Academic dates of significance.

Holidays and recesses.

UNIVERSITY CALENDAR 1970-1971

1970 First Semester

September 1-5, Tuesday-Saturday
September 7, Monday
September 8, Tuesday
September 16, Wednesday
October 23, Friday
November 2, Monday
November 3, Tuesday
November 9, Monday
November 18, Wednesday
November 25, Wednesday
November 26, Thursday
December 1, Tuesday
December 16, Wednesday
December 17, Thursday
December 20, Sunday
December 23, Wednesday

1971 Interim Period

January 4-16, Monday-Saturday

Student symposia; independent study; special projects; research; field trips; conferences, forums; community work; non-credit instruction, etc.
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**1971 Second Semester**

January 18-23, Monday-Saturday..........................Academic advising, registration
January 25, Monday................................................Instruction begins
February 2, Tuesday..............................................Last day for registration for credit
February 15, Monday..............................................Holiday: Presidents' Day
March 12, Friday..................................................Deficiency reports due
March 26, Friday..................................................Holiday: Kuhio Day
April 9, Friday....................................................Holiday: Good Friday
April 9-17, Friday-Saturday..............................Spring recess
April 14, Wednesday..............................Last day for withdrawal from courses
April 16, Friday..................................................Last day to process Pass-Fail option
May 12, Wednesday..............................................Last day of instruction
May 13, Thursday..............................................Final exams begin
May 19, Wednesday..............................................Second semester ends
May 23, Sunday..................................................Commencement
June 1, Tuesday........................................Deadline for foreign undergraduate applications for 1st semester 1971
July 1, Thursday........................................Deadline for U.S. undergraduate applications for 1st semester 1971 (new and returning students)

**1971 Summer Session**

June 14, Monday...............................................Registration for first term
July 23, Friday..................................................First term ends
July 26, Monday...............................................Registration for second term
September 3, Friday........................................Second term ends
Course Numbers and Descriptions;
Abbreviations Used

Effective in 1968, the University of Hawaii revamped its course numbering system. The system is applicable to all campuses of the University, including its community colleges. The 1968 catalog lists the old numbers of courses which were then changed.

1. UNDERGRADUATE COURSES.......................1 through 499
   A. Courses not applicable towards a bachelor's degree 1- 99
      Offered by community colleges .......................... 1- 59
      Offered by Manoa or Hilo campuses .......................... 60- 89
      Offered by educational television .......................... 90- 99
   B. Courses applicable towards a bachelor's degree 100-499*
      Initial or introductory courses; normally open to freshmen ............................................. 100-199
      Second-year courses in a sequence or development within a field of study ........................................ 200-299
      Third-year courses in sequence, or first courses in professional curricula normally taken by juniors .................. 300-399†
      Most advanced undergraduate courses .......................... 400-499†

2. POST-BACCALAUREATE COURSES ..................500 through 800*
   A. Courses in continuing education not generally applicable toward degrees ........................................ 500-599
   B. Courses applicable toward advanced degrees........600-800*
      Courses typically taken in first year of graduate study, or first in sequence ........................................ 600-699
      More advanced graduate courses .......................... 700-799
      Thesis research ................................................. 800

*Courses with numbers ending in -97 or -98 are generally experimental courses which may or may not be continued in future years.
†May be accepted by Graduate Division to fulfill graduate degree requirements.
A large proportion of the courses listed in this catalog were renumbered in 1968. The catalog for that year shows old numbers as well as new.

Courses are listed by college and department, arranged alphabetically, except for some interdisciplinary courses which are listed with the Selected Studies and Honors Program. Use the Table of Contents or Index to locate a given department or curriculum.

After each department and major division is its abbreviated IBM code (e.g., Anth for Anthropology). This code is also used in the course schedules issued prior to each semester and the summer session, showing the time and place of each class meeting.

Heading each course description are the number and title of the course, the number of credits, and the semester given. Thus (3) I signifies a 3-credit course offered the first semester; (4) II, a course carrying 4 credits offered the second semester; (3) I, II, a 3-credit course repeated in the second semester; (5–5) Yr., a year's sequence carrying 5 credits each semester; while (arr.) shows that the number of credits may vary, being arranged by the instructor in each instance.

Other abbreviations used in course descriptions are: Hr, hour; L, Lecture(s); Lb, laboratory; L-Lb, combined lecture and laboratory; Alt. yrs., alternate years; Pre, prerequisite.

Alongside the title of each course is printed the name of the faculty member giving it, as best ascertained at the time this catalog was prepared in early spring of 1970. Rank, title and academic degrees of all faculty are given at the end of the catalog.
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General Information

The University of Hawaii, the state-supported system of public higher education in Hawaii, conducts diverse programs in education, research and service for the state, the nation and the world community. It operates teaching and research facilities at more than 50 locations throughout the Hawaiian Islands and participates in international service and research activities in the Pacific Basin and Asian countries.

Throughout its history, a distinctive geographical and cultural setting has helped the University achieve excellence in certain areas of study. Geographical location has led to concentration in oceanography, marine biology and interdisciplinary studies of tropical environments, problems and resources. The physical characteristics of Hawaii have focused interest on natural phenomena in geophysics such as tsunami research, volcanology, astronomy and astrophysics. Hawaii's multiracial culture and its ties with Asia have created a favorable environment for the study of various aspects of diverse cultural systems, including such subjects as linguistics, genetics, philosophy and interrace relations.

The University offers course work leading to the bachelor's degree in 65 fields. The Graduate Division offers work leading toward the master's degree in 66 fields and the doctorate in 31.

In addition to its instructional program, the University conducts organized research in several fields. Special units initiate and conduct research in economics, education, biomedicine, Pacific and Asian linguistics, social sciences, water resources, marine biology, geosciences, astronomy, genetics and agriculture.

