to engage profit-
ably in graduate work in interdisciplinary study. Students lacking such background may be required to take, without credit toward the degree, such area courses as are deemed necessary to make up the deficiencies.

Requirements for the M.A. in Asian Studies include: (1) a minimum of 12 semester credits of approved Asian courses in one discipline; (2) 6 semester credits of approved Asian courses in one cognate field; (3) 6 semester credits in a graduate Asian Studies "civilizations" course or the equivalent; (4) 6 credits of thesis research, for a total of 30 semester credits in addition to language.

The major field may be a country of East Asia (Japan, China, Korea), Southeast Asia (Indonesia, Thailand, Philippines, Malaya), or South Asia (India, Pakistan). Courses other than the general requirements will be determined by the supervising committees in consultation with the student.

There are almost 200 language and area courses dealing with Asia which are open to graduate students in Asian Studies, 33 of them dealing in whole or in part with Southeast Asia, 39 South Asia, and 107 East Asia. For complete listing see bulletin of the Asian Studies Department, "Asian Studies Courses of Instruction."

**ASIAN STUDIES**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>521-522</td>
<td>Civilizations of the East: Japan, China, and Korea (3-3)</td>
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<tr>
<td>523-524</td>
<td>Civilizations of the East: Southeast Asia (3-3)</td>
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<tr>
<td>525-526</td>
<td>Civilizations of the East: South Asia (3-3)</td>
<td></td>
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<tr>
<td>699</td>
<td>Directed Research (3-3)</td>
<td></td>
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<tr>
<td>798-799</td>
<td>Seminar in East Asian Studies (3-3)</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research (ar.)</td>
<td></td>
</tr>
</tbody>
</table>

**Biochemistry and Biophysics**

**GRADUATE FACULTY**

T. Winnick, Ph.D. (Chairman)—metabolism and biosynthesis of proteins and peptides
J. B. Hall, Ph.D.—nucleic acids and viruses
R. H. McKay, Ph.D.—physical biochemistry, biological oxidations
H. F. Mower, Ph.D.—biological nitrogen fixation; energy transfer mechanisms
L. H. Piette, Ph.D.—mechanisms of organic and biological reactions, electron paramagnetic resonance
K. T. Yasunobu, Ph.D.—relationship of enzyme structure to function

**AFFILIATE FACULTY**

G. G. Dull, Ph.D.—plant biochemistry, natural products
R. M. Heinricke, Ph.D.—enzymology, nutrition, plant biochemistry
L. G. Nickell, Ph.D.—physiology and biochemistry of sugar cane

Intended candidates for either the M.S. or Ph.D. must have or acquire adequate preparation in organic, physical, and analytical chemistry. They should consult with the department faculty in planning their curricula and in choosing appropriate courses offered by other departments, such as
Microbiology, Genetics, Zoology, Chemistry, and Mathematics. Courses available for graduate credit are listed below.

**BIOCHEMISTRY**

601-602 General Biochemistry (3–3)
611-612 Biochemistry Laboratory (2–2)
621 Chemistry of the Proteins (2)
622 Metabolism and Biosynthesis of Proteins (2)
651 Advanced Enzymology (2)
660 Survey of Intermediary Metabolism (2)
691-692 Specialized Instrumentation and Methodology (ar.)
699 Directed Research (ar.)
711 Nucleic Acids and Viruses (2)
720 Molecular Biology and Comparative Biochemistry (2)
730 Biological Oxidations and Energy Production Processes (2)
791–792 Seminar (1–1)
800 Thesis Research (ar.)

**BIOPHYSICS**

750 Special Topics in Biophysics (1–1)

**Botany**

**GRADUATE FACULTY**

C. H. Lamoureux, Ph.D. (Chairman)—anatomy
G. E. Baker, Ph.D.—mycology
A. J. Bernatowicz, Ph.D.—phycology
B. J. Cool, Ph.D.—physiology
M. S. Doty, Ph.D.—phycology
G. W. Gillett, Ph.D.—systematics
J. A. Lockhart, Ph.D.—physiology
D. Mueller-Dombois, Ph.D.—ecology
E. W. Putman, Ph.D.—physiology
B. J. Rogers, Ph.D.—physiology
A. C. Smith, Ph.D.—systematics

**AFFILIATE FACULTY**

D. P. Gowing, Ph.D.—physiology
B. Krauss, M.S.—anatomy
L. G. Nickell, Ph.D.—physiology
W. G. Sanford, Ph.D.—physiology

Intended candidates must present a minimum of 18 hours of undergraduate credit in botany or related subjects. Within the undergraduate and graduate programs the student should demonstrate adequate preparation in physiology, morphology, and systematics. Thesis work may be undertaken in systematics, morphology, ecology, physiology, mycology, and phycology. Courses available for graduate credit are listed below.

**BOTANY**

410 Plant Anatomy (3)
412 Microtechnique (3)
418 Cytology (3)
430 Mycology (3)
436 Medical Mycology (3)
454 Ecology II (4)
Taxonomy of Vascular Plants II (3)
Principles of Plant Physiology (4)
Phycology (3)
Botanical Seminar (1)
Advanced Botanical Problems (ar.)
Morphology Seminar (2)
Evolution (2)
Phytogeography (2)
Advanced Taxonomy (3)
Nomenclature Seminar (2)
Advanced Physiology (3-3)
Techniques in Physiology (2)
Techniques in Physiology—Biochemistry (2)
Physiology Seminar (1)
Phycology—Chlorophyta (2)
Phycology—Phytoplankton (2)
Phycology—Myxophyta and Phaeophyta (2)
Phycology—Rhodophyta (2)
Biological Productivity of the Sea (3)
Directed Research (ar.)
Directed Research (ar.)
Thesis Research (ar.)

Business Administration

GRADUATE FACULTY

P. M. Pratt, Ph.D. (Chairman)—marketing
J. Adler, Ph.D.—accounting, finance
L. W. Ascher, Ph.D.—finance
J. K. Bailey, Ph.D.—management
D. W. Bell, B.S.—real estate, land economics
J. G. Bridges, Diploma in Commerce—hotel management and tourism
R. B. Bichele, Ph.D.—management
D. S. Carlson, M.B.A.—management, business finance
C. F. Congdon, M.B.A.—statistics, marketing
D. A. Corbin, Ph.D.—accounting, finance
W. A. Dymsz, Ph.D.—business economics
F. B. Evans, Ph.D.—marketing
J. B. Ferguson, Ph.D.—personnel management, industrial relations
T. Q. Gilson, Ph.D.—management and industrial relations
H. W. Grayson, Ph.D.—economic theory
A. L. Kirkpatrick, M.A.—economic theory, money and banking
K. Lau, LL.M.—business law, finance
Y. S. Leong, Ph.D.—public finance, statistics
E. C. Pendleton, Ph.D.—labor economics, industrial relations
K. W. Pierson, M.A.—insurance
H. S. Roberts, Ph.D.—labor economics, industrial relations
K. Sasaki, Ph.D.—statistics
K. K. Seo, Ph.D.—economic theory, money and banking
H. B. Stellmacher, M.B.A.—marketing
R. Taussig, Ph.D.—accounting, finance
C. A. Theodore, Ph.D.—statistics

Intended candidates for the M.B.A. must have had a minimum of 24 semester hours of undergraduate credit in business administration, including elementary accounting, business statistics, elementary principles of economics, money and banking, managerial economics, business finance, principles of management, and principles of marketing.
Intended candidates must submit the results of the Educational Testing Service examination "Admission Test for Graduate Study in Business."

The M.B.A. is a 36-credit hour nonthesis program offered under plan B of the Graduate School. In addition to course requirements, intended candidates must meet the following: (1) the satisfactory completion of an independent investigation in the field of specialization, as evidenced by a grade of B or better in the research course in the major field: Management 610, or Marketing 610, or Finance 610, or Accounting 620, or Directed Research 699; and (2) satisfactory performance in a comprehensive final examination covering both major and minor fields in business.

Required courses are listed in Group I. Six electives from Group II, including a research course, are to be approved by the candidate's Program Committee. At least six semester hours of electives must be outside of the College of Business Administration.

### Group I

| Accounting | 600 Seminar in Management Accounting (3) |
| Business Analysis and Statistics | 600 Seminar in Quantitative Analysis (3) |
| Business Economics | 600 Seminar in Managerial Economics (3) |
| Finance | 600 Seminar in Financial Problems (3) |
| Management | 600 Seminar in Management Problems (3) |
| Marketing | 600 Seminar in Marketing Problems (3) |

### Group II

| Accounting | 605 Seminar in Accounting History and Theory (3) |
| Business Analysis and Statistics | 610 Seminar in Contemporary Accounting Theory (3) |
| | 620 Seminar in Advanced Accounting (3) |
| Business Economics | 610 Seminar in Statistical Decision Theory (3) |
| | 620 Seminar in Operations Research (3) |
| | 630 Seminar in Quantitative Methods of Business and Economic Forecasting (3) |
| Business Economics | 690 Seminar in Current Economic Problems (3) |
| Finance | 610 Research in Financial Theory (3) |
INSURANCE
600 Seminar in Insurance (3)

MANAGEMENT
610 Research in Management Theory (3)
640 Seminar in Business Policy (3)

MARKETING
610 Research in Marketing Theory (3)

PERSONNEL AND INDUSTRIAL RELATIONS
690 Seminar in Current Labor Problems (3)

REAL ESTATE
600 Seminar in Real Estate (3)

BUSINESS
699 Directed Research (ar.)

Chemistry

GRADUATE FACULTY
R. G. Inskeep, Ph.D. (Chairman)—infrared spectroscopy, hydrogen bonding, complex ions
I. L. Barnes, Ph.D.—analytical chemistry and geochemistry, age determination of minerals, chemistry of the solid state
M. M. Frodyma, Ph.D.—analytical chemistry, polarography, gas analysis
J. L. Ihrig, Ph.D.—reaction mechanisms, free radicals, kinetics, magnetochemistry
E. F. Kiclier, Ph.D.—reaction mechanisms, small ring compounds, olefin transition metal complexes
H. O Larson, Ph.D.—natural products, new synthetic methods, rearrangements
J. A. Mann, Ph.D.—physical chemistry, theoretical chemistry, physics and chemistry of surfaces
J. J. Naughton, Ph.D.—analytical, physical, solid state and geochemistry
L. L. Schaleyger, Ph.D.—physical organic chemistry, kinetics and mechanism of acid catalyzed organic reactions, hydrolysis and hydration phenomena
P. J. Schenew, Ph.D.—organic chemistry, structure determination of natural products
R. A. Sparks, Ph.D.—physical chemistry, crystallographic chemistry, computers
J. L. T. Waugh, Ph.D.—boron chemistry, intermetallic and heteropoly compounds, X-ray studies
J. W. Wrathall, Ph.D.—inorganic chemistry, coordination compounds, reactions of coordinated ligands
H. Zeitlin, Ph.D.—organic and oceanographic chemistry, reflectance spectrophotometry

AFFILIATE FACULTY
G. E. Felton, Ph.D.—food technology, carbohydrate chemistry
H. W. Hilton, Ph.D.—agricultural chemicals and carbohydrates
R. W. Leeper, Ph.D.—organic synthesis
C. E. Mumaw, Ph.D.—organic chemistry, food chemistry
J. H. Payne, Ph.D.—carbohydrate chemistry, sugar technology
H. Y. Young, M.S.—analytical chemistry

Intended candidates for the M.S. or Ph.D. must present the following minimum undergraduate preparation in chemistry: year courses in general, organic, analytical, and physical chemistry.
Courses may be selected from those listed below or from graduate
offerings in Mathematics and the natural sciences. Required courses are marked with an asterisk. Additional details of programs may be found in a departmental brochure.

CHEMISTRY

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>421</td>
<td>Intermediate Inorganic Chemistry (3)</td>
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<tr>
<td>424</td>
<td>Preparative Inorganic Chemistry (3)</td>
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<tr>
<td>441</td>
<td>Preparative Organic Chemistry (3)</td>
</tr>
<tr>
<td>444</td>
<td>Qualitative Organic Analysis (4)</td>
</tr>
<tr>
<td>445</td>
<td>Intermediate Organic Chemistry (3)</td>
</tr>
<tr>
<td>580</td>
<td>Oceanographic Chemistry (3)</td>
</tr>
<tr>
<td>582</td>
<td>Chemical Literature (2)</td>
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<tr>
<td>621</td>
<td>Atomic Structure (3)</td>
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<tr>
<td>622</td>
<td>Ionic Compounds and Complexes (3)</td>
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<tr>
<td>623</td>
<td>Atomic and Molecular Compounds and Complexes (3)</td>
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<td>624</td>
<td>Metals and Intermetallic Compounds (3)</td>
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<tr>
<td>631-632</td>
<td>Instrumental Methods of Analysis (4-4)</td>
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<tr>
<td>633</td>
<td>Advanced Chemical Analysis (4)</td>
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<tr>
<td>642</td>
<td>Organic Chemistry Theory (3)</td>
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<tr>
<td>646</td>
<td>Quantitative Organic Analysis (3)</td>
</tr>
<tr>
<td>651-652</td>
<td>Intermediate Physical Chemistry (3-3)</td>
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<tr>
<td>655</td>
<td>Radiochemistry and Nuclear Reactions (3)</td>
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<tr>
<td>656</td>
<td>Radiochemical Techniques (3)</td>
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<tr>
<td>*691-692</td>
<td>Seminar (1-1)</td>
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<tr>
<td>699</td>
<td>Directed Research (ar.)</td>
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<tr>
<td>731-732</td>
<td>Special Topics in Analytical Chemistry (3-3)</td>
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<td>741</td>
<td>Natural Products Chemistry (3)</td>
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<td>742</td>
<td>Chemistry of Cyclic Compounds (3)</td>
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<tr>
<td>743</td>
<td>Stereochemistry (3)</td>
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<tr>
<td>751</td>
<td>Molecular Structure (3)</td>
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<tr>
<td>753-754</td>
<td>Quantum Chemistry (3-3)</td>
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<tr>
<td>799</td>
<td>Directed Research (ar.)</td>
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<tr>
<td>*800</td>
<td>Thesis Research (ar.)</td>
</tr>
</tbody>
</table>

Chinese

GRADUATE FACULTY

L. P. H. Winters, M.A. (Chairman)—traditional and modern literature; philosophy in literature; literature and culture
J. J. Y. Liu, M.A.—classical poetry and drama; literary criticism
Y. Shen, Ed.D.—theoretical and applied linguistics; acoustic phonetics

There are three major fields of concentration: literature, language, and teaching of Chinese as a second language. Intended candidates for the M.A. in Chinese must have a B.A. in Chinese or have had equivalent preparation in the discipline.

The minimum requirement for the M.A. is 24 semester hours of course work and 6 semester hours of thesis research. A minimum of 18 semester hours for which graduate credit is given must be selected from courses in Chinese, and the rest in related fields. No more than 6 credits from courses numbered below 600 may be applied toward satisfaction of this requirement. In addition, a reading knowledge of some other language approved by the Graduate Faculty of the Field of Study is required.
Courses available for graduate credit are listed below. Required courses are marked with an asterisk. Courses required for a B.A. in Chinese cannot be used toward the degree.