The main campus is located in the Manoa Valley section of Honolulu, the capital of the state. The University maintains a second four-year campus at Hilo and there are three community college campuses on Oahu, one each on Hawaii, Maui, and Kauai.

Space observatories and associated research facilities of the University are located on the islands of Maui and Hawaii. The Hawaii Institute of Marine Biology, operated by the University, is located on Coconut Island in Windward Oahu. The University conducts the largest Peace Corps training program in the nation and its facilities are located on the islands of Hawaii and Molokai. Branches of the Hawaii Agricultural Experiment Station are located on five of the major islands of the state.
GENERAL INFORMATION

History. The University of Hawaii was founded in 1907 as a federal land-grant institution specializing in agriculture and the mechanic arts. Referred to as the College of Hawaii, it was launched with five regular students and 12 faculty members on a temporary campus in downtown Honolulu. In 1912 the campus was moved to its present location in Manoa where an initial ninety acres were set aside for buildings. With the addition of a College of Arts and Sciences in 1920, the institution became the University of Hawaii.

In the following two decades, the University began to develop a special interest in bridging the East and West. A period of physical and academic expansion followed World War II, and new responsibilities and opportunities for growth were presented to the University when Hawaii became a state in 1959.

In 1960 the federal government created the East-West Center on the Manoa campus. Officially called the Center for Cultural and Technical Interchange between East and West, it aims to promote mutual understanding among the nations of the world through its exchange and service programs.

The University accepted a new task in 1964 when the state legislature authorized it to operate a state-wide community college system. With four state-owned technical schools for a base, the system's fifth campus in Leeward Oahu opened in September, 1968, and a sixth in Hilo was added in 1969. The community colleges offer a variety of college transfer and general education curricula on all campuses and award associate degrees.

Colleges and Schools. The academic work of the University is administered by the following units: the colleges of Arts and Sciences, Business Administration, Education, Engineering, Health Sciences and Social Welfare, and Tropical Agriculture and the Division of Continuing Education. Included in the College of Tropical Agriculture are the Cooperative Extension Service and the Hawaii Agricultural Experiment Station. The School of Travel Industry Management is part of the College of Business Administration. Four professional schools are included in the College of Health Sciences and Social Welfare: School of Medicine, School of Nursing, School of Public Health and School of Social Work. The School of Library Studies is an additional professional school.

An Honors Program embraces all colleges. The Graduate Division assumes the major role in the organization and development of graduate programs.

Accreditation. The University is accredited by the Western Association of Schools and Colleges. Professional programs in the curriculum are individually accredited by appropriate agencies. Students may transfer credits to other American or foreign universities on the same basis as course credits are transferred by other accredited American universities.
GENERAL INFORMATION

Academic Year. The academic year is divided into two 17-week semesters, a 12-week Summer Session which offers two 6-week terms, and a 2-week Interim Period between semesters (see “University Calendar”).

Administrative Organization. Governance of the University of Hawaii is vested in a board of regents appointed by the governor of the state.

The president of the University serves as executive officer of the board of regents and as such is responsible for educational leadership and is the administrative head of the University. The president’s staff includes vice-presidents, the secretary of the University, assistants to the president, an office of international programs, and the director of University relations and development.

The council of deans advises the vice-president for academic affairs on matters of academic policy. The faculty senate is similarly advisory to the president and the board of regents.

Colors, Seal and Motto. The University of Hawaii colors are green and white. The rainbow, a frequent sight in Manoa Valley, is the campus symbol, and the University teams traditionally are nicknamed “The Rainbows.” The University seal contains a torch and book titled Malamalama (The Light of Knowledge) in the center of a circular map of the Pacific, surrounded by the state motto, Ua Mau Ke Ea o Ka Aina i Ka Pono (The Life of the Land Is Preserved in Righteousness). The University motto, inscribed in both the Hawaiian and English languages on Founders’ Gate at the entrance to the Manoa campus on University Avenue, is “Above all nations is humanity.”

Inquiries. Prospective students should address inquiries to the following offices on the Manoa Campus.


Other Campuses. Hilo campus: Hilo Campus, University of Hawaii, Hilo, Hawaii 96720. Community colleges: Honolulu Community College, 874 Dillingham Boulevard, Honolulu, Hawaii 96817; Kapiolani Community College, 620 Pensacola Street, Honolulu, Hawaii 96814; Leeward Oahu Community College, 96-050 Farrington Highway, Pearl City, Hawaii 96782; Kauai Community College, RR 1, Box 216, Lihue, Kauai, Hawaii 96766; Maui Community College, 310 Kaahumanu Avenue, Kahului, Maui, Hawaii 96732; Hawaii Community College, 1175 Manoa Street, Hilo, Hawaii 96720.
GENERAL INFORMATION

RESEARCH AND SERVICE OPERATIONS

In addition to the instructional program, the University conducts organized research in several fields and offers other forms of public service. The most important of these operations are described below. The Cooperative Extension Service and the Hawaii Agricultural Experiment Station are discussed under the College of Tropical Agriculture. The Center for Engineering Research is discussed under the College of Engineering.

In accordance with the legislation which created it, the Economic Research Center conducts short- and long-term research studies of direct pertinence to the economic welfare and development of Hawaii. In cooperation with the resident academic departments of the University, the center offers research training to advanced students.

The Education Research and Development Center adopts an interdisciplinary behavioral science approach to the conduct of basic and applied research, evaluation and development concerned with educational problems. Activities are directed at obtaining factual evidence that may assist educators in reaching decisions about educational practices. Major programs focus upon understanding of achievement motivation, of conditions influencing educational attainment of different ethnic and socio-economic groups, and of means of optimizing the cognitive learning of school children. Research and development to facilitate educational planning and practice in Hawaii and the Pacific Basin is a primary concern.