**CHINESE**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>401-402</td>
<td>Chinese Literature in English (3-3)</td>
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<td>407</td>
<td>Contemporary Chinese Literature in English (2)</td>
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<tr>
<td>409-410</td>
<td>Fourth-Year Chinese—Modern (3-3)</td>
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<tr>
<td>415-416</td>
<td>Chinese Grammar (3-3)</td>
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<tr>
<td>417-418</td>
<td>Fourth-Year Chinese—Classical (3-3)</td>
</tr>
<tr>
<td>419</td>
<td>Chinese Phonetics and Phonemics (3)</td>
</tr>
<tr>
<td>493</td>
<td>Chinese Bibliography (3)</td>
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<tr>
<td>611-612</td>
<td>Contemporary Chinese Literature (3-3)</td>
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<tr>
<td>613-614</td>
<td>Chinese Poetry (2-2)</td>
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<tr>
<td>616</td>
<td>History of Chinese Literary Criticism (2)</td>
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<tr>
<td>617</td>
<td>Traditional Chinese Fiction (3)</td>
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<tr>
<td>618</td>
<td>Traditional Chinese Drama (3)</td>
</tr>
<tr>
<td>619-620</td>
<td>Chinese Etymology (2-2)</td>
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<tr>
<td>631</td>
<td>Historical Phonology (3)</td>
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<tr>
<td>632</td>
<td>Major Dialects (3)</td>
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<tr>
<td>641</td>
<td>Contrastive Analysis of Mandarin and English: Phonology (3)</td>
</tr>
<tr>
<td>642</td>
<td>Contrastive Analysis of Mandarin and English: Morphology and Syntax (3)</td>
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<tr>
<td>693-694</td>
<td>Methods in Chinese Studies (3-3)</td>
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<tr>
<td>699</td>
<td>Directed Research (ar.)</td>
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<tr>
<td>701-702</td>
<td>Research Seminar in Chinese (2-2)</td>
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<tr>
<td>800</td>
<td>Thesis Research (ar.)</td>
</tr>
</tbody>
</table>

**Civil Engineering**

**GRADUATE FACULTY**

- A. N. L. Chiu, Ph.D. (Chairman)—structures
- J. R. Evans, M.S.—soil mechanics
- M. L. P. Gu, Ph.D.—structures
- R. W. Haselwood, M.S.—transportation and soil mechanics
- W. S. Honsel, M.S.—soil mechanics
- L. S. Lau, Ph.D.—ground water hydrology, environmental and sanitary engineering
- T. Mitsuda, M.S.—applied mechanics
- T. Sakou, Ph.D.—physical oceanography
- J. A. Williams, Ph.D.—hydromechanics

Intended candidates for the M.S. in Civil Engineering must present a B.S. in Civil Engineering or the equivalent. Both plans A and B are available. Choice of plan must be made before 14 credits of graduate work applicable to the degree have been completed.

Under plan A the program may include a maximum of 6 credits of approved courses in fields other than Civil Engineering. At least two graduate seminars are required.

The program under plan B requires 30 credits of graduate study. It normally includes 24 credits in graduate Civil Engineering courses and 6 credits in approved courses in other departments. At least two graduate seminars are required.
Courses required in both programs are marked with an asterisk.

CIVIL ENGINEERING

621 Advanced Fluid Mechanics I (3)
622 Advanced Fluid Mechanics II (3)
623 Ground Water Hydrology (3)
624 Flow in Porous Media (3)
625 Ocean Engineering (3)
626 Coastal and Harbor Engineering (3)
651 Advanced Soil Mechanics I (3)
652 Advanced Soil Mechanics II (3)
671 Theory of Elasticity (3)
672 Plates and Shells (3)
674 Theory of Elastic Stability (3)
675 Theory of Vibrations (3)
676 Structural Dynamics (3)
681 Advanced Indeterminate Structures (3)
682 Numerical Methods of Stress Analysis (3)
683 Advanced Reinforced Concrete Design I (3)
684 Advanced Reinforced Concrete Design II (3)
685 Advanced Design of Metal Structures (3)
*687 Civil Engineering Seminar (1)
*688 Civil Engineering Seminar (1)
699 Directed Research (ar.)
800 Thesis Research (ar.)

Special Program in Environmental and Sanitary Engineering

In addition to the regular Graduate Faculty in Engineering the following are utilized in this program.

N. C. Burbank, Sc.D. (Program Advisor)—environmental engineering theory and science (microbiology and chemistry)
R. K. C. Lee, M.D., Dr. P.H.—public health administration
R. M. Worth, M.D., M.P.H., Ph.D.—epidemiology
A. Q. Y. Tom, Sc.D.—environmental engineering theory and design (affiliate graduate faculty)

Administered with the close cooperation of the Department of Public Health, the program is intended for candidates with a B.S. in Engineering who meet the Graduate School admission qualifications. Plan A (thesis program) is highly recommended for this program of study although in exceptional cases plan B (nonthesis) may be permitted. Suggested electives are Public Health 601-602, 610, 625, 636-637, 651, 710; Chemistry 441, 580, 655, 656; Zoology 401, 425, 620, 621, 629, 645; Microbiology 415, 620, 625, 631, 632, 655; Civil Engineering 621, 622, 624, 651, 652.

Ordinarily, at least one full calendar year will be needed to complete the program. Courses marked with an asterisk are required of all candidates.

CIVIL ENGINEERING

601 †ESE Seminar (1)
602 ESE Seminar (1)
Drama and Theatre

GRADUATE FACULTY
E. Ernst, Ph.D. (Chairman)—Oriental theatre
L. Bentley, M.A.—acting
E. Langhans, Ph.D.—theatre history
R. Mason, M.F.A.—design
J. Trapid, Ph.D.—direction

Intended candidates for an advanced degree in Drama and Theatre should present an adequate undergraduate background in the humanities, preferably in English, other languages and literatures, art and music, and in theatre or speech. Deficiencies in undergraduate preparation must be made up without credit. Intended candidates must submit official scores from the general portion of the Graduate Record Examination.

Two degrees are offered: the Master of Arts and the Master of Fine Arts. Both plan A and plan B programs for the M.A. are offered. For the M.A. thesis the candidate does research with documentary materials in theatre history, criticism, or theory. The M.F.A. thesis involves creative work in one of two areas: play production or playwriting. For the production thesis, the student designs and directs a play of demonstrable historical and/or literary importance and gives a complete account of the production in a production script. For the playwriting thesis the candidate writes a full-length play.

Candidates are required to have a reading knowledge of a foreign language and to pass a comprehensive examination prior to the final examination on the thesis.

Courses available for graduate credit are listed below. However, candidates having sufficient undergraduate preparation may also take advanced courses in other departments, for example, literature and dramatic literature courses in English, or in European and Asian languages, and selected courses in Anthropology, Art, Music, Psychology, Philosophy. All candidates are required to take Drama and Theatre 710, 6 credits from 620,
630, 635, or 640, and 3 from 660 or 670. Besides work in course, candidates are required to participate in the production of at least three plays.

East-West Center grantees from the United States must attain proficiency in an Oriental language.

**Drama and Theatre**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>405</td>
<td>Puppetry</td>
<td>(3)</td>
</tr>
<tr>
<td>410</td>
<td>Creative Dramatics</td>
<td>(3)</td>
</tr>
<tr>
<td>415</td>
<td>Playwriting</td>
<td>(3)</td>
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<tr>
<td>420</td>
<td>Acting</td>
<td>(3)</td>
</tr>
<tr>
<td>430</td>
<td>Direction</td>
<td>(3)</td>
</tr>
<tr>
<td>435</td>
<td>Design in the Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>440</td>
<td>Modern Stagecraft and Stage Lighting</td>
<td>(3)</td>
</tr>
<tr>
<td>445</td>
<td>Costume for the Stage</td>
<td>(3)</td>
</tr>
<tr>
<td>540</td>
<td>Oriental Drama and Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>550</td>
<td>History of the Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>620</td>
<td>Advanced Acting Techniques</td>
<td>(3)</td>
</tr>
<tr>
<td>630</td>
<td>Problems in Direction</td>
<td>(3)</td>
</tr>
<tr>
<td>635</td>
<td>Advanced Design</td>
<td>(3)</td>
</tr>
<tr>
<td>640</td>
<td>Problems in Stagecraft and Stage Lighting</td>
<td>(3)</td>
</tr>
<tr>
<td>660</td>
<td>Modern Theories of Stage Presentation</td>
<td>(3)</td>
</tr>
<tr>
<td>670</td>
<td>Aesthetics of the Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>700</td>
<td>Advanced Theatre Practice</td>
<td>(2)</td>
</tr>
<tr>
<td>710</td>
<td>Seminar in Theatre Research</td>
<td>(3)</td>
</tr>
<tr>
<td>720</td>
<td>Seminar in Drama and Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>750</td>
<td>Seminar in Oriental Theatre</td>
<td>(3)</td>
</tr>
<tr>
<td>799</td>
<td>Directed Work (ar.)</td>
<td></td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research (ar.)</td>
<td></td>
</tr>
</tbody>
</table>

**Economics**

**Graduate Faculty**

- R. Sato, Ph.D. (Chairman)—economic theory, mathematical economics, econometrics
- W. Gorter, Ph.D.—international trade
- R. Hoffman, Ph.D.—public finance
- T. H. Ige, Ph.D.—labor economics
- R. M. Kamins, Ph.D.—Soviet economics, public finance
- S. M. Mark, Ph.D.—economic theory, mathematical economics, economic development
- H. T. Oshima, Ph.D.—national income accounting, economic development
- J. Wise, Ph.D.—economic theory, mathematical economics, econometrics, international economics

Applicants should have 24 credits in undergraduate economics, including principles (6); money and banking (3); intermediate economic theory, micro (3) and macro (3); and statistics (3). Knowledge of calculus is strongly recommended.

Economics 600 and 602 are required. Candidates must pass a written and oral comprehensive examination covering three fields of economics—economic theory, and two selected from: economic development, quantitative analysis, monetary economics, public finance, and international economics, or an approved outside field. A maximum of 6 semester credits in outside fields is allowed in plan A and 9 in plan B.
Educational Administration

GRADUATE FACULTY

L. D. Jackson, Ed.D. (Chairman)—administrative leadership, school law, school business, school publicity
J. B. Crossley, Ed.D.—administration of intermediate, secondary, junior college, higher, adult, and trade and vocational education
H. V. Everly, Ph.D.—general school administration
R. W. Johnson, Ed.D.—administrative organization, supervision, school plant, and administration of elementary education

Intended candidates for the M.Ed. must present a minimum of 10 semester hours in professional education courses, and in addition, have had two years of successful teaching experience. Applicants shall provide written evidence of such experience when applying.

Admission to candidacy is based upon (1) the quality of the student's undergraduate and graduate record; (2) his performance on the Graduate Record Examination and the Miller Analogies Test; and (3) his
performance on the general examination, including successful completion of EA 685.

Plan A requirements include 3 semester hours in philosophy of education, 3 semester hours in educational psychology, 3 semester hours in research methods, and at least 2 seminars in educational administration or supervision. Included in the requirements under plan B are 9 to 15 semester hours in fields other than education, 3 semester hours in philosophy of education, 3 semester hours in educational psychology, one seminar in educational administration or supervision, one additional seminar in administration or supervision, terminal in nature, and directed by the candidate's Program Committee.

Selection of specific courses in the above fields will be by the Program Committee of the candidate.

EDUCATIONAL ADMINISTRATION

670 Supervision of Instruction (3)
671 Seminar in School Public Relations (3)
680 Public School Organization (2)
685 Principles of Educational Administration (3)
689 The School Plant (3)
699 Directed Research (ar.)
768 Research Seminar in Educational Administration (3)
770 Seminar in Supervision of Instruction (3)
780 Seminar in Educational Administration (3)
781 Legal Aspects of School Administration (3)
784 Financial Aspects of School Administration (3)
785 Seminar and Internship in Administrative Leadership (2-4)
800 Thesis Research (ar.)

Educational Psychology

GRADUATE FACULTY
G. Sax, Ph.D. (Chairman)—measurement, research
R. S. Alm, Ph.D.—diagnosis and remedial instruction
W. F. Char, M.D.—child psychiatry, special education
F. E. Clark, Ed.D.—counseling and guidance
D. R. Collins, Ed.D.—counseling and guidance
R. Y. Fuchigami, Ed.D.—special education
G. Fujita, Ph.D.—statistics, research
D. Leton, Ph.D.—school psychology
R. H. Mathewson, Ph.D.—counseling and guidance
T. A. McIntosh, Ed.D.—special education, guidance
A. M. Niyekawa, Ph.D.—social psychology, psycholinguistics
D. G. Ryan, Ph.D.—measurement, research
W. A. Wittich, Ph.D.—audio-visual

AFFILIATE FACULTY
T. M. C. Chang, Ph.D.—educational psychology

Intended candidates for the M.Ed. in educational psychology must present a minimum of 18 semester hours in professional education courses. As a part of the undergraduate preparation, students will have completed a minimum of 12 hours of work in psychology or educational psychology
including work in developmental psychology, educational psychology, and test and measurements. Students should plan on meeting proficiency in statistics prerequisite for Educational Research Methods.

Admission to candidacy is based upon (1) the quality of the student's undergraduate record and (2) his performance on the general examination. The results of the Aptitude Test of the Graduate Record Examination and the Miller Analogies Test must be submitted to the Chairman at the time the student plans on entering the M.Ed. program. The Graduate Faculty may waive the requirement for the MAT provided that both the Aptitude and Area Tests of the Graduate Record Examination are submitted.

Areas of study offered are audio-visual education, counseling and guidance, remedial and diagnostic techniques, special education, and the general field of educational psychology (learning, developmental, measurement, and research methods). The programs in counseling and guidance, and special education meet the certification requirements of the Hawaii State Department of Education; the program in remedial and diagnostic techniques meets the recommendations of the International Reading Association.

In plan A, the program may include a maximum of 10 semester hours in approved courses other than educational psychology which are related to the candidate's announced goals. At least one graduate seminar in educational psychology is required. A minimum of 4 units in philosophy of education and history of education is required.

In plan B, the program must include a minimum of 36 hours in a planned and approved sequence of courses, 21 of which will normally be in educational psychology. A minimum of six hours of graduate work shall be taken in Fields of Study other than educational psychology. Ordinarily, the related field of study shall be in the behavioral sciences. At least one graduate seminar in educational psychology is required. A minimum of 4 units in philosophy of education and history of education is required.

EDUCATIONAL PSYCHOLOGY

507 Remedial Reading (3)
510 Education of Exceptional Children (3)
514 Audio-Visual Media (3)
601 Guidance in the School (3)
602 Elementary School Guidance (3)
604 Occupational Information in Guidance (3)
605 Problems of School Adjustment (3)
607 Clinical Procedures in Reading (3)
609 Tests and Inventories in Guidance (3)
613 Education of the Mentally Retarded (3)
614 Education of Gifted Children (3)
615 Curriculum Development for Mentally Retarded Children (3)
616 Seminar in Education of Mentally Retarded (3)
629 Educational Statistics (3)
634 Television in Education (3)
672 Advanced Educational Psychology (3)
Directed Research (ar.)
Seminar in Guidance (3)
Group Guidance (3)
Guidance Practicum (3)
Seminar in Audio-Visual Education (3)
Production of Audio-Visual Materials (3)
Research Methods (3)
Educational Evaluation (3)
Organization of New Media Programs (3)
Seminar in Educational Psychology (3)
Thesis Research (ar.)

Electrical Engineering

GRADUATE FACULTY
P. C. Yuen, Ph.D. (Chairman) — microwaves, radio science
A. V. Chow, M.S. — communication theory
E. Gott, D. Eng. — circuit theory and signal processing systems
B. S. M. Granborg, Ph.D. — automatic control
W. E. Meserve, Ph.D. — automatic control
K. Najita, M.S. — applied mathematics and microwave devices
W. W. Peterson, Ph.D. — information theory
T. H. Roelofs, Ph.D. — radio wave propagation
H. Seo, M.S. — electronic instrumentation and applied physics

Intended candidates for the M.S. in Electrical Engineering must present the B.S. in Electrical Engineering or the equivalent. Both plans A and B are available. Choice of plan is required before 15 credits of graduate work applicable to the degree have been completed.

Plan A may include a maximum of 6 credits of approved courses in departments other than Electrical Engineering. At least two graduate seminars are required.

Plan B requires 30 credits of graduate study. It normally includes 21 credits in Electrical Engineering courses and 9 credits (and not less than 6 credits) in approved courses in Mathematics and Physics. At least two graduate seminars are required.

ELECTRICAL ENGINEERING
601-602 Electromagnetic Theory and Applications (3-3)
603 Active Network Analysis (3)
604 Magneto-Ionic Theory (3)
605-606 Network Synthesis (3-3)
607 Energy-State Devices (3)
608 Analysis of Non-linear Systems (3)
621-622 Advanced Microwave Theory (3-3)
631 Advanced Electronic Instrumentation (3)
641 Statistical Communication Theory (3)
651 Advanced Feedback Control Systems (3)
652 Optimization Techniques in Control Systems (3)
655 Sampled-Data Control Systems (3)
661 Theory and Design of Digital Machines (3)
663 Information Theory (3)
665 Signals and Random Noise (3)
672 Magnetohydrodynamics (3)
Elementary Education

GRADUATE FACULTY
M. R. Porter, Ph.D. (Chairman)—elementary education, curriculum for elementary schools
A. B. Carr, Ed.D.—science education for elementary schools
M. Ezer, Ed.D.—language arts, reading, social studies, curriculum for elementary schools
E. D. Hayes, Ph.D.—language arts, reading, creative expression in elementary education
A. L. Pickens, Ed.D.—art education

Intended candidates for the M.Ed. in elementary education must present a minimum of 18 semester hours in professional education courses and, in addition, credit for supervised student teaching or teaching experience. Before completion of the M.Ed. degree, evidence must be presented of successful teaching experience beyond student teaching. This requirement may be met by a full semester of supervised internship.

Admission to candidacy is based upon (1) the quality of the student’s undergraduate record, (2) his performance on the general examination, (3) his performance on the Graduate Record aptitude and the Miller Analogies tests, and (4) an interview with the Graduate Faculty.

Plan A: minimum of 30 semester hours, 21–27 in foundation courses, research, and elementary education (of which 6 semester hours may be allowed for thesis research) and 3–9 semester hours in elective courses other than elementary education which are related to the candidate’s goals. At least one graduate seminar is required.

Plan B: minimum of 36 semester hours, 21–27 in foundation courses, research, and elementary education, and 9–15 semester hours in a planned and approved sequence of elective courses which carry graduate credit in fields of study other than elementary education. It is designed to enable teachers to develop depth and creativity in a teacher’s role. Elementary Education 722 is required.

Nine credits in History and Philosophy of Education and Educational Psychology (including 708) are required of all candidates.

Required courses in Elementary Education are marked with an asterisk in the list below.

ELEMENTARY EDUCATION

620 Teaching Reading in the Elementary School (2)
621 Modern Language Arts Program, Elementary (2)
*622 Elementary School Curriculum (3)
623 The Elementary Science Curriculum (3)
624 The Elementary Mathematics Curriculum (3)
625 The Elementary Social Studies Curriculum (3)
626 Art in Elementary Education (3)
630 Curriculum Development in Creative Expression (3)
CURRICULUM TRENDS IN EARLY CHILDHOOD EDUCATION (3)

DIRECTED RESEARCH (AR.)

SEMINAR IN ELEMENTARY CURRICULUM FOUNDATIONS (3)

THESIS RESEARCH (AR.)

ENGLISH

GRADUATE FACULTY

C. S. Bouslog, Ph.D. (Chairman)—English romanticism, 20th century British and American literature
J. M. Backus, Ph.D.—American literature
D. S. Brown, Ph.D.—American literature
A. G. Day, Ph.D.—American literature, writing, Pacific literature
J. W. Frierson, Ph.D.—Victorian literature
T. H. Fujimura, Ph.D.—Restoration literature
W. T. Furniss, Ph.D.—Renaissance Period
D. George, Ph.D.—18th century literature
M. F. Heiser, Ph.D.—American literature
W. E. Huntsberry, M.A.—writing
B. F. Kirtley, Ph.D.—comparative literature, folklore
A. L. Korn, M.A.—Milton, 17th century poetry, British novel, Hawaiian history
R. L. Larson, Ph.D.—17th century literature (1964–65)
A. P. Leib, Ph.D.—American literature
A. J. Levy, Ph.D.—American literature
J. K. Lowers, Ph.D.—Elizabethan literature
S. Lutzky, Ph.D.—American literature and social backgrounds
D. Stempel, Ph.D.—19th century literature, linguistics, criticism
B. M. Stillians, Ph.D.—English romanticism, American literature
C. G. Stroven, Ph.D.—American literature, Pacific literature
T. L. Summersgill, Ph.D.—Elizabethan literature, Chaucer
T. F. Teevan, Ph.D.—modern English and Irish literature
L. Wellein, Ph.D.—comparative literature, Old and Middle English
W. Wilson, Ph.D.—drama, playwriting
L. E. Winters, Ph.D.—comparative literature, Chinese, American literature

Intended candidates for the M.A. are expected to present, in addition to the customary freshman and sophomore composition and literature survey courses, 24 semester hours of undergraduate credit in English or closely related subjects, including advanced exposition, Shakespeare, English literature and American literature. In addition, courses in English and American history and in classical and European literature are desirable. A reading knowledge of an ancient or modern European language is required. Courses for the graduate program are to be selected from the list below; however, a number of advanced courses in other disciplines may be approved as part of a program. Required courses are marked with an asterisk; English 780 or 785 is required, not both.

Both plan A and plan B are available. Under plan A, English 630 must be offered in addition to the required 12 graduate hours; under plan B, English 630 must be offered as part of the 18 graduate hours.

Applicants for admission to graduate study in English must submit official scores from the General and Literature portions of the Graduate Record Examination.
ENGLISH
440 English Drama to 1642 (3)
443-444 Modern Dramatic Literature (3-3)
447 The English Novel to 1832 (3)
448 The English Novel, 1832-1900 (3)
451 Medieval English Literature (3)
452 Chaucer (3)
455 Sixteenth-Century English Literature (3)
457-458 Shakespeare (3-3)
460 Early Seventeenth-Century English Literature (3)
465 Restoration Literature (3)
466 Milton (3)
470 Early Eighteenth-Century English Literature (3)
471 Late Eighteenth-Century English Literature (3)
480 The Romantic Movement in England (3)
485 Victorian Literature (3)
490 Twentieth-Century British Novel (3)
571-572 American Literature (3-3)
573 American Literature and Cultural History (3)
585 Literature of the Pacific (3)
590 Twentieth-Century American Novel (3)
592 Twentieth-Century British and American Poetry (3)
620 Seminar in Teaching Composition (3)
*625 History of the English Language (3)
*630 Seminar in Research Methods (3)
635 Seminar in Comparative Literature (3)
636 History of Literary Criticism (3)
640 Old English (3)
657 Seminar in Shakespeare (3)
660 Major Authors (3)
675 Literary Genres and Problems (3)
*685 Seminar in English Literature (3)
699 Directed Research (arr.)
*780 Seminar in American Literature: Authors (3)
*785 Seminar in American Literature: Problems, Periods (3)
*800 Thesis Research (arr.)

Entomology

GRADUATE FACULTY
D. E. Hardy, Ph.D. (Chairman)—taxonomy, medical entomology
J. W. Beardsley, Jr., Ph.D.—biological control, mealybug taxonomy
H. A. Bess, Ph.D.—biological control and ecology
W. C. Mitchell, Ph.D.—economic entomology
R. Namba, Ph.D.—insect transmission of plant viruses
T. Nishida, Ph.D.—ecology
M. Sherman, Ph.D.—toxicology
M. Tamashiro, Ph.D.—insect pathology
L. D. Tuthill, Ph.D.—taxonomy

AFFILIATE FACULTY
J. L. Gressitt, Ph.D.—taxonomy
C. R. Joyce, Ph.D.—medical entomology
I. Keiser, B.S.—fruit flies
L. C. Quate, Ph.D.—taxonomy
K. Sakimura, B.S.—pineapple insects

54
Intended candidates for the M.S. or Ph.D. in Entomology must present a minimum of 18 hours of undergraduate credit in entomology and zoology, including general zoology, general entomology, economic entomology, insect morphology, and systematic entomology. In addition, they should have credit for two years of chemistry (including inorganic and organic), and courses in algebra, botany, and genetics. Deficiencies in undergraduate preparation must be made up.

Courses available for graduate credit are listed below. Courses in the fields of Zoology, Botany, Microbiology, and Genetics may be allowed in the degree program. Required courses are marked with an asterisk.

**ENTOMOLOGY**

- 661 Medical and Veterinary Entomology (3)
- 662 Advanced Systematic Entomology (3)
- 663 Scale Insects (3)
- 664 Immature Insects (3)
- 671 Insect Ecology (3)
- 672 Acarology (3)
- 673 Insect Pathology (3)
- 675 Biological Control of Pests (3)
- 680 Insect Toxicology (4)
- 686 Insect Transmitted Diseases of Plants (3)
- 697 Entomology Seminar (1)
- 699 Directed Research (ar.)
- 800 Thesis Research (ar.)

**ZOOLOGY**

- 601 Zoological Literature (1)
- 602 Preparation of Scientific Manuscripts (1)

**Food Science**

**GRADUATE FACULTY**

- E. Ross, Ph.D. (Chairman)—food science and technology
- L. Allen, Ph.D.—food technology, processing
- H. A. Frank, Ph.D.—food science, food microbiology
- H. Y. Yamamoto, Ph.D.—food science, food biochemistry

**AFFILIATE FACULTY**

- G. G. Dull, Ph.D.—natural products, plant biochemistry
- G. E. Felton, Ph.D.—food technology, carbohydrate chemistry
- J. H. Payne, Ph.D.—sugar technology

Intended candidates for the M.S. must present a minimum undergraduate preparation of two and a half years of chemistry, including at least a semester each of analytical and organic chemistry, one year of general physics, credits in agricultural and biological sciences, including general microbiology, and college algebra and trigonometry.
Courses for the graduate program are to be selected from those offered in the major field of Food Science, and the related fields of Agricultural Engineering, Chemistry, Biochemistry and Biophysics, Microbiology, and Nutrition. A maximum of 6 credits may be earned in other fields. Required courses are marked with an asterisk.

**FOOD SCIENCE**

- 510 Tropical Food Processing (3)
- 511 Tropical Food Products (2)
- 601 Principles in Food Science and Technology (3)
- 603 Microbiology of Foods (3)
- 604 Laboratory Methods for Food Microbiology (2)
- *620 Seminar (1)*
- 630 Biochemical and Chemical Aspects of Foods (3)
- *699 Directed Research (ar.)*
- *701 Recent Advances in Food Research (1)*
- 800 Thesis Research (ar.)

**French**

**GRADUATE FACULTY**

- D. B. Aspinwall, Ph.D. (Chairman)—literature of 19th and 20th centuries
- J. Holton, Ph.D.—methods of teaching the language
- E. Jackson, Ph.D.—Renaissance and 18th century literature
- E. Knowlton, Ph.D.—history of the language
- A. Moore, B.A.—Franco-German literary relations in 18th and 19th centuries

Intended candidates for the M.A. in French must present 24 semester hours of undergraduate credit in French, exclusive of introductory and intermediate courses, or have had equivalent preparation. They must also demonstrate, by means of a personal interview or by a tape recording, that they possess the ability to communicate orally in French with a French national.

Under plan A at least 6 semester hours of European history, taken as undergraduate or as graduate work are required. Some knowledge of Latin is desirable and a competence in a second foreign language is required. For the latter requirement the standard for a European language is the equivalent of that expected upon completion of the second year of University study in the language. A maximum of 8 semester hours may be elected from courses in related fields. Required courses are marked with an asterisk.

**FRENCH**

- *411-412 Literature of the Golden Age (3-3)*
- *413-414 Eighteenth-Century Literature (2-2)*
- *415-416 Nineteenth-Century Literature (2-2)*
- 417-418 Twentieth-Century Literature (3-3)
- *601 Seminar in Modern French Literature (2)*
- *609 Literature of Renaissance (3)*
- *660 Advanced Composition and Stylistics (2)*
- 671 History of the French Language (2)
- 672 Medieval Literature (2)
The M.S. and Ph.D. in Genetics are offered in human genetics, biochemical genetics, immunogenetics, plant genetics (see Horticulture) and quantitative genetics (see Animal Science). Intended candidates must have or acquire adequate preparation in biology, biometrics, chemistry through organic chemistry, analytic geometry and calculus, genetics, and physics. For human genetics additional undergraduate requirements are anthropology and human genetics. For immunogenetics, the undergraduate preparation should include general microbiology, comparative anatomy and embryology. For quantitative genetics, the preparation should include vertebrate zoology and physiology. For plant genetics the undergraduate requirements include cytology, plant anatomy, taxonomy, and physiology. The Graduate Record Examination and two letters of recommendation are required.

All candidates for the graduate degree in genetics must take Genetics 518, 618, 650, 4 semesters of 654, Biochemistry 601–602, and any additional courses specified by the Thesis Committee. Related fields in which credit will normally be allowed toward the degrees in genetics include Animal Science, Anthropology, Botany, Biochemistry, Chemistry, Horticulture, Mathematics, Medicine, Microbiology, Public Health and Zoology. Departmental courses available for graduate credit are listed below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>518</td>
<td>Biochemical Genetics</td>
</tr>
<tr>
<td>618</td>
<td>Cytogenetics</td>
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<tr>
<td>625</td>
<td>Advanced Topics in Genetics</td>
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<tr>
<td>650</td>
<td>Population Genetics</td>
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<tr>
<td>654</td>
<td>Seminar</td>
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<tr>
<td>699</td>
<td>Directed Research</td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research</td>
</tr>
</tbody>
</table>
Geography

GRADUATE FACULTY
R. J. Fuchs, Ph.D. (Chairman)—urban and economic geography, Soviet Union
N. M. Bowers, Ph.D.—South and Southeast Asia, Micronesia, political geography
C. A. Manchester, Jr., Ph.D.—Japan, history of geography, historical geography
P. N. D. Pirie, Ph.D.—population geography, Pacific
J. M. Street, Ph.D.—agricultural and physical geography, tropical biogeography

AFFILIATE FACULTY
J. H. Chang, Ph.D.—climatology, China

Undergraduate background should include the courses required for a geography major. However, students with majors in related disciplines are welcomed with the understanding that they may be obliged to take some essential courses on a noncredit basis. The student is expected to have adequate preparation in mathematics or statistics and to have a reading knowledge of a foreign language.

Courses available for graduate credit are listed below. Regulations on course and degree requirements are available from the department. Programs are individually arranged by the department to guarantee inclusion of basic content and methods courses and the beginnings of specialization in a systematic field and a regional field. Ordinarily, the bulk of a student's program will be made up of systematic and methods courses within the department, and an integrated group of courses selected from the physical and social sciences.