The Division of Educational Broadcasting is responsible for all of the production and transmission functions of the Hawaii Educational Television Network, which, through its chain of transmitters, serves the entire state of Hawaii. Its studios, located on the University of Hawaii campus, form a production center for the creation of teaching materials broadcast daily into classrooms in the public schools throughout the state. In addition, a wide range of program materials are produced, or acquired from other sources, to serve the general public with information in the arts, political affairs, and public concerns. Direct, college-level, teaching materials for "closed circuit" use on campus are also produced, and the studios serve as a laboratory for students in speech and educational communications courses.

The University Instructional Resources Service Center is staffed by instructional and media specialists. Upon request they offer assistance and consultation to faculty in the examination of instructional objectives, overall strategy planning, organization of instructional media, development of evaluating systems, and the necessary follow-up for effective development and implementation of programs.
The selection, location, production, evaluation and effective use of media are coordinated for faculty and staff by the center which has three major sections. Instructional Systems operates the closed circuit television system, twelve multi-media auditoria and Varsity Theatre. Graphics prepares and develops a wide range of graphic materials including transparencies for projection and diagrams, by using various processes such as diazo and photography. The Media Lab is used for demonstrations, media workshops and videotaping for instructional self-analysis. The Media Lab also includes self-service facilities where equipment and materials are provided for faculty who wish to make their own transparencies and other instructional materials.

The **Thomas Hale Hamilton Library**, located on the Mall, houses the main book and periodical collections of the University of Hawaii Library. Maximum utilization of the library's resources is the aim of the organizational plan which places a Humanities, Social Science and Science-Technology reference librarian near the reference materials and current periodicals of the respective broad subject area. Hamilton's openstacks contain approximately 605,000 volumes, including over 13,000 currently received serial titles. Microform and the major research collections are located in Hamilton except these listed below which will remain in Sinclair Library until Phase II of the Hamilton Library is completed. The four-story building which provides space for 955 readers has an open reading lanai on the top floor.

**Gregg M. Sinclair Library**, located at University Avenue and Campus Road, houses the Undergraduate Collection, as well as the Government Documents, Rare Books, Archives, Hawaiian & Pacific research collections, and the East-West Center Library's Oriental Collection. As the undergraduate library, Sinclair has the Reserve Books (graduate and undergraduate), a browsing collection with lounge furniture, a Reference Collection, a collection of college catalogs, a collection of children's literature, and a listening center where course-related material is available via a dial-access retrieval system. Sinclair Library has an 85,000 volume undergraduate collection and seats for 2,000 readers.

**Audio-Visual Services** located in Sinclair Library circulates the library's collections of approximately 900 film titles, as well as filmstrips, media kits, phonodiscs, slides, tapes and transparencies. Portable equipment to utilize effectively these resources is lent upon request. A-V Services also maintains pools of such equipment conveniently located in eleven classroom buildings on campus. This Library unit will assist any department on campus in obtaining maintenance service for departmental audio-visual equipment.

Audio-Visual Services operates the Listening Center in Sinclair Library and also provides such services as PA systems for special events and tape duplications.
The Hawaii Cooperative Fishery Unit promotes graduate training and research in fishery biology by providing students with support, counseling and facilities. The unit is headquartered in Edmondson Hall and functions academically as part of the department of zoology. Research program centers on the fishery biology and ecology of inshore marine and inland waters. The unit operates under joint sponsorship of the University, the Hawaii Department of Land and Natural Resources—Division of Fish and Game, and the U.S. Bureau of Sport Fisheries and Wildlife—Division of Fishery Services.

The Hawaii Institute of Geophysics was organized to take advantage of the unique position of Hawaii as a national laboratory for conducting geophysical research in the broad field of the earth sciences. In cooperation with academic departments devoted to the physical sciences, the institute conducts research programs and provides advanced training in geodesy, aeronomy, meteorology, oceanography, solid earth geophysics, geology, soils and geochemistry. The main laboratory of the institute is located at 2525 Correa Road on the campus. The institute also maintains a cloud physics observatory at Hilo, Hawaii, a ship operations facility at Pier 18, Honolulu, and a seismographic observatory in upper Manoa Valley.

The Hawaii Institute of Marine Biology, established in 1950, with facilities on Coconut Island in Kaneoh Bay and at Kewalo Basin, encourages research in the marine biological sciences, including fisheries, by providing facilities and services for faculty members, graduate students and visiting scientists. Its research programs include studies in the ecology, physiology, behavior and systematics of marine animals and plants, pollution studies, biology, chemistry and pharmacology of toxic marine organisms, fundamental research in the interrelationship of organisms and their environment, and an applied resource development and exploitation research under the Sea Grant Program.

The Industrial Relations Center, established in 1948, seeks to promote understanding of labor-management relations problems, techniques and policies. It serves labor, management and the community by providing information on personnel and industrial relations. The center maintains a library containing the basic information services, as well as current publications; provides reference service; and assists in conducting conferences, lectures and group discussions, and in training of advanced students. Research studies in basic industrial relations problems are published by the center, as well as a monthly Newsletter, a bimonthly Selected Acquisitions List, reprints, reading materials and bibliographies.

The Labor-Management Education Program, instituted in 1965, is under the general supervision of the Industrial Relations Center, College of Business Administration. Its objectives are to provide basic leadership training for those associated with management and labor, to promote (1)
understanding by both groups of the fundamental problems of mutual interest with which they deal; (2) knowledge of the factors which are essential to productive relations between them; and (3) appreciation of the public's interest in the satisfactory solution of their common problems. In addition to its schedule of general courses, the program conducts special courses, one-day and week-end institutes, conferences and staff training programs.

The Institute for Astronomy was founded in July 1967, to assume responsibility for the development of the University's research programs in astronomy. In cooperation with the department of physics and astronomy, with which certain of its staff share appointments, the institute provides graduate training on the Manoa campus and at its observing facilities. The institute operates observatories on Mount Haleakala, Maui, for studies of the sun (especially the corona) and of the zodiacal light. On Mauna Kea, Hawaii, an observatory for planetary and stellar studies, equipped with an 88-inch and two 24-inch telescopes, has recently been completed. A space astronomy program has obtained high resolution ultra-violet spectrograms of the sun from rockets, and is planning work based on satellites and space probes. The offices of the scientific staff, laboratories for data reduction and instrument development, and shops for instrument construction and maintenance, are located on the Manoa campus.