Systematic and Methods

GEOGRAPHY
410 Physical Geography (3)
420 Introduction to Climatology (3)
421 Advanced Climatology (3)
430 Cartography (3)
450 Urban Geography (3)
470 Population Geography (3)
507 Conservation and Utilization of Natural Resources (3)
580 Geography of the Tropics (3)
601 History of Geography (3)
605 Historical Geography (3)
620 Studies in Economic Geography (3)
630 Seminar in Climatology (3)
640 Quantitative Methods in Geography (3)
645 Field Methods (3)
680 Seminar in Geography (3)

Regional

GEOGRAPHY
501 Geography of United States and Canada (3)
526 Geography of the Soviet Union (3)
541 Geography of Asia (3)
Individual Research

699 Directed Research (ar.)
800 Thesis Research (ar.)

Geological Sciences

GRADUATE FACULTY
R. Moberly, Jr., Ph.D. (Chairman)—sedimentology, marine geology
A. T. Abbott, Ph.D.—ore deposits, geomorphology
W. M. Adams, Ph.D.—seismology, applied geophysics
J. C. Belshe, Ph.D.—geomagnetism, marine geophysics
D. C. Cox, M.A.—hydrology, ground-water and engineering geology
A. S. Furumoto, Ph.D.—seismology, geophysics
G. A. Macdonald, Ph.D.—volcanology, igneous petrology
M. Manghnani, Ph.D.—geochemistry, geophysics
K. A. Pankiwskyj, Ph.D.—metamorphic geology, silicate phase geochemistry
J. C. Rose, Ph.D.—gravity, marine geophysics
G. P. Woollard, Ph.D.—gravity, seismology, geomagnetism

AFFILIATE FACULTY
D. A. Davis, M.S.—ground-water geology, geology of Pacific Islands
H. A. Powers, Ph.D.—volcanology, petrology

Intended candidates for the M.S. and Ph.D. in the Geological Sciences will be accepted from undergraduate majors in the natural sciences, mathematics, and engineering. Students not having year-length courses in geology and geophysics, physics, chemistry, college mathematics, and geological or geophysical field methods will be obliged to take those courses without credit. The M.S. General Examination and the Ph.D. Comprehensive Examination may include basic questions from mineralogy, petrology, geochemistry, structure, stratigraphy, geomorphology, hydrology, geophysics, paleontology, chemistry, physics, and mathematics, and the entering student will be guided accordingly.

Plan B is available only to prospective teachers of Earth Science in secondary schools. One foreign language with useful scientific literature in the field of the candidate, usually French, German, or Russian, is required of M.S. candidates, and two such languages are required for the Ph.D.

Graduate credit may be obtained in the courses listed below, and in
related offerings of the natural sciences, mathematics, and engineering departments with the approval of the supervising committees.

**GEOLOGICAL SCIENCES**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>401-402</td>
<td>Petrology-Geochemistry (4-4)</td>
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<tr>
<td>421-422</td>
<td>Dynamic Geology (4-4)</td>
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<tr>
<td>431</td>
<td>Elementary Seismology (3)</td>
<td></td>
</tr>
<tr>
<td>445</td>
<td>Paleontology (3)</td>
<td></td>
</tr>
<tr>
<td>454</td>
<td>Economic Geology (2)</td>
<td></td>
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<tr>
<td>460</td>
<td>Geomorphology (3)</td>
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</tr>
<tr>
<td>470</td>
<td>Marine Geology (3)</td>
<td></td>
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<tr>
<td>491-492</td>
<td>Seminar in Geological Science (1-1)</td>
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<tr>
<td>495</td>
<td>Geochemistry (3)</td>
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<tr>
<td>550</td>
<td>Intermediate Geophysics I (3)</td>
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<td>551</td>
<td>Intermediate Geophysics II (3)</td>
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<td>601</td>
<td>Seminar in Volcanology (2)</td>
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<td>602</td>
<td>Seminar in Igneous Petrology (2)</td>
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<td>Seminar in Metamorphic Geology (2)</td>
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<td>Seminar in Hydrogeology (3)</td>
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<td>606</td>
<td>Seminar in Engineering Geology (3)</td>
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<td>610</td>
<td>Seminar in Solid-Earth Geophysics (3)</td>
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<td>612</td>
<td>Principles of Theoretical Geophysics I (3)</td>
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<tr>
<td>613</td>
<td>Principles of Theoretical Geophysics II (3)</td>
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<tr>
<td>615</td>
<td>Seismology (3)</td>
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<td>620</td>
<td>Seminar in Gravity of the Earth (3)</td>
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<td>621</td>
<td>Seminar in Geomagnetism (3)</td>
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<tr>
<td>641</td>
<td>Seminar in Ore Deposits (2)</td>
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<tr>
<td>651</td>
<td>Seminar in Geomorphology (2)</td>
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<tr>
<td>666</td>
<td>Advanced Field Studies (ar.)</td>
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<tr>
<td>671</td>
<td>Near-shore Marine Processes (2)</td>
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<tr>
<td>672</td>
<td>Seminar in the Geology of the Ocean Basins (2)</td>
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<tr>
<td>673</td>
<td>Principles of Sedimentology (3)</td>
<td></td>
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<tr>
<td>674</td>
<td>Sedimentary Petrography and Stratigraphy (3)</td>
<td></td>
</tr>
<tr>
<td>690</td>
<td>Seminar in Geochemistry (3)</td>
<td></td>
</tr>
<tr>
<td>699</td>
<td>Directed Research (ar.)</td>
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</tr>
<tr>
<td>800</td>
<td>Thesis Research (ar.)</td>
<td></td>
</tr>
</tbody>
</table>

**German**

**GRADUATE FACULTY**

B. Mueller, Ph.D. (Chairman)—Goethe, nineteenth-century literature

J. Michalski, M.A.—medieval period, twentieth-century literature

A. Moore, M.A.—Franco-German literary relations

Intended candidates must present a full undergraduate major in German or the equivalent. They must also demonstrate, by means of a personal interview or a tape recording, such fluency and accuracy in German as will insure successful participation in class discussion and research. They must also pass a proficiency test in a second European language.

The minimum requirement is 36 graduate credit hours. A maximum of 8 of the 36 hours may be elected from courses in related fields. Required courses are marked with an asterisk.
GERMAN

411-412  The Classical Period (3-3)
413-414  The Modern Period (3-3)
416      Renaissance and Baroque Literature (3)
417      The German Drama (3)
418      The Romantic Movement (3)
*601     History of the German Language (3)
602      Composition and Stylistics (3)
*615     Middle High German Masterpieces (3)
*693     Seminar in German Literature (5)

Four cycles, one of which is required: (a) Novel, 18th and 19th centuries; (b) Faust; (c) Lyric Poetry; (d) Novel, 20th century.

699      Directed Research (ar.)
800      Thesis Research (6)

EUROPEAN LANGUAGES

*630     Seminar in Research Methods (2)

History

GRADUATE FACULTY

H. F. Margulies, Ph.D. (Chairman)—United States political, the progressive era
G. Akita, Ph.D.—Far East, modern Japan
C. B. Cowing, Ph.D.—United States social and economic
W. A. Ernest, M.A.—Medieval Europe
Z. Gasiorowski, Ph.D.—Central and Eastern Europe
C. H. Hunter, Ph.D.—Hawaii, United States cultural
D. D. Johnson, Ph.D.—United States diplomatic, Latin America, United States in the Pacific
D. W. Y. Kwok, Ph.D.—modern China, Chinese thought
J. M. McCutcheon, Ph.D.—United States cultural and social
T. D. Murphy, Ph.D.—British Commonwealth, the Pacific
G. R. Nunn, Ph.D.—Asia, research methods and resources
S. Sakamaki, Ph.D.—Japan, Ryukyus
J. G. Sharma, Ph.D.—India
M. Shinoda, Ph.D.—Far East, pre-modern Japan
J. N. Stalker, Ph.D.—recent United States social and economic, United States—Far East relations
H. P. Varley, Ph.D.—Pre-Modern Japan
W. F. Vella, Ph.D.—Southeast Asia, Thailand
J. A. White, Ph.D.—Russia, Russia in Asia

Intended candidates for the M.A. or Ph.D. must present a minimum undergraduate preparation of 18 upper-division credits in history. Deficiencies in this regard or in preparation in the area of specialization may be made up before or during graduate study. Both thesis (plan A) and non-thesis (plan B) programs for the M.A. are offered according to graduate school regulations.

Courses in history are divided into three major geographic area classifications: Americas, Asia and Pacific, and Europe. Study in at least two
of these areas is required in all graduate programs, and general examinations are based upon sub-fields within the area.

Students are encouraged to take advanced courses in other disciplines related to their program of study. For the Ph.D. a minimum of 12 credits in a minor discipline is required.

Reading knowledge of one foreign language related to the area of specialization is required of M.A. candidates.

Courses available for graduate credit are listed below:

### Americas

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td>461-462</td>
<td>History of the United States to 1876 (3-3)</td>
</tr>
<tr>
<td>463-464</td>
<td>History of the United States since 1877 (3-3)</td>
</tr>
<tr>
<td>471-472</td>
<td>Diplomatic History of the United States (3-3)</td>
</tr>
<tr>
<td>475</td>
<td>Constitutional History of the United States (3)</td>
</tr>
<tr>
<td>481</td>
<td>American Thought and Culture (3)</td>
</tr>
<tr>
<td>491</td>
<td>The West in American History (3)</td>
</tr>
<tr>
<td>492</td>
<td>The South in American History (3)</td>
</tr>
<tr>
<td>511-512</td>
<td>History of Latin America (3-3)</td>
</tr>
<tr>
<td>634</td>
<td>American Social Reform Movements since 1865 (3)</td>
</tr>
<tr>
<td>635</td>
<td>The Colonial Period in American History (3)</td>
</tr>
<tr>
<td>637</td>
<td>The Progressive Period in American History (3)</td>
</tr>
<tr>
<td>641</td>
<td>Seminar in American Diplomatic History (3)</td>
</tr>
<tr>
<td>731</td>
<td>Advanced Problems and Reading in American History (3)</td>
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</table>

### Asia and Pacific

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>439</td>
<td>Australia and New Zealand (3)</td>
</tr>
<tr>
<td>527</td>
<td>Russian Siberia and the Pacific (3)</td>
</tr>
<tr>
<td>529-530</td>
<td>Southeast Asia (3-3)</td>
</tr>
<tr>
<td>531-532</td>
<td>History of China (3-3)</td>
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<tr>
<td>541-542</td>
<td>History of Japan (3-3)</td>
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<tr>
<td>543-544</td>
<td>Pre-Modern Japan c. 552-1868 (3-3)</td>
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<tr>
<td>551-552</td>
<td>South Asia (3-3)</td>
</tr>
<tr>
<td>553</td>
<td>Russian Central Asia and the Caucasus (3)</td>
</tr>
<tr>
<td>571</td>
<td>History of Oceania (3)</td>
</tr>
<tr>
<td>575</td>
<td>The United States in the Pacific (3)</td>
</tr>
<tr>
<td>577</td>
<td>History of the Hawaiian Islands (3)</td>
</tr>
<tr>
<td>659-660</td>
<td>Chinese Intellectual History (3-3)</td>
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<tr>
<td>661</td>
<td>Seminar in Chinese History (3)</td>
</tr>
<tr>
<td>663</td>
<td>Seminar in Indian History (3)</td>
</tr>
<tr>
<td>664</td>
<td>Seminar in Southeast Asian History (3)</td>
</tr>
<tr>
<td>665</td>
<td>Seminar in Japanese History (3)</td>
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<tr>
<td>666</td>
<td>Seminar in Political History of Modern Japan (3)</td>
</tr>
<tr>
<td>667-668</td>
<td>Japanese Intellectual History (3-3)</td>
</tr>
<tr>
<td>669-670</td>
<td>Seminar in Pre-Modern Japan (3-3)</td>
</tr>
<tr>
<td>671</td>
<td>Seminar in Russian History (3)</td>
</tr>
<tr>
<td>675</td>
<td>Seminar in Pacific History (3)</td>
</tr>
<tr>
<td>713</td>
<td>Research Materials and Methods in Asian History (3)</td>
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</table>

### Europe

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>401-402</td>
<td>Greek and Roman Civilizations (3-3)</td>
</tr>
<tr>
<td>405-406</td>
<td>Medieval Europe, 300-1300 (3-3)</td>
</tr>
</tbody>
</table>
Renaissance and Reformation, 1300–1600 (3)
Early Modern Europe, 1600–1800 (3)
Europe in the Nineteenth Century (3)
Europe Since Versailles (3)
History of England (3-3)
Constitutional History of England (3)
East Central Europe (3-3)
History of Germany (3)
History of Russia (3-3)
Seminar in European History (3)
British Empire and Commonwealth (3)
Seminar in Russian History (3)

Historiography, Historical Method, and Individual Research

Directed Research (ar.)
Seminar in Historical Methods (3)
Seminar in Historiography (3)
Thesis Research (ar.)

History and Philosophy of Education

F. Glenn Austin, Ph.D. (Chairman)—history, philosophy, social foundations
Shiro Amioka, Ph.D.—philosophy, Japanese education
Ronald S. Anderson, Ph.D.—comparative education
William H. Boyer, Ed.D.—philosophy, social foundations
Robert W. Clopton, Ph.D.—history, philosophy
Robert E. Potter, Ed.D.—history, philosophy, social foundations

Intended candidates for the M.Ed. must present a minimum of 18 semester hours in professional education courses, and in addition, credit for supervised student teaching or teaching experience.

Admission to candidacy is based upon (1) the quality of the student’s undergraduate record, (2) his scores on certain standardized examinations, and (3) his performance on the general examination.

Plan A: The program may include a maximum of 10 semester hours in approved courses outside the Department of History and Philosophy of Education, which are related to the candidate’s announced goals.

Plan B: The program normally includes 21 semester hours of Education of which 15 are in the Department of History and Philosophy of Education, and 15 semester hours (a minimum of 12) in a planned and approved sequence of courses which carry graduate credit in other fields.

In both plan A and plan B, requirements include 3 semester credits in educational psychology, 3 semester credits in research, at least two of the listed Ed HP courses which are marked with asterisks, and at least one seminar in the Department of History and Philosophy of Education.

Plan B requirements normally include an additional terminal seminar in the Department of History and Philosophy of Education.
In both plan A and plan B, courses in Fields of Study outside the Department of History and Philosophy of Education will normally be concentrated in one or two of the following: Philosophy, History, Economics, Political Science, Sociology, Anthropology, Asian Studies, American Studies, or another graduate field in Education.

Graduate courses in the Department of History and Philosophy of Education not listed below, but which are offered in summer sessions or during the year by visiting professors, may be included in degree programs with the approval of the Chairman.

### HISTORY AND PHILOSOPHY OF EDUCATION

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
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<td>History of Education</td>
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<tr>
<td>*HP 660</td>
<td>Philosophy of Education</td>
<td>3</td>
</tr>
<tr>
<td>*HP 670</td>
<td>Comparative Education: Europe and America</td>
<td>3</td>
</tr>
<tr>
<td>*HP 671</td>
<td>Comparative Education: The Orient</td>
<td>3</td>
</tr>
<tr>
<td>HP 672</td>
<td>Education and the World Community</td>
<td>3</td>
</tr>
<tr>
<td>HP 681 (681)</td>
<td>The Church and the School</td>
<td>2</td>
</tr>
<tr>
<td>*HP 683 (683)</td>
<td>Social Foundations of Education</td>
<td>3</td>
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<tr>
<td>HP 684 (684)</td>
<td>Interpersonal Relationships in Education</td>
<td>3</td>
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<tr>
<td>HP 685 (685)</td>
<td>Education in America</td>
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<tr>
<td>HP 699</td>
<td>Directed Research (ar.)</td>
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<tr>
<td>HP 751</td>
<td>History of American Education</td>
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<tr>
<td>HP 757</td>
<td>Educational Classics</td>
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<tr>
<td>HP 763</td>
<td>Seminar in Educational Theory</td>
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<tr>
<td>HP 765</td>
<td>Comparative Ideologies and Education</td>
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<tr>
<td>HP 768</td>
<td>Seminar in Problems in Education</td>
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<tr>
<td>HP 770</td>
<td>Seminar in Comparative Education</td>
<td>2</td>
</tr>
</tbody>
</table>

### Horticulture

**GRADUATE FACULTY**

- J. C. Gilbert, Ph.D. (Chairman)—vegetable breeding
- J. L. Brewbaker, Ph.D.—radiation genetics
- R. A. Hamilton, Ph.D.—tropical fruit improvement
- H. Kamemoto, Ph.D.—ornamental cytogenetics
- H. Y. Nakasone, Ph.D.—tropical fruit breeding
- R. R. Romanowski, Ph.D.—vegetable physiology
- Y. Sagawa, Ph.D.—developmental morphology and cytogenetics
- R. M. Warner, Ph.D.—tropical fruit ecology

**AFFILIATE FACULTY**

- R. L. Cushing, M.S.—plant genetics
- D. B. Heinz, Ph.D.—sugar cane cytogenetics
- K. R. Kerns, M.S.—plant breeding
- B. Krauss, M.S.—plant physiology
- L. G. Nickell, Ph.D.—plant physiology
- J. B. Smith, Ph.D.—plant genetics
- J. N. Warner, Ph.D.—sugar cane breeding
- D. P. Watson, Ph.D.—ornamentals
Intended candidates for the M.S. or Ph.D. in Horticulture must present a minimum of 24 hours of undergraduate credit in plant sciences (including botany, horticulture, agronomy, plant pathology) and related fields. Basic courses in chemistry and botany are required. Deficiencies must be made up without credit.

Courses available for graduate credit are listed below. Related fields in which credit will normally be allowed toward the degrees in Horticulture include Agronomy, Biochemistry, Biophysics, Botany, Entomology, Food Science, Genetics, Microbiology, Plant Pathology, Soil Science, and Zoology. Required courses are marked with an asterisk.

**HORTICULTURE**

- 453 Principles of Plant Breeding (3)
- 463 Principles of Floriculture (3)
- 464 Orchidology (3)
- 471 Post-Harvest Physiology (3)
- 494 Systematic Vegetable Crops (3)
- 566 Advanced Tropical Pomology (3)
- 603 Experimental Design (2)
- 611 Advanced Plant Breeding (3)
- 666 Radiation Biology (3)
- 667 Horticulture Seminar (1)
- 668 Growth Regulators in Horticulture (2)
- 691 Crop Ecology (3)
- 699 Directed Research (ar.)
- 711 Special Topics in Experimental Horticulture (ar.)
- 800 Thesis Research (ar.)

**Japanese**

**GRADUATE FACULTY**

- J. Young, Ph.D. (Chairman)—applied linguistics
- J. T. Araki, Ph.D.—literature
- N. Fujioka, M.A.—grammar, history of the Japanese language
- H. Ikeda, Ph.D.—narrative literature, bibliography
- Y. Uyehara, M.A.—contemporary literature, poetry
- K. Yasuda, D.Litt.—classical literature, poetry

There are three major fields of concentration: literature, language, and teaching of Japanese as a second language. Intended candidates for the M.A. degree must have a B.A. degree in Japanese or have had equivalent preparation in the discipline.

The minimum requirement for this degree is 24 semester hours of course work and 6 semester hours of thesis research. A minimum of 18 credit hours of course work, for which graduate credit is given, must be selected from courses in Japanese and the rest in related fields. No more than 6 credits from courses numbered below 600 may be applied toward satisfaction of this requirement. In addition, a reading knowledge of some other language approved by the department is required.

Courses must be selected from those listed below. Required courses
are marked with an asterisk. Courses required for a B.A. in Japanese cannot be used toward the degree.

**JAPANESE**

- 401-402 Japanese Literature in English (2-2)
- 408 Structure of Japanese (3)
- 415-416 Japanese Grammar—Colloquial (3-3)
- 417-418 Fourth-Year Japanese (3-3)
- 421-422 Japanese Grammar—Classical (3-3)
- 431-432 Introduction to Classical Japanese Literature (3-3)
- 440 Advanced Japanese Composition (2)
- 493 Reference Materials for Japanese Studies (2)
- 611-612 Contemporary Japanese Literature (3-3)
- 613-614 Edo Literature (3-3)
- 615-616 Classical Japanese Literature (3-3)
- 619-620 Japanese Poetry (3-3)
- 631-632 History of the Japanese Language (3-3)
- 641-642 Contrastive Studies of Japanese and English Structure (3-3)
- 643-644 Methodology in Teaching Japanese as Second Language (3-3) *694 Japanese Bibliography (3)
- 699 Directed Research (ar.)
- *701-702 Research Seminar in Japanese (2-2)
- *800 Thesis Research (ar.)

**Library Studies**

**GRADUATE FACULTY**

R. R. Shaw, Ph.D. (Director)—administration and documentation
M. W. Ayrault, M.S.—cataloging and classification
G. S. Bunn, M.S.—science and technology, government documents
E. R. Casellas, M.S.—business and economics literature
R. C. Simon, M.S.—scientific management, and systems design
R. D. Stevens, M.A.—technical services
M. Taylor, M.L.S.—building library collections
C. L. Tom, M.S.—general reference and children's literature

The program leading to the degree of Master of Library Studies consists of a core curriculum to provide the basic professional equipment for all types of library work and enough electives to enable each student to explore one area of specialization.

**College, Public, and Special Librarians:** The normal basic curriculum for Public, College, and Special Librarians includes the following courses, to be taken generally in the order given below. Field experience, on a noncredit basis, will be available to persons interested in firsthand contact with children, young adult, and adult services.

**LIBRARY STUDIES**

- 601 Bibliography and Reference Sources (3)
- 602 Advanced Reference Sources (3)
- 605 Basic Cataloging and Classification (3)
- 610 Social Functions of Libraries (3)
- 615 Building Library Collections (3)
Management of Library Operations (3)
Administration of Libraries (3)
Reader Services (3)

ELECTIVES FOR COLLEGE, PUBLIC, OR SPECIAL LIBRARIANS

Advanced Cataloging and Classification (3)
Audio-Visual Services in Libraries (3)
Science and Technology Literature (3)
Business and Economic Literature (3)
Abstracting and Indexing for Information Services (3)
Literature Searching and Documentation (3)
Evaluation and Use of Popular Literature (3)
Reading Materials for Children (3)
Reading Materials for Youth (3)
Service for Children and Young People (3)
Traditional Literature and Oral Narration (3)
Field Seminar (during last term in the School) (3)

School Librarians: The basic program for school library work is identical with the above except that the course in Service for Children and Young People is substituted for the course in Administration and the following additional courses are specified:

LIBRARY STUDIES

Audio-Visual Services in Libraries (3)
Reading Materials for Children (3)
Reading Materials for Youth (3)
Field Seminar (during last term in the School) (3)

School librarians who wish to qualify for work in other states will require 36 hours of library school study and an additional 12 credit hours is frequently designated in fields of education in certain states. Supervised practice work in a school library, arranged by a faculty member of the School of Library Studies, is also required for certification in some states; and students who want to make sure that their degree will qualify them for certification in other states should make enquiries in advance through the Director's office.

Linguistics

GRADUATE FACULTY

H. P. McKaughan, Ph.D. (Chairman)—advanced linguistic analysis, Malayan and Papuan languages
S. H. Elbert, Ph.D.—comparative and historical linguistics, Micronesian and Polynesian languages
G. W. Grace, Ph.D.—comparative and historical linguistics, Malayo-Polynesian languages
A. J. Schutz, Ph.D.—introductory analysis, field methods, Melanesian and Polynesian languages
D. M. Topping, Ph.D.—introductory method, applied linguistics, Philippine and Micronesian languages
S. M. Tsuzaki, Ph.D.—introductory analysis, languages in contact, Romance linguistics
Intended candidates for the M.A. or Ph.D. in linguistics must present a minimum background of 27 credits in language study or be prepared to make up such work during the first year of graduate study. Included in this background should be the following, or the equivalent: 3 hours of introductory linguistics, 3 hours of introductory work in historical-comparative linguistics and at least 6 hours of the structure of English. Those not fulfilling these specified requirements may be admitted to candidacy only under conditions stipulated by the Graduate Faculty.

**M.A. Requirements**

Only the plan A (thesis) program is available. The regular Graduate School requirement of a general examination and a final examination (thesis defense) will be augmented by a comprehensive examination near the end of the candidate's residence work. A reading knowledge of French or German, to be demonstrated at least one full semester before the candidate takes his comprehensive examination, is required. The substitution of another language may be made if there is sufficient linguistic literature in such language. The program of courses will be planned to assure the candidate's competence in the following areas: phonetics and phonemics; morphology and syntax; comparative and historical linguistics; the structure of a specific language; methodology, including field methods and informant techniques; current linguistic research; additional work in linguistics and/or supporting areas such as anthropology.

**Ph.D. Requirements**

In addition to the preparation described as prerequisite for the M.A., the doctoral candidate must demonstrate competence in advanced linguistic analysis, descriptive techniques, comparative method, and field methods. A major portion of the work beyond the M.A. level will be done in seminars and directed research. Ph.D. candidates must pass a comprehensive examination and a final oral examination in defense of the thesis. Competence in two languages other than the candidate's native tongue is required. In general the languages should be French and German. The doctoral candidate is expected also to have one or more minor fields, selected in consultation with the Department. Possible fields include Anthropology, Asian and Pacific languages, English, European languages, Philosophy, Psychology, and Speech or selected portions thereof. The doctoral dissertation must be a scholarly presentation of an original contribution to knowledge. In general, the dissertation should be based on field work though theoretical contributions will also be encouraged.

Courses for the graduate program may be selected from those listed below and from offerings in related Fields of Study as directed by the candidate's supervisory committees.

68
Linguistics

610 Articulatory Phonetics (3)
620 Introduction to Linguistic Analysis (3)
621 Phonemics (3)
622 Morphology and Syntax (3)
630 Field Methods (3)
645 Comparative Method (3)
650 Advanced Linguistic Analysis (3)
699 Directed Research (ar.)
710 Areal Linguistics (3)
750 Seminar (3)
760 Problems in Comparison and Pre-history (3)
780 Ethno-Linguistics (3)
800 Thesis Research (ar.)

Mathematics

Graduate Faculty

C. Gregory, Ph.D. (Chairman)—applied mathematics, differential equations, statistics, theoretical physics
E. J. Appleby, Ph.D.—applied mathematics
J. C. Kudar, Ph.D.—applied mathematics
H. Loomis, Ph.D.—applied mathematics
E. H. Mookini, M.S.—calculus of variations, modern algebra, numerical analysis
K. Rogers, Ph.D.—algebra
F. Straus, Ph.D.—algebra
H. A. White, Ph.D.—statistics
H. Yamauchi, Ph.D.—applied mathematics
Z. Z. Yeh, Ph.D.—analysis

Intended candidates must present a minimum undergraduate preparation of 27 credits in mathematics, including analytic geometry and differential and integral calculus. College physics is recommended. One or more of the following courses are recommended but not required: differential equations, advanced calculus, theory of equations, vector analysis, statistics, and logic.

Courses for graduate credit are to be selected from those listed below. Required courses are marked with an asterisk. Additional courses may be elected from courses in logic, theoretical courses in mechanics, electricity and magnetism, atomic and nuclear physics, and electrical and mechanical engineering.

Mathematics

401-402 Differential Equations (3-3)
410 Numerical Methods for Algebraic Equations (3)
411 Numerical Methods for Differential Equations (3)
421 Introduction to Modern Algebra (3)
422 Matrices and Theory of Equations (3)
*431-432 Advanced Calculus (3-3)
442 Vector Analysis (3)
444 Theory of Functions of a Complex Variable (3)
471 Probability (3)
472 Statistical Inference (3)
501-502 Theory of Sets and Metric Spaces (3-3)
601-602 Applied Mathematics (3-3)
611-612 Modern Algebra (3-3)
621-622 Topology (3-3)
631-632 Theory of Functions of a Real Variable (3-3)
644-645 Analytic Function Theory (3-3)
*650 Seminar (1)
*699 Directed Research (ar.)
*800 Thesis Research (ar.)

Meteorology

GRADUATE FACULTY
C. S. Ramage, Ph.D. (Chairman)—tropical meteorology
W. C. Chiu, Ph.D.—stratospheric meteorology, large scale atmospheric turbulence, atmospheric oscillations
P. C. Ekern, Ph.D.—agricultural meteorology, hydrology
M. A. Estoque, Ph.D.—numerical analysis and prediction, atmospheric boundary layer phenomena

AFFILIATE FACULTY
S. Price, B.S.—physical meteorology
A. H. Woodcock, D.Sc.—cloud physics

Intended candidates for an advanced degree must present a thorough preparation in general physics, chemistry, and mathematics, through calculus, as well as a minimum of 14 hours of undergraduate credit in meteorology including courses in climatology, instruments and observations, descriptive meteorology, and synoptic meteorology. Deficiencies in undergraduate preparation must be made up. A reading knowledge of one foreign language is required for the M.S. In addition to the examinations prescribed by the Graduate School, candidates for the M.S. must pass a comprehensive examination in the field.

Courses available for graduate credit are listed below. Courses may also be allowed in the fields of Oceanography, Physics, and Mathematics.

METEOROLOGY AND OCEANOGRAPHY
575 Advanced Tropical Meteorology (6)
624 Atmospheric Turbulence (3)
673 Cloud Physics (3)
674 Physical Meteorology (3)
675 Numerical Analysis and Prediction (5)
676 Statistical Meteorology (3)
680 Advanced Theoretical Meteorology I (3)
681 Advanced Theoretical Meteorology II (3)
682 Special Topics in Meteorology (3)
683 Advanced Topics in Synoptic Meteorology I (3)
684 Advanced Topics in Synoptic Meteorology II (3)
685 Seminar I (1)
686 Seminar II (1)
687 Problems in Tropical Meteorology (2)
699 Directed Research (ar.)
800 Thesis Research (ar.)
Microbiology

**GRADUATE FACULTY**

A. A. Benedict, Ph.D. (Chairman)—immunology
L. R. Berger, Ph.D.—general bacteriology and physiology
O. A. Bushnell, Ph.D.—medical and economic bacteriology
G. W. Chu, D.Sc.—medical bacteriology and parasitology
D. E. Contois, Ph.D.—general bacteriology and physiology
C. E. Folsome, Ph.D.—general bacteriology and microbial genetics
H. R. Hohl, Ph.D.—general microbiology and microbial cytology
P. C. Loh, Ph.D.—virology

**AFFILIATE FACULTY**

E. J. Anderson, Ph.D.—nematology
J. Kern, Ph.D.—virology
H. Klemmer, Ph.D.—economic bacteriology
M. Levine, Ph.D.—public health and medical bacteriology
J. Stephenson, M.D.—medical bacteriology
K. Wilcox, Ph.D.—medical bacteriology

Intended candidates must present a minimum of 15 hours of undergraduate work in microbiology, a basic course in biology, botany, or zoology, and courses in general and organic chemistry, quantitative analysis, and college physics. Deficiencies in undergraduate preparation must be made up.