The Institutional Research Office is responsible for conducting and coordinating research relating to the University of Hawaii. An advisory committee aids in selecting institutional studies which are necessary for the University to function effectively and to plan realistically for the future. The office also develops and analyzes data on students, faculty and academic programs.

The Laboratory of Sensory Sciences performs basic research on all the sensory capabilities of man and other animals. Vision, hearing, taste, smell and the senses of the body are studied as well as their associated nerve reactions. In the laboratory are included the scientists, students and equipment in the disciplines of biophysics, psychophysics, electrophysiology, neurology and behavior, all investigating in common, but from different viewpoints, the basic question of the nature of sensation. This interdisciplinary approach, plus the year-round availability of marine animals for study in Hawaii, makes the laboratory unique in the study of the sensory processes.

The Land Study Bureau is the center of land research for the University and the state of Hawaii. The bureau plans and conducts a dynamic program of basic and applied research, and publishes its findings, with the objective of achieving highest and best use of the lands of Hawaii. Research is interdisciplinary with a broad base in the physical and social
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sciences. The bureau participates in the teaching program of the University and provides data for and works cooperatively with students, faculty and staff (including the East-West Center) as they seek solutions to Hawaii's environmental, economic and social problems. The bureau also advises and participates in the technological and economic development of areas throughout the Pacific and Asia.

The Legislative Reference Bureau, created by the legislature in 1948 to aid in legislative and governmental problems, is situated on the campus, where it maintains a reference library. It provides the legislature, governor, departments, institutions and agencies of the state with bill-drafting services, information and reports. During sessions of the legislature the bureau maintains an office at the state capitol.

The Harold L. Lyon Arboretum occupies 123 acres in upper Manoa Valley, about 4 miles from the Manoa campus. It was developed by the Hawaiian Sugar Planters' Association and presented to the University in 1954. Several hundred species of exotic trees and shrubs are established, inventoried and maintained, providing the University and scientific community with an unrivaled facility for research on tropical and subtropical plants.

The Pacific and Asian Linguistics Institute plans and conducts research in general linguistic theory and specific problems of lexicology, structural semantics, and grammatical description. Through its Pacific Lexicography Center, the research institute collects and stores data on the languages of the Pacific and adjacent areas, developing and utilizing computer techniques for storage and retrieval.

The Pacific Biomedical Research Center encourages investigations in the areas of subcellular biology, microbiology, cell structure and function, regulatory biology, genetics, behavioral sciences, epidemiology and other areas of medical research. Its building provides space; research equipment, such as electron microscopes; and research facilities, such as an animal colony, to faculty members, graduate students and visiting scientists. The center contains research laboratories for microbiology, physiology, biochemistry, biophysics, and psychology, in which it fosters and facilitates research projects of biomedical interest.

The Pacific Urban Studies and Planning Program is a multidisciplinary endeavor, located in the College of Arts and Sciences and directed by the participating academic departments and professional schools — architecture, economics, engineering, geography, political science, public health, social work and sociology. These departments and schools join with the program in offering graduate studies emphasizing planning and urban and regional development. The program also sponsors and facilitates problem-oriented research on urban and planning prob-
lems, particularly those relevant to Hawaii, the Pacific Basin and Asia and participates in, coordinates with and supports related University efforts.

The Population Genetics Laboratory was established in 1968 to conduct research in human genetics, especially on peoples of the Pacific Basin. The CDC 3100 computer at the laboratory is used also by visiting investigators from other institutions. The laboratory has been designated by the World Health Organization as its International Reference Centre for Processing of Human Genetics Data.

The Social Science Research Institute facilitates the initiation of faculty research and develops and conducts programs primarily of an interdisciplinary nature in the social sciences and related fields. Particular emphasis is given to the study of modernization, socio-economic development and cultural change. The institute is developing new programs in survey research, contemporary Korea, and Hawaii's people. A long-term study of culture and mental health in Asia and the Pacific provides an opportunity for Asian and American scholars to participate in cooperative research.

The Social Welfare Development and Research Center, operated by the School of Social Work, is involved in social welfare planning efforts, particularly in the fields of juvenile delinquency and youth development. It offers consultation and training to agency and interagency programs through workshops, seminars, special University courses and other projects.

The Speech and Hearing Clinic is operated by the division of speech pathology and audiology of the School of Medicine. Diagnostic and therapeutic services in speech and hearing are provided for children, University students, and other adults by staff members and supervised student clinicians. A fee of $5.00 per semester or part thereof is charged for non-University registrants.

The Speech Communication Center provides programs for students discovered to need special attention to improvement of their communication skills. The department of speech-communication conducts the evaluation program for the University. Students may be referred by their instructors for evaluation at any time. Persons whose skills are evaluated as below criterion are trained in the center until these skills are re-evaluated as at or above criterion (usually after fewer than twenty clock hours of training). Within the space available, the center accepts, on a fee basis, persons not enrolled in the University. The center also engages in basic and applied research and provides training of researchers in speech-communication.

The Statistical and Computing Center operates an IBM 7040-1401 system and an IBM 360/65 system, along with a supporting line of peri-
pheral punched card equipment. It provides services with respect to statistical consultation, system design, data processing, computing, and educational and reference advice to all the divisions and departments of the University.

The University of Hawaii Press publishes scholarly books and monographs, particularly those dealing with Hawaii, the Pacific and the Orient; regional books; and three scholarly journals, *Pacific Science*, *Philosophy East and West* and *Oceanic Linguistics*.