Courses for the graduate program are to be selected from those listed below and from others offered in the related fields of Biochemistry and Biophysics, Chemistry, Genetics, Plant Pathology, Public Health, Soil Science, and Zoology. Required courses are marked with an asterisk.

**MICROBIOLOGY**

- 625 Immunology (3)
- 627 Techniques of Immunology (3)
- 632 Advanced Microbial Physiology (3)
- 655 Virology (2)
- 657 Virology Laboratory (3)
- 661 Ultrastructure of Microorganisms (3)
- 671 Microbial Genetics (4)
- *690 Seminar (1)
- *699 Directed Research (ar.)
- 800 Thesis Research (ar.)

**Music**

**GRADUATE FACULTY**

N. D. Rian, Ed.D. (Chairman)—music education
M. Kerr, M.M.—music performance, piano
O. F. Paul, Ed.D.—music education
A. Russell, D.M.A.—music composition
B. B. Smith, M.M.—ethnomusicology
R. Vaught, Ph.D.—musicology
R. W. Vine, M.M.—music performance, voice
Intended candidates for the master's degree in Music must present an undergraduate degree with a major in music or an undergraduate degree in another field with evidence of an equivalent musical background. For concentration in music education a record of teaching experience should be presented.

The M.A. in Music is offered with concentration in ethnomusicology, in musicology, and in music education. The M.F.A. in Music is offered with concentration in composition and in performance. Normally a maximum of 6 credit hours may be selected from advanced courses in other disciplines closely related to the field of thesis research as determined by the supervising committee. For concentration in musicology a reading knowledge of French or German is required; for concentration in other areas a foreign language appropriate to the field of thesis research may be required as determined by the supervising committee. The requirement of 12 or 18 credits of courses numbered 600 or above may be waived by the Graduate Faculty except for candidates in music education.

Candidates concentrating in music education may choose between the thesis program and the nonthesis program which normally includes 12 credit hours in education and music education, 18 credit hours in music, and 6 credit hours in related courses as advised by the supervising committee. Requirements for the Hawaii State Department of Education Professional Certificate may be met in the M.A. Program in Music Education.

Courses for the graduate major must be selected from those listed below. A limited number of credit hours may be selected from advanced courses in Anthropology, Drama, Education, literature in English, Asian, Pacific or European languages, Philosophy, Psychology, Sociology, or other pertinent fields. A seminar in the field of concentration is required of all candidates.

**MUSIC**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>University Concert Choir (1)</td>
</tr>
<tr>
<td>401</td>
<td>Ensemble Music (1)</td>
</tr>
<tr>
<td>405</td>
<td>University Orchestra (1)</td>
</tr>
<tr>
<td>409</td>
<td>University Concert Band (1)</td>
</tr>
<tr>
<td>435</td>
<td>Individual Instruction (ar.)</td>
</tr>
<tr>
<td>451</td>
<td>Advanced String Methods (2)</td>
</tr>
<tr>
<td>452</td>
<td>Advanced Woodwind Methods (2)</td>
</tr>
<tr>
<td>453</td>
<td>Advanced Brass Methods (2)</td>
</tr>
<tr>
<td>†461</td>
<td>Music of the Baroque Period (2)</td>
</tr>
<tr>
<td>†462</td>
<td>Music of the Classic Period (2)</td>
</tr>
<tr>
<td>†463</td>
<td>Music of the Romantic Period (2)</td>
</tr>
<tr>
<td>†464</td>
<td>Contemporary Music (2)</td>
</tr>
<tr>
<td>470</td>
<td>Music of Asia (3)</td>
</tr>
<tr>
<td>471</td>
<td>Music of Nonliterate Peoples (3)</td>
</tr>
<tr>
<td>481</td>
<td>Advanced Orchestration (2)</td>
</tr>
<tr>
<td>*483-*484</td>
<td>Counterpoint (2-2)</td>
</tr>
<tr>
<td>*485-*486</td>
<td>Form and Analysis (2-2)</td>
</tr>
</tbody>
</table>

*Graduate credit not available to candidates for a degree in composition.
†Graduate credit not available to candidates for a degree in musicology.
\*487-\*488 Composition (2-2)
\*489-\*490 Advanced Composition (2-2)
600 Seminar (3)
635 Advanced Individual Instruction (3) MFA only
650 Seminar: Problems in Music Education (2)
651 Foundations in Music Education (2)
654 Pacific and Asian Music in Education (2)
657-658 Advanced Conducting (2-2)
661 Bibliography and Research Methods in Music (3)
699 Directed Research (ar.)
800 Thesis Research (ar.)

**Nursing**

**GRADUATE FACULTY**

V. Jones, M.Ed. (Chairman)—public health nursing
C. Canfield, M.P.H.—public health nursing
Y. Gross, M.S.—psychiatric nursing
L. Love, M.S.—psychiatric nursing
F. Ozaki, M.A.—maternal-child nursing

Intended candidates must present a baccalaureate nursing degree, which includes public health and psychiatric nursing, or an acceptable equivalent. Prerequisite to all programs is a course in elementary statistics. In addition, a broad foundation of related courses in the social sciences, natural sciences, and the humanities is strongly recommended. The applicant must have active registration for the practice of nursing.

All students in nursing taking plan B (nonthesis) are required to take a minimum of 36 hours of graduate credits of which 18 credits will be in nursing courses and 18 credits in other fields of study.

**NURSING**

600-601 Methods of Research (2-2)
610 Curriculum Development (3)
620 Concepts of Leadership in Nursing (3)
630 Advanced Nursing Seminars (2)
640 Advanced Nursing Practicum (2)
655 Contemporary Psychiatric Theories (3)
699 Directed Research (ar.)

**Nutrition**

**GRADUATE FACULTY**

D. M. Hilker, Ph.D. (Chairman)—carbohydrate metabolism, enzymology
M. L. Brown, Ph.D.—reproduction and early growth
I. J. Lichton, Ph.D.—fluid handling, endocrinology
B. R. Standal, Ph.D.—protein, lipid metabolism

Intended candidates for the M.S. in Nutrition must present the following undergraduate preparation: general chemistry, qualitative analysis, quantitative analysis, organic chemistry, biology, general physics, college algebra, trigonometry, and an adequate preparation in nutrition. Courses
for the graduate major are to be selected from those listed below. Additional graduate courses may be taken in Animal Science, Chemistry, Biochemistry, Food Science, Microbiology, Zoology, or other related fields.

**NUTRITION**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>601-602</td>
<td>Human Nutrition</td>
<td>(3-3)</td>
</tr>
<tr>
<td>621</td>
<td>Topics in Nutrition</td>
<td>(2)</td>
</tr>
<tr>
<td>651</td>
<td>Dietary Studies</td>
<td>(ar.)</td>
</tr>
<tr>
<td>652</td>
<td>Laboratory Methods in Nutrition</td>
<td>(3)</td>
</tr>
<tr>
<td>699</td>
<td>Directed Research</td>
<td>(ar.)</td>
</tr>
<tr>
<td>701</td>
<td>Seminar</td>
<td>(1)</td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research</td>
<td>(ar.)</td>
</tr>
</tbody>
</table>

**Oceanography**

**GRADUATE FACULTY**

- V. E. Brock, M.A. (Chairman)—biological
- C. W. Adams, M.S.—physical
- T. K. Chamberlain, Ph.D.—geological
- M. Gilmartin, Ph.D.—biological
- G. W. Groves, Ph.D.—physical
- B. F. Pasley, M.S.—chemical
- K. Wyrtki, Ph.D.—physical

**AFFILIATE FACULTY**

- R. Barkley, Ph.D.—physical
- J. C. Marr, M.A.—biological
- C. R. Seckel, M.S.—physical

The University currently offers a master's degree program in physical, chemical, geological, and biological oceanography, and anticipates expansion of this program to the doctorate by 1965-66.

Intended candidates should have a major in one of the sciences, mathematics, or engineering. Depending upon the specific areas of interest in oceanography, undergraduate deficiencies if any, will be determined by the faculty. A reading knowledge of a foreign language is required.

Students pursuing a degree program must take the following courses or their equivalents: Ocn 620, 621, 622, 623, 625, 799 (two units).

Courses listed below are available for credit in the degree program. Additional courses may be selected from the fields of Botany, Chemistry, Engineering, Geology, Mathematics, Meteorology, Physics, and Zoology.

It should be understood that many oceanography courses involve varying amounts of work at sea although specific activity levels per course are not shown since lengths, objectives, and times of occurrence vary.

**OCEANOGRAPHY**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>620</td>
<td>Physical Oceanography</td>
<td>(3)</td>
</tr>
<tr>
<td>621</td>
<td>Biological Oceanography</td>
<td>(3)</td>
</tr>
<tr>
<td>622</td>
<td>Geological Oceanography</td>
<td>(3)</td>
</tr>
<tr>
<td>623</td>
<td>Chemical Oceanography</td>
<td>(2)</td>
</tr>
<tr>
<td>625</td>
<td>Sea and Laboratory Techniques</td>
<td>(2)</td>
</tr>
<tr>
<td>631</td>
<td>Marine Phytoplankton</td>
<td>(3)</td>
</tr>
</tbody>
</table>
Overseas Operations Program

GRADUATE FACULTY
J. N. Stalker, Ph.D. (Chairman)—current Asian affairs
J. M. Allison, LL.D.—foreign affairs

The Overseas Operations Program is a prescribed course of study leading to a master's degree. It is designed to prepare graduate students for service in Asia with international organizations, agencies of the United States government, and private institutions and industries.

In conjunction with the objectives of the program and a student's background and interests, a coordinated course of study is prescribed to qualify a student for a career in international service. An Asian language is required, and the student must demonstrate a genuine proficiency in at least one Asian language before the degree will be granted. Students will be expected to engage in intensive independent study connected with their individual specialities as these relate to Asia.

No thesis is required for the degree; however, the following basic requirements must be met by all students:

1) 36 semester hours, including an internship of 6 semester hours;
2) required seminars in Agriculture, Economics, History, Philosophy, and Political Science;
3) fluency in at least one Asian language;
4) oral and written comprehensive examinations;
5) the submission of a satisfactory internship paper which relates knowledge gained in the program to practical application overseas.

Courses available for graduate credit are:

OVERSEAS OPERATIONS
601–602 Internship in Overseas Operations (6)
699 Directed Readings (3–3)
The required undergraduate background is 18 hours of credit dealing with the Pacific Islands area in such fields as the following: anthropology, art, geography, history, literature, music, political science, and sociology. A basic course in either anthropology or geography of the Pacific Islands is required. Candidates are urged to acquire a reading knowledge of French, German, Hawaiian, Japanese, or Spanish and to utilize the chosen language in thesis research.

Courses are to be selected from those listed below in such manner as to provide an integrated program bearing upon a particular concentration of interest. At least three departments, other than language, must be represented. In valid instances, courses relating to the Pacific Islands in certain fields such as agriculture, botany, chemistry, microbiology, nutrition, and zoology, may be substituted. Required courses are marked with an asterisk.

**ANTHROPOLOGY**

450 Regional Cultures of Oceania (3)
   (1) Hawai'i
   (2) Micronesia
   (3) Polynesia
   (4) Melanesia

460 Regional Archaeology (3)
   (1) Asia and the Pacific

699 Directed Research (ar.)

750 Research Seminar in Oceania (3)

**ENGLISH**

585 Literature of the Pacific (3)

699 Directed Research (ar.)

**GEOGRAPHY**

561 Geography of Australia and New Zealand (2)

571 Geography of the Pacific Islands (3)

578 Geography of Hawaii (3)

580 Geography of the Tropics (3)

665 Seminar in Geography of the Pacific (3)

699 Directed Research (ar.)

**HISTORY**

439 Australia and New Zealand (3)

571 History of Oceania (3)

575 The United States in the Pacific (3)

577 History of the Hawaiian Islands (3)

675 Seminar in Pacific History (3)

699 Directed Research (ar.)

76
MUSIC
471 Music of Nonliterate Peoples (3)
600 Seminar (in Ethnomusicology) (3)
654 Pacific and Asian Music in Education (2)
699 Directed Research (ar.)

PACIFIC ISLANDS
699 Directed Research (ar.)
800 Thesis Research (ar.)

POLITICAL SCIENCE
422 Government of Hawaii (3)
450 Government and Politics of Polynesia (3)
651 Development Administration (3)
699 Directed Reading and Research (ar.)

SOCIOLOGY
451 Race Relations in the Pacific (3)
699 Directed Research (ar.)

Philosophy

GRADUATE FACULTY
W. E. Nagley, Ph.D. (Chairman)—history of Western religious philosophy, existential philosophy
C. Y. Cheng, Ph.D.—Chinese philosophy, philosophy of language
R. P. Haynes, Ph.D.—history and theory of Greek philosophy, ethics
K. K. Inada, Ph.D.—history and theory of Buddhist philosophy, Asian thought
H. E. McCarthy, Ph.D.—history and theory of metaphysics, philosophy of art
C. A. Moore, Ph.D.—Oriental and East-West philosophy
M. D. Resnick, Ph.D.—symbolic logic, foundations of mathematics
S. K. Saksena, Ph.D.—history and theory of Indian philosophy, comparative: Indian and Western

Intended candidates for the M.A. or the Ph.D. must present a minimum undergraduate background of 24 credits in philosophy, including courses in history of philosophy, ethics, logic, and contemporary philosophy. Related courses in anthropology, art, drama, Far Eastern studies, history, literature, mathematics, psychology, sociology, and the biological and physical sciences are recommended.

Degrees are offered in three specific areas of Philosophy: (1) Western Philosophy. All graduate students in Philosophy must acquire a first-rate knowledge of the history and problems of Western philosophy. The Western tradition is the lecture and research frame of reference for the Department and serves as the base of operations for its unique work in the Asian and Comparative fields. Degree candidates are to be oriented in the same manner. (2) Asian Philosophy. Resting on the mandatory mastery of the Western field, the Department offers the Asian field of specialization. Three areas in the Asian field are available: Indian, Buddhist, or Chinese. (3) Comparative Philosophy. In this field the candidate elects a comparison of any one of the three Asian fields, Indian, Buddhist, or Chinese, with any
one of the three Western fields, Greek, Modern Classical, or Contemporary. Full details of all programs are available in a special brochure.

Western

PHILOSOPHY

410 American Philosophy (3)
431 Symbolic Logic I (3)
432 Symbolic Logic II (3)
433 Philosophy of Mathematics (3)
434 Philosophy of Language (3)
435 British Empiricism (3)
436 Continental Rationalism (3)
440 Political Philosophy (3)
475 Plato (3)
476 Aristotle (3)
500 Philosophy of Art (3)
505 Philosophy of Religion (3)
510 Philosophy in Literature (3)
515 Philosophy of History (3)
520 Existential Philosophy (3)
550 Theory of Science (3)
555 Foundations of Science (3)
601 Seminar in Greek Philosophy (3)
610 Seminar in Modern Philosophy (3)
620 Seminar in Contemporary Philosophy (3)

Eastern

445 Philosophical Foundations of Indian Culture (3)
450 Indian Philosophy (3)
451 Contemporary Indian Philosophy (3)
453 Indian Social Philosophy (3)
454 Indian Logic (3)
460 Introduction to Buddhist Philosophy (3)
461 Theravada Buddhist Philosophy (3)
462 Mahayana Buddhist Philosophy (3)
464 Zen Buddhist Philosophy (3)
470 Introduction to Chinese Philosophy (3)
471 Confucianism (3)
650 Seminar in Indian Philosophy (3)
660 Seminar in Buddhist Philosophy (3)
670 Seminar in Chinese Philosophy (3)

Comparative

465 Philosophy, East and West (3)
680 Seminar in Comparative Philosophy (3)
*699 Directed Research (Greek, Modern Classical, Contemporary Western, Indian, Buddhist, Chinese, and Comparative) (ar.)
*800 Thesis Research (ar.)

Physics

GRADUATE FACULTY

J. R. Holmes, Ph.D. (Chairman)—optics, spectroscopy
R. J. Cence, Ph.D.—elementary particles
S. Y. H. Hee, Ph.D.—nuclear physics, optics
J. T. Jefferies, D.Sc.—astrophysics
J. C. Kudar, Ph.D.—theoretical physics
H. C. McAllister, Ph.D.—optics, spectroscopy
I. Miyake, M.S.—acoustics, electronics
F. Q. Orrall, Ph.D.—astrophysics
V. Z. Peterson, Ph.D.—elementary particles
W. Pong, Ph.D.—solid state
W. R. Steiger, Ph.D.—optics, atmospheric and solar physics
V. J. Stenger, Ph.D.—elementary particles
K. Watanabe, Ph.D.—spectroscopy

Intended candidates for the M.S. or Ph.D. must present a minimum of 35 semester hours of undergraduate credits in physics, including atomic and nuclear physics, electromagnetism, mechanics, optics, and thermodynamics. Year courses in general chemistry and differential equations are also required. Official scores of the aptitude and the physics tests of the Graduate Record Examination must be submitted prior to admission.

Courses available for graduate credit are listed below. Required courses are marked with an asterisk. Additional courses may be selected, with approval, in Mathematics, Chemistry, Meteorology, Engineering, and Philosophy.

**PHYSICS**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>400</td>
<td>Nuclear Science Laboratory (2)</td>
</tr>
<tr>
<td>440</td>
<td>Physical Electronics (3)</td>
</tr>
<tr>
<td>600-601</td>
<td>Methods of Theoretical Physics (3–3)</td>
</tr>
<tr>
<td>605-606</td>
<td>Modern Physics Laboratory (1 or 2)</td>
</tr>
<tr>
<td>*610</td>
<td>Analytical Mechanics I (3)</td>
</tr>
<tr>
<td>611</td>
<td>Analytical Mechanics II (3)</td>
</tr>
<tr>
<td>620</td>
<td>Physics of the Upper Atmosphere (3)</td>
</tr>
<tr>
<td>625–626</td>
<td>Modern Astrophysics (3–3)</td>
</tr>
<tr>
<td>630</td>
<td>Statistical Mechanics (3)</td>
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<tr>
<td>*650</td>
<td>Electrodynamics I (3)</td>
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<tr>
<td>651</td>
<td>Electrodynamics II (3)</td>
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<tr>
<td>660</td>
<td>Advanced Optics (3)</td>
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<td>*670</td>
<td>Quantum Mechanics I (3)</td>
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<tr>
<td>671</td>
<td>Quantum Mechanics II (3)</td>
</tr>
<tr>
<td>677</td>
<td>Nuclear Physics I (3)</td>
</tr>
<tr>
<td>678</td>
<td>Nuclear Physics II (3)</td>
</tr>
<tr>
<td>680</td>
<td>Atomic and Molecular Spectra (3)</td>
</tr>
<tr>
<td>685</td>
<td>Solid State Theory (3)</td>
</tr>
<tr>
<td>*690</td>
<td>Seminar (1)</td>
</tr>
<tr>
<td>699</td>
<td>Directed Research (ar.)</td>
</tr>
<tr>
<td>700</td>
<td>Seminar on Elementary Particle Physics (1)</td>
</tr>
<tr>
<td>710</td>
<td>Quantum Theory of Fields (3)</td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research (ar.)</td>
</tr>
</tbody>
</table>

**Plant Pathology**

**GRADUATE FACULTY**

R. B. Hine, Ph.D. (Chairman)—soil-borne fungal diseases
M. Aragaki, Ph.D.—fungus physiology, sporulation, bacterial diseases
I. V. Buddenhagen, Ph.D.—bacterial diseases
S. Goto, Ph.D.—epidemiology, diseases of ornamentals
O. V. Holtzmann, Ph.D.—parasitic nematodes, diseases of fruits and nuts
M. Ishii, Ph.D.—virology, diseases of vegetable crops
E. E. Trujillo, Ph.D.—banana diseases, soil-borne fungal diseases

AFFILIATE FACULTY
E. J. Anderson, Ph.D.—soil-borne fungal and nematode diseases
W. J. Apt, Ph.D.—nematology, pineapple diseases
H. W. Klemmer, Ph.D.—soil microbiology
H. Koike, Ph.D.—sugar cane diseases, soil microbiology
C. A. Wismer, Ph.D.—diseases of sugar cane

Intended candidates for the M.S. in Plant Pathology must present a minimum of 18 hours of undergraduate credit in agricultural plant sciences, botany, or entomology. The undergraduate program should also include two years of chemistry, one year of physics, one year of mathematics, and basic courses in bacteriology, economics, English composition, genetics, soils, and zoology.

Both plan A and B are available. Plan B is designed for those students who do not intend to make plant pathological research their profession. In this program at least 9 credits of work in courses numbered 600–799 shall be earned in the major field. Six credits must be earned in directed research in the major field. Students may change from plan A to plan B only with the approval of the Graduate Faculty.

Courses available for graduate credit are listed below. In addition, selected courses from Agronomy, Biochemistry, Botany, Chemistry, Entomology, Genetics, Horticulture, Microbiology, Soil Science, Zoology, and related disciplines may be approved to fit the needs of individual candidates. Courses marked with an asterisk are required of all thesis program candidates.

PLANT PATHOLOGY
610 Principles of Plant Disease Control (3)
620 Plant Pathology Techniques (3)
625 Advanced Plant Pathology (2)
*660 Plant Pathology Seminar (1)
699 Directed Research (ar.)
*800 Thesis Research (ar.)

Political Science

GRADUATE FACULTY
N. Meller, Ph.D. (Chairman)—Public Administration, Public Law, American Government
T. Becker, Ph.D.—Public Law, Political Theory
R. S. Cahill, Ph.D.—Politics, American Government
H. J. Friedman, Ph.D.—Public Administration, Comparative Government
M. Haas, Ph.D.—International Relations, Comparative Government
H. S. Kariel, Ph.D.—Political Theory, American Government
O. M. Lee, Ph.D.—International Relations, Public Law, Comparative Government
W. Levi, Ph.D.—International Relations, Comparative Government
Intended candidates for M.A. or Ph.D. must present a minimum of 15 hours of undergraduate credit in political science, or the equivalent. Evaluation of a student’s performance on his work for the master’s degree, which usually is prerequisite, will be used in considering applicants for doctoral candidacy.

Candidates for the master’s degree are required to pass a written comprehensive examination in two of the subfields (theory, American government, comparative government, international relations, politics, public administration, public law). The doctoral candidate is required to pass four written comprehensive examinations: one in theory; one or two of the others must be international relations or comparative government (including American); one or two must be politics, public administration, or public law. After completing the written examinations, the doctoral candidate must pass an oral comprehensive administered by three or more members of the Graduate Faculty.

In addition to formal studies in political science, candidates are required to offer courses in related disciplines, as approved by the supervising committee.

Full details of the programs and procedures are obtainable from the Department.

**Political Theory**

**POLITICAL SCIENCE**

401 Western Political Thought (3)
404 Modern Political Ideologies (3)
405 American Political Thought (3)
*600 Contemporary Political Science (3)
601 Systematic Political Analysis (3)
602 Asian Political Thought (3)
620 The Political Order: Constitutionalism in America (3)
700 Seminar: Classical Western Political Thought (3)
701 Seminar: Modern Western Political Thought (3)

**American Government**

420 State Government and Administration (3)
421 Municipal Government and Administration (3)
429 Government of Hawaii (3)
425 Courts and Politics: The American System (3)
461 American Foreign Policy (3)
620 The Political Order: Constitutionalism in America (3)

*Required for all degree candidates.*
### Comparative Government

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>443</td>
<td>Government and Politics of China and Japan</td>
<td>(3)</td>
</tr>
<tr>
<td>444</td>
<td>Government and Politics of South and Southeast Asia</td>
<td>(3)</td>
</tr>
<tr>
<td>446</td>
<td>Government and Politics of the USSR</td>
<td>(3)</td>
</tr>
<tr>
<td>450</td>
<td>Government and Politics of Polynesia</td>
<td>(3)</td>
</tr>
<tr>
<td>467</td>
<td>Problems of Regional International Organization</td>
<td>(3)</td>
</tr>
<tr>
<td>640</td>
<td>Politics of National Development</td>
<td>(3)</td>
</tr>
<tr>
<td>740</td>
<td>Seminar: East Asia</td>
<td>(3)</td>
</tr>
<tr>
<td>741</td>
<td>Seminar: South and Southeast Asia</td>
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<tr>
<td>742</td>
<td>Seminar: Comparative Politics</td>
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<tr>
<td>751</td>
<td>Seminar: Comparative Public Administration</td>
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### International Relations

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>461</td>
<td>American Foreign Policy</td>
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<tr>
<td>462</td>
<td>International Relations of the Far East</td>
<td>(3)</td>
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<tr>
<td>463</td>
<td>International Relations of South and Southeast Asia</td>
<td>(3)</td>
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<tr>
<td>466</td>
<td>Foreign Policy of the Soviet Union</td>
<td>(3)</td>
</tr>
<tr>
<td>467</td>
<td>Problems of Regional International Organization</td>
<td>(3)</td>
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<td>469</td>
<td>Problems in International Relations</td>
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</tr>
<tr>
<td>603</td>
<td>Foreign Policy of Mainland China</td>
<td>(3)</td>
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<td>760</td>
<td>Seminar: International Politics</td>
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### Politics

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<tr>
<td>423</td>
<td>Courts and Politics</td>
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<tr>
<td>424</td>
<td>Courts and Politics: The American System</td>
<td>(3)</td>
</tr>
<tr>
<td>481</td>
<td>American Political Parties</td>
<td>(3)</td>
</tr>
<tr>
<td>483</td>
<td>Propaganda and Public Opinion</td>
<td>(3)</td>
</tr>
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<td>486</td>
<td>Political Behavior</td>
<td>(3)</td>
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<td>681</td>
<td>Public Policy Development</td>
<td>(3)</td>
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<tr>
<td>760</td>
<td>Seminar: Politics</td>
<td>(3)</td>
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<td>761</td>
<td>Seminar: Legislative Process</td>
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### Public Administration

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<tr>
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<tr>
<td>501</td>
<td>Principles of Management</td>
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<tr>
<td>502</td>
<td>Personnel Administration</td>
<td>(3)</td>
</tr>
<tr>
<td>651</td>
<td>Development Administration</td>
<td>(3)</td>
</tr>
<tr>
<td>656</td>
<td>Seminar in Regional and City Planning</td>
<td>(3)</td>
</tr>
<tr>
<td>673</td>
<td>Administrative Law</td>
<td>(3)</td>
</tr>
<tr>
<td>681</td>
<td>Public Policy Development</td>
<td>(3)</td>
</tr>
<tr>
<td>750</td>
<td>Seminar: Public Administration</td>
<td>(3)</td>
</tr>
<tr>
<td>751</td>
<td>Seminar: Comparative Public Administration</td>
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### Public Law

<table>
<thead>
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<th>Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>423</td>
<td>Constitutional Law</td>
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<td>424</td>
<td>Courts and Politics</td>
<td>(3)</td>
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<td>425</td>
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<td>(3)</td>
</tr>
<tr>
<td>470</td>
<td>International Law</td>
<td>(3)</td>
</tr>
</tbody>
</table>
Poultry Science

GRADUATE FACULTY

R. B. Herrick, Ph.D. (Chairman)—physiology
A. L. Palafox, M.S.—nutrition
E. Ross, Ph.D.—nutrition

Intended candidates for the M.S. must present 18 semester hours of undergraduate credit in Poultry Science and related fields. The related subject matter fields are animal science, chemistry, bacteriology, and zoology. Courses are to be selected from those listed below and others in the Fields of Study of Agricultural Economics, Animal Science, Biochemistry, Chemistry, Entomology, Genetics, Microbiology, Nutrition, and Zoology. Candidates may specialize in the areas of poultry management, nutrition or physiology.

POULTRY SCIENCE

601 Poultry Science Seminar (1)
699 Directed Research (ar.)
800 Thesis Research (ar.)

Psychology

GRADUATE FACULTY

W. F. Oakes, Ph.D. (Chairman)—learning, verbal behavior
A. Arkoff, Ph.D.—clinical
H. M. Bitner, Ph.D.—student counseling
R. J. Blanchard, Ph.D.—comparative, physiological
D. H. Crowell, Ph.D.—infant responsiveness; exceptional children
C. M. Davis, Ph.D.—physiological
A. L. Diamond, Ph.D.—psychophysics
J. M. Digman, Ph.D.—measurement; child personality
A. A. Dole, Ph.D.—individual differences; disability
C. J. Herrick, Ph.D.—student counseling; history of psychology
C. A. Insko, Ph.D.—attitude change; communication
R. C. Johnson, Ph.D.—adolescence; cognitive process
J. Michel, Ph.D.—counseling
H. B. Weaver, Ph.D.—applied; tourist industry
W. R. Wilson, Ph.D.—small groups, communication

AFFILIATE FACULTY

A. Connor, M.D.—infant behavior and growth
H. Gudeman, Ph.D.—clinical

Intended candidates for M.A. or Ph.D. must present 18 hours of undergraduate credit in psychology, including general and experimental psychol-
ogy and statistics. Related course requirements are mathematics, extending at least through intermediate algebra, and introductory zoology.

No more than 6 credits in courses numbered in the 400–500 series may be counted toward the advanced degree. A maximum of 6 hours may be elected from closely related courses in anthropology, philosophy, physics, sociology and zoology. Additional elective courses will be dependent upon the candidate's background.

The M.A. and Ph.D. degrees are offered in the following fields: General-Experimental, Social-Personality, Developmental and Counseling. Candidates for the M.A. in Counseling are expected to meet the standards set by the American Psychological Association, including 48 semester credits. Special programs with traineeships are available in Developmental and in Vocational Rehabilitation Counseling.

The following courses are required: 620, 630, and either 614 or 615.

Intended candidates for the doctorate may, under special circumstances, offer 24 course credits in lieu of the M.A. degree, although all students without the M.A. degree in Psychology from an American university must enter the program initially as intended candidates for the M.A. degree.

Official scores of the aptitude and advanced Psychology tests of the Graduate Record Examination and of the Miller Analogies Test are required when applying for admission. Additional details of the departmental programs are presented in a brochure available from the department.