The Press is a member of the Association of American University Presses and the American Book Publishers Council. It was established in 1947 as a division of the University operating with the guidance of an advisory committee of seven members, drawn from the administration and faculty and appointed by the president. Book manuscripts should be sent to the director, journal papers to the respective editors-in-chief.

The Office of University Relations and Development is responsible for the production of all official University publications, for publicity and public relations activities, and for the coordination of efforts to raise funds for the University from private sources.

The Waikiki Aquarium is a state-owned museum specializing in Hawaiian aquatic exhibits. It is located in Waikiki and is operated by the University of Hawaii as a place for the education, recreation and inspiration of Hawaii's residents and visitors.

The Water Resources Research Center, established in 1964, plans and conducts research of both basic and practical nature related to Hawaii's water resources, and provides for the training of engineers and scientists through such research. Research is interdisciplinary with a broad base of physical sciences, technology and social sciences. It involves hydrology and hydraulic engineering, geology, geophysics and geochemistry, sanitary engineering and public health, climatology and soil physics, agricultural engineering and forestry, and socio-economic and legal aspects. The center promotes interdisciplinary programs in water resources research among various units of the University.

INTERNATIONAL PROGRAMS

The Office of International Programs aids the University in its international programming efforts by providing information, informal coordination and services as required. The office provides on-campus assistance to foreign visitors engaged in related international programs, as needed.

The assistant to the president for international programs provides general administrative support and program guidance to the University's
training centers; coordinates all business, administrative and training aspects of the University's international contracts; assists in devising and developing plans for new training programs; promotes and encourages the most effective use of the University's resources on international activities; provides on-campus assistance to foreign visitors as needed, particularly those engaged in related international programs.

With the establishment of the new Center for Cross-Cultural Training and Research, the University's efforts in training and research will be consolidated into one organizational unit. Training for Peace Corps, the Agency for International Development, the private sector and for many Asian organizations will be carried on at the Center's headquarters in Hilo, and other sites throughout the State and in Asia. The University continues to train more people for service in Asia and the Pacific than any other American institution.

The Center for Cross-Cultural Training and Research is administratively responsible to the chancellor of the University of Hawaii at Hilo, maintaining close liaison with the Manoa campus and the international community through an advisory council.

Peace Corps Training in Hawaii

The office of the training director provides general coordinative, administrative, and program direction and guidance to the training aspects of the University's contracts and involvement in Peace Corps training. It provides on-campus assistance to visitors as needed, particularly those engaged in related programs.

The training sites are located on the island of Hawaii (Big Island) and on the island of Molokai. Various aspects of training are also conducted on the islands of Kauai, Lanai, Maui and Oahu which have prepared trainees for volunteer service in South East Asian and Pacific countries: Ceylon, India, Indonesia, Korea, Malaysia, Nepal, Philippines and Thailand, and in Fiji, Micronesia, Tonga and Western Samoa.

COOPERATING INSTITUTIONS

Through cooperative agreements with institutions listed below, the University has increased its research facilities and expanded its services to the state. The Bishop Museum, the Pacific and Asian Affairs Council, and the Academy of Arts offer student membership rates.

The Bernice P. Bishop Museum, a world-famous storehouse of information, contains an outstanding reference library as well as important biological and anthropological collections relating to Hawaii and other Pacific islands. In addition, this institution holds the combined herbaria of the University and the museum, the most complete collection of Hawaiian plants in existence. The museum's research facilities are available to University students on a reciprocal basis.
The Hawaiian Fruit Flies Investigations laboratory is maintained on the campus by the U. S. Department of Agriculture, Entomology Research Division. Its principal objectives are the development of basic information on, and methods for the control and eradication of fruit fly agricultural pests, and recommendations under which produce can be treated and passed through quarantine into mainland and other markets. A substation is located at the Waiakea Experiment Farm near Hilo. The laboratory cooperates with the department of entomology, and other University and state agencies.

The Hawaiian Sugar Planters' Association provided the funds for building the Agricultural Engineering Institute with shop facilities for instruction and research. The association donated its renowned Lyon Arboretum, a dense botanical tree garden maintained by HSPA since 1919 and now used as an experimental lab by the University's botany department. HSPA has provided grants to the departments of agronomy and soils and plant pathology. It also supports a continuing graduate fellowship in entomology and supervises graduate students in research. Staff scientists and engineers serve as members of the affiliate graduate faculty and work on joint research projects with the University.

The Honolulu Academy of Arts has important collections of both Occidental and Oriental art. Installations of the permanent collection are augmented by a diversified schedule of temporary exhibitions including historical and temporary material from world-wide sources and a research library for Academy members, scholars and students.

The Pacific and Asian Affairs Council provides a World Affairs Program as an educational service to all public and private secondary schools throughout the state. The program operates in the schools as a major curriculum supplement. To produce the program, PAAC coordinates educational and professional resources in international affairs.

The Pineapple Research Institute of Hawaii, supported by the pineapple industry, has most of its scientific staff on the affiliate graduate faculty of the University. Offices and laboratories are located on a 150-acre experimental farm near Wahiawa, Oahu.

The Biological Laboratory, Honolulu, of the U.S. Bureau of Commercial Fisheries is located adjacent to the campus. Several of its senior staff members hold appointments on the Affiliate Graduate Faculty. The laboratory's mission is to conduct research on the oceanography and the fishery resources of the central Pacific Ocean. Its library, a comprehensive collection of works in the marine sciences, is available for use by students and faculty of the University. Requests for information should be addressed to the Director of Biological Laboratory, Honolulu, Bureau of Commercial Fisheries, P. O. Box 3830, Honolulu, Hawaii 96812.

The U.S. Geological Survey Volcano Observatory, located at Kilauea Crater on the island of Hawaii, conducts research relating to the Hawaiian volcanoes. Research facilities are made available on occasion to faculty and students of the University.
STUDENT ACTIVITIES

THE UNIVERSITY OF HAWAII offers an almost unlimited variety of programs and activities in which students are encouraged to participate. These programs and activities are provided for the entire University community and are administered by students. Programs are available in cultural and social activities, public affairs, educational experimentation, community service, publications and radio, and recreation. The two major organizations which provide these programs and services are the Associated Students of the University of Hawaii (ASUH) and the Campus Center Board.

The ASUH through its elected officers serves as the administrative and legislative body for students in participating in the policy making councils of the University. Among the activities directly administered by ASUH are experimental courses, innovative, interdisciplinary programs, a series of major symposia on public affairs, and a wide variety of other programs and services. The Campus Center Board presents programs in the cultural, social, recreational, and public affairs areas. It operates as an all-University representative body comprising not only students, but faculty, administration, and alumni as well. The scope of its present programs, administered by the Activities Council, will be greatly expanded upon the construction and completion of the new five million dollar Campus Center.

*Ka Leo o Hawaii*, the campus newspaper, is entirely staffed by students and opportunities are available in news-editorial writing, advertising, and in the Board of Publications Press. The Board of Publications which serves as publisher for *Ka Leo* also publishes *Kapa*, a literary magazine.

Other programs and activities of general interest to students are theatrical productions, about 100 different scholastic, honorary, professional, religious, social, departmental, special interest and residence organizations; the University band and chorus, and sports, including intercollegiate athletics and intramurals.

Students interested in participating in any of these programs or who desire to find out what other organizations and programs are available should inquire at the Bureau of Student Activities on the second floor of Hemenway Hall. The Bureau of Student Activities is responsible for the coordination of programs and services.
Rights and Freedoms of Foreign Students

The University of Hawaii, like all state universities, embraces those aspects of academic freedom which guarantee the freedom to teach and the freedom to learn. Free inquiry and free expression for both students and faculty are indispensable and inseparable. Students, whether from the United States or from foreign countries, as members of the academic community are encouraged to develop a capacity for critical judgment and to engage in sustained and independent search for truth.

Students from foreign countries, as full participants in the educational process at the University of Hawaii, have the right to pursue formal knowledge, verbal or written, in whatever directions and with whatever legitimately appropriate associations as are necessary, without fear of reprisal.

For its part, the University of Hawaii guarantees all students the freedom of silence. No student is required to engage in research on any topic or to make statements of any kind, unless it is his wish to do so.

The University of Hawaii would be most concerned if any government placed its own nationals in jeopardy for engaging in normal academic studies on its campus; it urges other governments to accept the concepts of academic freedom prevalent here if they intend for their nationals to study at this institution.

Orientation for Freshmen and New Students

Entering freshmen and transfer students are expected to be on the campus for the orientation program, the dates of which are stated in the University calendar (p. 2). This program is conducted by the Bureau of Student Activities and sponsored by the Associated Students of the University of Hawaii. It tries to reach as many new students as possible to help them get acquainted with the University.

Intramural-Extramural Sports Program

The intramural-extramural program at the University of Hawaii is designed to provide opportunities for students and staff to participate in competitive and non-competitive, organized and informal sports activities as regularly as their time and interests permit. This is accomplished by taking part in one or both of two basic aspects of the program: (1) organized and competitive, (2) informal, self-directed, less competitive.

In the former, participants enter teams or individually in meets, leagues and tournaments and play according to specific schedules. This competition involves pre-arranged facilities, equipment, supervision, officials, and usually recognition through awards and student newspaper publicity.
The second phase or informal participation lacks most of the foregoing characteristics and emphasizes self motivated, impromptu recreation. For example, when facilities are available, students swim, shoot baskets, lift weights, play tennis, paddleball, and golf.

Most of the basic equipment is available on a check out basis. The program is essentially voluntary and free with the exception of bowling and golf for which there are the usual fees.

Each year the intramural staff organizes tournaments and leagues for twenty different activities. Students may contact the Intramural Office at 944-7294 for further information concerning the program.

For instruction in the various activities offered in the program, see listings under Health & Physical Education section of the College of Education following in this catalog.

**Intercollegiate Athletics**

University teams compete in the following varsity sports: baseball, basketball, football, golf, gymnastics, sailing, soccer, tennis, track-and field, volleyball, and wrestling. Interested students should contact the athletic department for further information regarding participation in the intercollegiate program.

ASUH members are admitted free to varsity athletic events.

**Liability for Injury**

Although the University takes reasonable precautions, it assumes no responsibility for injuries students receive in sports or games. All students participating in varsity sports are insured against accidents.

**STUDENT SERVICES**

**Student Health Service**

The Student Health Service is set up to assist the student in protecting his health. Facilities are housed in the Student Health Service building located at 1710 East-West Road and include both an out-patient clinic and an infirmary. Most of the common everyday illnesses that occur in a student can be cared for through this service, and if simple bed care is indicated, the student may be admitted to the infirmary. The clinic hours run from 8:00 a.m. to 11:30 a.m. and 12:30 p.m. to 4:00 p.m., Monday through Friday and 9:00 a.m. to 11:00 a.m. on Saturdays. A nurse is available during off-duty hours for emergency services only.

Although the service is free, students must pay for drugs prescribed and there is an infirmary charge at $4.00 a day. The health care services are limited; supplemental health and accident insurance is therefore essential to provide the student with medical care beyond the scope of this
service. For information about the ASUH sponsored health insurance plan, consult the Bureau of Student Activities or the Student Health Service.

The University requires that all newly registering daytime students undergo a complete medical examination, and the results of this evaluation must be submitted to the Student Health Service on the University of Hawaii Health Form for approval before medical clearance can be granted and registration completed. Medical services will be denied all students who do not comply with this requirement. Students who are returning to the University of Hawaii to continue their education after dropping out of the University for more than four years must resubmit this health form for approval. Payment for these preadmission medical examinations is the personal responsibility of the student.