**PSYCHOLOGY**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>410</td>
<td>History of Psychology</td>
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</tr>
<tr>
<td>430</td>
<td>Intermediate Experimental Psychology</td>
<td>(3)</td>
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<tr>
<td>440</td>
<td>Physiological Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>450</td>
<td>Social Development of Children</td>
<td>(3)</td>
</tr>
<tr>
<td>480</td>
<td>Abnormal Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>512</td>
<td>Comparative Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>574</td>
<td>Problems in Industrial and Business Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>600</td>
<td>Seminar: Problems in Psychology</td>
<td>(3)</td>
</tr>
<tr>
<td>614</td>
<td>Theory I</td>
<td>(3)</td>
</tr>
<tr>
<td>615</td>
<td>Theory II</td>
<td>(3)</td>
</tr>
<tr>
<td>620</td>
<td>Quantitative Methods I</td>
<td>(3)</td>
</tr>
<tr>
<td>621</td>
<td>Quantitative Methods II</td>
<td>(3)</td>
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<td>626</td>
<td>Quantitative Methods III</td>
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<tr>
<td>630</td>
<td>Experimental Psychology I</td>
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<tr>
<td>631</td>
<td>Experimental Psychology II</td>
<td>(3)</td>
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<td>650</td>
<td>Developmental Psychology I</td>
<td>(3)</td>
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<tr>
<td>652</td>
<td>Developmental Psychology II</td>
<td>(3)</td>
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<td>660</td>
<td>Personality</td>
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<tr>
<td>662</td>
<td>Social Psychology</td>
<td>(3)</td>
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<td>670</td>
<td>Applied Social Psychology</td>
<td>(3)</td>
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<tr>
<td>672</td>
<td>Advanced Educational Psychology</td>
<td>(3)</td>
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<tr>
<td>678</td>
<td>Psychology of Occupations</td>
<td>(3)</td>
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<tr>
<td>679</td>
<td>Psychology of Vocational Rehabilitation</td>
<td>(3)</td>
</tr>
<tr>
<td>682</td>
<td>Psychological Appraisal A</td>
<td>(3)</td>
</tr>
<tr>
<td>683</td>
<td>Psychological Appraisal B</td>
<td>(3)</td>
</tr>
<tr>
<td>684</td>
<td>Psychological Appraisal C</td>
<td>(3)</td>
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</tbody>
</table>
699 Directed Research (ar.)
730 Directed Research (Experimental) (ar.)
750 Directed Research (Developmental) (ar.)
760 Directed Research (Personality) (ar.)
762 Directed Research (Social) (ar.)
780 Directed Research (Counseling) (ar.)
782 Psychological Counseling A (3)
783 Psychological Counseling B (3)
784 Psychological Counseling C (3)
800 Thesis Research (ar.)

Public Health

GRADUATE FACULTY
R. K. C. Lee, M.D., Dr.P.H. (Chairman)—public health administration
M. Brown, Ph.D.—nutrition
D. Char, M.D.—maternal and child health
C. S. Chung, Ph.D.—biostatistics
V. Drenckhahn, M.S., M.P.H.—health education
B. Gross, M.S.—environmental sanitation
M. Kau, D.D.S., M.P.H.—dental health
H. W. Klemmer, Ph.D.—sanitary microbiology
B. J. McMorrow, M.S.—sanitary engineering
I. J. Ryan, Ed.D.—school health
G. Schnack, M.D.—mental health
R. F. Shepard, M.D.—medical disability
R. Suehiro, M.A., M.P.H.—public health administration
G. Tokuyama, M.P.H.—biostatistics
R. J. Wolff, Ph.D.—behavioral sciences
R. M. Worth, M.D., M.P.H., Ph.D.—epidemiology

AFFILIATE FACULTY
L. Bernstein, M.D., M.P.H.—public health administration
K. McLaren, M.P.H.—public health nursing
J. Paty, M.P.H.—health education
L. Rosen, M.D., Dr.P.H.—epidemiology

Intended candidates for the M.S. in Public Health will follow plan B. Six courses (marked with an asterisk) which present the basic concepts of public health and two seminars are required of all candidates.

Ordinarily, a minimum of two full academic years will be needed to complete the program. Students who have had little or no practical experience in public health must spend one summer session in laboratory or field work, or in some other form of on-the-job training.

Courses are to be selected from those listed below, and, with approval, others in the related fields suitable for each individual student.

PUBLIC HEALTH

*601-602 Principles and Practices of Public Health (3-3)
*610 Infectious Diseases of Man in the Pacific Area (3)
*625 Biostatistics (3)
626 Vital Statistics (3)
630 Public Health Nutrition (2)
Seminar in Public Health Nutrition (1)
Dental Public Health (2)
Environmental Health (2-2)
Public Health Education (2)
Seminar in Public Health Education (2)
Principles of Epidemiology (3)
Community Mental Health (2-2)
Socio-cultural Aspects of Health and Illness (3)
Medical Aspects of Disability (3)
Effect of the Environment on Personal Health (3)
Maternal and Child Health (2)
Seminar on Community Health Problems (1)
Seminar on International Health Problems (1)
Seminar on School Health Services (1)
Directed Research (ar.)
Advanced Public Health Practice (3)

Secondary Education

GRADUATE FACULTY
A. W. S. In, Ph.D. (Chairman)—secondary education, administration, supervision, curriculum
R. S. Ahn, Ph.D.—language arts and reading
C. H. Ewing, Ph.D.—trade and industrial education
R. M. Martin, Ph.D.—secondary education, administration, supervision, curriculum
G. Meyer, Ph.D.—secondary education, curriculum
T. Nelson, Ed.D.—secondary education, administration, supervision, curriculum
D. S. Noda, Ph.D.—secondary education, administration, supervision, curriculum
A. L. Pickens, Ed.D.—art education
M. F. Poyzer, Ed.D.—industrial education
N. Whitman, Ph.D.—mathematics education

Intended candidates for the M.Ed. must present a minimum of 18 semester hours in professional education courses and, in addition, credit for supervised student teaching or teaching experience.

Admission to candidacy is based upon (1) the quality of the student's undergraduate record; (2) his performance on the general examination.

Both plan A (thesis) and plan B (nonthesis) are available.

Plan A: The program requires 24 semester credits of course work, with a minimum of 14 semester credits in Education and a maximum of 10 semester credits in a related field. At least one graduate seminar is required. Required courses are Ed SE 635 or 636, 640, Ed EP 708, one of Ed HP 650, 660 or 683, and Ed SE 800.

Plan B: The program requires a total of 36 semester credits in course work, with a minimum of 18 hours in Education and a minimum of 12 hours in a related field. The program is primarily designed to enable teachers to strengthen their teaching field majors. At least one graduate seminar is required. Required courses are Ed SE 635 or 636, 640, 733 and one of Ed HP 650, 660 or 683.
SECONDARY EDUCATION

437 Curriculum Development, Industrial Education (2)
631 Modern Language Arts Program (2)
634 Extraclass Activities in Secondary Schools (3)
635 Junior High School Curriculum (3)
636 Secondary School Curriculum (3)
637 Art in Secondary Education (3)
640 Seminar in Special Methods (3)
672 Teaching Aids on Asia (2)
699 Directed Research (ar.)
733 Seminar in Curriculum (3)
737 Foundations in Art Education (3)
800 Thesis Research (ar.)

Social Work

GRADUATE FACULTY

K. N. Handley, M.S.W. (Director)—social services
W. J. T. Cody, M.D.—psychiatry
H. A. Jambor, M.A.—social services, community organization administration
K. Kumabe, M.S.W.—casework, cultural factors
F. C. Merritt, M.S.W.—casework
D. B. Reid, M.S.—field work
R. Takasaki, M.P.A.—administration
A. M. Takase, M.S.—field work
K. C. Tyson, M.S.—field work
W. A. Walsh, M.A.—casework, human growth and behavior
A. B. Zaloha, M.A.—group work

The School of Social Work offers an accredited two-year M.S.W. program. Inquiries for information and applications for admission should be sent to the office of the School of Social Work. The School publishes an annual bulletin.

The curriculum for the Master of Social Work requires the student to complete a minimum of 48 credits of work including at least 10 credits (750 clock hours) of supervised field work and 6 credits covering research on a group project or individual thesis. The core curriculum, aside from the research sequence, covers three areas: social services, human growth and behavior, and social work methods. The courses in these areas are set up as sequences which continue throughout the two years. The student's program usually includes the following courses:

Social Services

SOCIAL WORK

627 Social Services (2)
628 Social Services (2)
653 Legal Aspects of Social Work (2)
656 Social Welfare Organization and Administration (2)
781 Seminar in Social Welfare Policy (2)
Human Growth and Behavior

610-611 Human Growth and Behavior (3-3)
775 Advanced Social Psychiatry (2)
790 Cultural Factors in Social Work Practice (2)

Social Work Methods

605-606 Social Casework (2-2), or
608-609 Social Group Work (2-2)
612 Group Work Program Activities (1-1)
615 Community Organization (2)
660-661 Supervised Field Work (3-3)
760-761 Advanced Supervised Field Work (4-4)
765-766 Advanced Social Casework (2-2), or
770-771 Advanced Social Group Work (2-2)
777 Community Development in Social Work (2)

Research

652 Social Statistics and Research (2)
798-799 Seminar in Research (3-3)
800 Thesis Research

Sociology

GRADUATE FACULTY

C. K. Cheng, Ph.D. (Chairman)—social institutions, criminology, penology
Harry V. Bull, Ph.D.—sociology of law, penology
O. Bartos, Ph.D.—theory and small groups
C. E. Glick, Ph.D.—race relations, collective behavior
B. L. Hornbeck, Ph.D.—modernization of peasant peoples, social disorganization
I. Krafts, Ph.D.—social stratification, urban sociology
A. W. Lind, Ph.D.—the community, emphasis on race relations
T. T. Wittmers, Ph.D.—social change in developing areas
G. Won, Ph.D.—industrial and urban problems
G. K. Yamamoto, M.A.—occupations and professions
D. S. Yamamura, Ph.D.—methods and statistics, demography and ecology
C. K. Yang—social movements and social change

Intended candidates for the M.A. must present a minimum undergraduate preparation of 18 credits in sociology, including Introduction to the Study of Society (151) or Principles of Sociology (201) or the equivalent. Courses available for graduate credit are listed below. A maximum of 6 credits may be selected from related courses in Anthropology, Economics, Political Science, Philosophy, or Psychology with the approval of the supervising committee.

SOCIOLOGY

410 Population and Society (3)
435 The Agrarian Community (3)
Soil Science

GRADUATE FACULTY
L. D. Swindle, Ph.D. (Chairman)—soil genesis and classification, physical chemistry
P. C. Ekern, Ph.D.—soil management, physics
R. L. Fox, Ph.D.—soil fertility and chemistry
Y. Kanehiro, Ph.D.—soil chemistry, fertility
D. G. Moore, Ph.D.—soil chemistry, biotics
G. D. Sherman, Ph.D.—soil genesis and weathering, classification, chemistry, fertility
G. Stanford, Ph.D.—soil fertility and chemistry
G. Uehara, Ph.D.—soil physics, mineralogy
O. R. Younge, Ph.D.—soil management, fertility

AFFILIATE FACULTY
A. S. Ayres, Ph.D.—soil chemistry
L. D. Baver, Ph.D.—soil physics

Intended candidates for the M.S. or Ph.D. in Soil Science must have completed a minimum of 18 hours of undergraduate credit in soil science and related subject matter fields and two years of college chemistry. The related subject matter fields are microbiology, chemistry, geography, geology, mineralogy, physics, botany, plant physiology, agronomy, and agricultural engineering (irrigation).
Courses in the major field are to be selected from those listed below. Required courses are marked with an asterisk. Supplementary courses in related fields will be required, as determined by the area of specialization. Candidates may specialize in tropical soil genesis and classification, soil management, soil fertility, and the fundamental physical and chemical properties of soils.

**SOIL SCIENCE**

484  Soil Physics (3)
485  Soil Biomes (3)
*685  Soil Genesis and Formation (3)
686  Advanced Soil Classification (3)
*687  Soil Science Seminar (1)
   (a) Soil Chemistry
   (b) Soil Physics
   (c) Soil Genesis, Formation and Classification
   (d) Soil Fertility
688  Soil and Clay Mineralogy (3)
689  Advanced Soil Fertility (4)
690  Advanced Soil Chemistry (ar.)
699  Directed Research M.S. (ar.)
799  Directed Research Ph.D. (ar.)
800  Thesis Research (ar.)

**Spanish**

**GRADUATE FACULTY**

J. S. Holton, Ph.D. (Chairman)—methods of teaching the language, grammar
E. C. Knowlton, Jr., Ph.D.—history of the language, Hispano-Philippine literature

Intended candidates for the M.A. in Spanish must present 24 semester hours of undergraduate credit in Spanish, excluding introductory and intermediate courses, but including work in Spanish Phonetics, Peninsular Literature, and Spanish American Literature, or equivalent preparation. They must also demonstrate, by means of a personal interview or by a tape recording, that they possess an acceptable accent and a reasonable degree of fluency in Spanish.

Both plan A and plan B are available. Under both plans a minimum of 6 and a maximum of 15 credits may be taken from courses in related fields. Some knowledge of Latin is desirable, and one year of a second modern language will be required of those whose basic command of Spanish was largely acquired in the home. Before admission to candidacy a student must present satisfactory scores on the Proficiency Examinations for Teachers and Advanced Students prepared by M.L.A. and E.T.S. Required courses are marked with an asterisk; those numbered between 400 and 500 not taken as part of the undergraduate preparation must form part of the M.A. program.
The Master of Arts in the Teaching of English as a Second Language is an interdepartmental graduate program contributed to by the departments of American Studies, English, Linguistics, and Speech. Available to both foreign and native graduate students, this program is a 36-semester hour, nonthesis program with major emphasis on linguistics and linguistic methods of teaching English. Competence in understanding, speaking, reading, and writing English is prerequisite and in case of foreign students must be certified by English language experts in the student’s own country at the time of application for admission. Native students may be exempted from courses marked with an asterisk but are required to pursue competence in the language and culture of their chosen area of teaching English as a second language. The required courses of the program are listed below. Additional information will be found in a program brochure.

**AMERICAN STUDIES**

- *690 Introduction to Contemporary America (3)

**ENGLISH**

- 425 Modern English Grammar (3)
- *601 The Teaching of English Composition (3)
- *602 The Teaching of English Literature (3)
- 622 Teaching English as a Second Language (3)
- 625 History of the English Language (3) or English literature
- 723 Textbook and Test Construction (3)

**LINGUISTICS**

- 620 Introduction to Linguistic Analysis (3)
- 621 Phonemics (3)
- 622 Morphology and Syntax (3) or structure of language of chosen area

**SPEECH**

- 615 Phonetics and Phonemics of American English (3)
- *616 Special Problems in Phonetics and Phonemics (3)

**Zoology**

**GRADUATE FACULTY**

- A. J. Berger, Ph.D. (Chairman)—ornithology, anatomy
- J. E. Alicata, Ph.D.—parasitology
- A. H. Banner, Ph.D.—invertebrate zoology, systematics
Intended candidates for the M.S. or Ph.D. in Zoology must present a minimum of 18 hours of undergraduate preparation in zoology, including courses in vertebrate zoology (including comparative anatomy), embryology, and physiology. M.S. candidates should have completed two years of chemistry (inorganic and organic), and courses in college algebra and botany. In addition, Ph.D. candidates should have completed one year of physics. Deficiencies in undergraduate preparation must be made up.

Courses available for graduate credit are listed below. One seminar each year is required. Other required courses are marked with an asterisk (602 is not required for the M.S. under plan B). For the M.S. under plan A a maximum of 6 hours, and under plan B a minimum of 6 hours may be elected from related courses in Botany, Chemistry, Entomology, Genetics, Mathematics, Meteorology, Oceanography, and Physics. Under plan B a minimum of 2 credits of directed research is required. For the Ph.D., additional work will be stipulated by the supervising committee.

**ZOOLOGY**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<td>Principles of Ecology</td>
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<tr>
<td>410</td>
<td>Parasitology</td>
<td>3</td>
</tr>
<tr>
<td>416</td>
<td>Histology</td>
<td>3</td>
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**Other Faculty**

**GRADUATE FACULTY AT LARGE**

K. J. Orr, M.S.—Cooperative Extension Service
R. Pavlantos, Ph.D.—Classics
W. Stuiver, Ph.D.—Mechanical Engineering
E. Wiswell, B.A.—Russian