Tuberculosis remains a distinct health hazard for all students. A tuberculin test performed within six months of enrollment is required. An annual chest x-ray is mandatory for all positive tuberculin reactors. For foreign students, a chest x-ray taken within six months of enrollment is required for entrance into school, so the above tuberculin test may be omitted.

Residents of University housing must obtain a medical clearance from the Student Health Service before they are permitted to reside in the residence halls. Students afflicted with any contagious illness must leave the residence hall for the duration of the contagious period of the illness.

**Counseling and Testing Center**

The Counseling and Testing Center's staff consists of professionally trained psychologists, psychiatrists, counseling psychiatric social workers, psychometrists and interns, who, as a team, function on the campus in the areas of student service, graduate training and academic research. Educational, vocational and personal counseling is available to students. Various aptitude, interest and other psychological tests are often used as aids in the counseling process. The Center also maintains an educational and vocational library.

**University Placement and Career Planning**

The Office of University Placement and Career Planning assists students and alumni in the selection and pursuit of an optimum career. Services are provided in areas of self-analysis, vocational information, specific job opportunities, job campaigns, evaluation of offers, and graduate studies. The office cultivates the interest of prospective island, mainland and overseas employers and provides them with facilities to contact stu-
Students and former students available for employment. Recruiting literature, annual statements, graduate and professional school bulletins, copies of the College Placement Annual and other career references are provided. Credential files are established for students interested in an academic career.

Campus interviews are scheduled with recruiting representatives of mainland and Hawaii organizations that offer career opportunities in business and industry, education and government. A number of recruiting firms are interested in hiring foreign students for employment in their home countries. In addition several hundred employment opportunities are listed with the office by employers who find it impractical to make campus visits.

Early registration is encouraged during the final year of study.

**International Student Office**

The International Student Office serves both foreign and American students. It helps those from other countries with immigration requirements, financial problems, living arrangements and other University and community matters. Special orientation programs are held at the beginning of each semester; foreign students admitted to the University are notified in advance and urged to arrive in time to attend them.

The office, located in Webster Hall 101, advises American students
who seek opportunities for overseas study, service and travel, and who wish to engage in international student activities while at the University of Hawaii.

Non-U.S. citizens who are graduates of a university and are applying for admission to the University of Hawaii should write to: Graduate Division Student Services, University of Hawaii, 2540 Maile Way, Honolulu, Hawaii 96822. Those interested in undergraduate admission should contact: Office of Admissions and Records, University of Hawaii, 2444 Dole Street, Honolulu, Hawaii 96822.

Lockers

Steel book lockers for students are available in Wist Hall. Use of a locker for the first and second semesters may be obtained by calling campus local 8961 with the number of the locker desired. The Facilities Management Office will advise the student about pickup of the key. All keys must be returned before Commencement.

STUDENT REGULATIONS

Student Conduct

The University of Hawaii has a Code of Community Standards which defines expected conduct for members of the University community and which specifies those acts subject to University sanctions. The disciplinary authority is exercised through the Student Conduct Committee composed of four students, four faculty members and a non-voting chairman. The committee has developed procedures for hearing allegations of misconduct.

Complete copies of the Community Standards Code and Student Conduct Committee procedures are published in the Handbook and are also available at the Office of the Dean of Students.

Financial Obligations to the University. Students who have not adjusted their financial obligations (traffic violations, library fines, locker fees, laboratory breakage charges, transcript fees, loans past due, etc.) to the satisfaction of the business office may be denied graduation, transcripts, and further registration.

Intoxicating Beverages. Intoxicating beverages are prohibited on the campus and in affiliated buildings, including dormitories and facilities for all fraternities, sororities and other organizations.

Lethal Weapons. Firearms and spear guns are prohibited in dormitories and environs.
STUDENT AFFAIRS

Parking and Traffic

Students are expected to familiarize themselves with the University's parking and traffic rules and regulations established by the board of regents. These regulations and special instructions may be obtained at the Office of University Relations in Bachman Hall, at the Traffic Desk in the Auxiliary Services building, and also during registration periods at the lanai area of the swimming pool located in the quarry. Ignorance of these rules and regulations will not excuse a student from the payment of fines for violations.

Parking permits are sold in the lanai of the swimming pool (quarry) during registration periods, and at the Traffic Desk in the Auxiliary Services building throughout the year.

STUDENT HOUSING

The student must be fully aware of several problem areas in making plans to attend the University of Hawaii.

First, finding suitable housing will be a major problem unless handled in advance of academic registration. Acceptance to the University does NOT assure one of housing. Housing in this community is scarce, difficult to find and expensive.

Second, there is only a limited number of residence hall facilities on campus. Almost all of these assignments go to state of Hawaii residents since priority is given to these students. There are no facilities on campus for married students. The Student Housing Office keeps listings of available off-campus spaces but most of these are small units scattered throughout Honolulu. These units are limited and reserved usually a month or more in advance of a term. Remaining facilities are usually farther away from campus and very expensive.

The student is cautioned to be prepared to make temporary housing arrangements in hotels or other quarters, if possible in advance, and to bear in mind that rental rates can quickly use up personal funds. He must utilize all possible avenues of searching for housing including newspapers, rental agencies, personal or professional contacts in the community or other sources.

Inquiries concerning student housing should be directed to the Student Housing Office, Johnson Hall-A, 2555 Dole Street, Honolulu, Hawaii 96822.

On Campus

Residence halls for regular University students administered by the Student Housing Office include:
STUDENT AFFAIRS

Frear Hall, Hale Kahawai, Hale Laulima — (for undergraduate women) $406 room and board per semester.
Johnson Hall — (for undergraduate men) $406 room and board per semester.
Gateway House — (for graduate and upper division undergraduate men and women) $436 room and board per semester.
Board includes 10 meals per week.
All halls have double rooms except for a limited number of single rooms at Hale Laulima at $461 room and board per semester.

Off Campus

The Student Housing Office offers a free central listing service and maintains listings of rooms in private homes, a few apartments, and room and board jobs. However, these listings are very limited and quickly exhausted. Moreover, these off-campus landlords must be handled directly by the student. Because of the rapid turnover, the names of landlords cannot be sent through the mail. Spaces which are available to be shared with other students are listed in the office for convenience but names of individual students or roommate requests are not listed. The rush for housing usually starts about three weeks prior to beginning of classes. There is no place on campus to which luggage or mail may be forwarded ahead of arrival.

Food Services

In addition to the Gateway House cafeteria, dining facilities on campus include:
Hemmemway Hall Cafeteria. Meals a la carte are served.
East-West Center Cafeteria. A complete food service in Jefferson Hall, including a cafeteria, a snack bar and private dining rooms.
A snack bar in the northeast section of the campus.

Expenses

Minimum expenses are estimated at approximately $2,408 per year for board, room, tuition, registration, course fees, class and student body fees, and books. Off-campus housing may be higher. These estimates do not include the cost of medical or dental expenses, additional dependents or transportation. Students from outside the state should add the cost of transportation to and from Hawaii and additional items for adjustments in a new community.
Refer to "Tuition and Fees" section beginning on p. 39 for further information.
FINANCIAL AIDS

The Office of Financial Aids is concerned primarily with assisting students who have financial need to continue or complete their education at the University of Hawaii. This assistance may be in the form of scholarships, grants, loans and/or student employment. One application form for financial aids is all that is required. Completed applications received prior to March 1 will be given priority. Application forms and correspondence should be addressed to: Director, Office of Financial Aids, 1627-A Bachman Place, Honolulu, Hawaii 96822. Graduate students seeking scholarships, fellowships or teaching assistantships should write to: Dean of the Graduate Division, 2540 Maile Way, Honolulu, Hawaii 96822.

Scholarships and Grants

State Government Scholarships and Grants

State Scholarships: 400 tuition scholarships ($206) are awarded annually to full-time undergraduates who have resided in Hawaii five years prior to application. Awards are renewable providing the recipient maintains a satisfactory record.

Board of Regents Scholarships: 30 tuition scholarships ($206) are awarded annually to full-time undergraduates; 10 reserved for foreign students.

Waivers of Tuition: 250 waivers ($206) are awarded annually to full-time undergraduates with exceptional financial need.

Federal Government Scholarships and Grants

Educational Opportunity Grants: The University of Hawaii participates in the Federal Educational Opportunity Grant Program which provides assistance to full-time undergraduate students with exceptional financial need. Grants range from $200 to $1,000 and must be matched with scholarship, loan, and/or campus employment.

Law Enforcement Grants: The University of Hawaii participates in the Federal Law Enforcement Grant Program which provides assistance to persons employed full time in a public law enforcement agency and pursuing a course which will improve them professionally. Maximum grant is $300 a semester for tuition and fees.

Nursing Scholarships: The University of Hawaii participates in the Federal Nursing Scholarship Program which provides assistance to full-time undergraduates with exceptional financial need in both Technical and Professional Nursing. Awards may range from $200 to $1,500.

Health Profession Scholarships: The University of Hawaii participates in the Federal Health Profession Scholarship Program which provides assistance to full-time medical students with exceptional financial need. Maximum scholarship is $2,500 a year.
Endowed Scholarships Administered by the Financial Aids Office

Riley H. Allen Memorial Fund
Chinese Community Club Scholarship
Harry H. Collins Memorial Scholarship
John Fee Embree Memorial Scholarship
Fushiminomiya Memorial Scholarship
Charles R. Hemenway Scholarship
Honolulu Civic Association Scholarship
Rubie Ethel Kono Scholarship
Korean University Club Scholarship
Robinson A. McWayne Scholarship
Emma K. Mossman Scholarship
N. Obermer Chamber Music Scholarship
Stephen Spaulding Scholarship
University of Hawaii Scholarship
Kenji Yamaguma Memorial Scholarship

Other Scholarships (Privately-Sponsored) Administered by the Financial Aids Office

Scholarships Based on Specific Majors:

For Engineering: Won Kiu Ahn Engineering Scholarship; Chi Epsilon Alumni Scholarship; General Motors Scholarship; Francis Kanahele Scholarship (for Pre-Law also); Edward K. S. Park Memorial Scholarship; Shimazu, Shimabukuro & Fukuda, Inc. Scholarship.

For Business Administration: Theodore Char CPA Accounting Scholarship; Matson Navigation Scholarship; Kazuo & Akiyo Totoki Scholarship.

For Art: Joseph Goldinger Memorial Scholarship; Kenny Gruenhagen Foundation Scholarship (for Architecture also); Sueko Kimura Art Scholarship; Rubie Ethel Kono Scholarship (for Music also); Gordon Mark Art Scholarship.

For Travel Industry & Management: Hawaii Hotel Association Scholarship; Hawaiian Airlines Scholarship; Ilikai Scholarship; William A. Patterson—United Airlines Scholarship (for juniors and seniors); Sheraton Foundation Scholarship; Sky Chefs Scholarship; Western International Hotels Hard Corps Scholarship.

For Social Sciences: John Fee Embree Scholarship; Kappa Iota Jack Karby Scholarship.

Miscellaneous: Sears Roebuck & Co. Foundation Scholarship (for Human Resources & Development); Allstate Foundation Nursing Education Scholarship; Judd-Larsen Scholarship (for Medicine); Molyneux-Halford Scholarship (for Social Work, Nursing, Public Health, or Medical Technology, Speech Pathology & Audiology, Dental Hygiene); Music Department Scholarships.
Other Scholarships:

Leora Parmelee Dean (sponsored by the Women's Campus Club); Hawaii Government Employees' Association, University Chapter; Harold E. Hicks Memorial Scholarship Fund; Hui Pookela, Chapter of Mortar Board Scholarship; International Association of Machinists Union 1245; Emma Mossman; Palolo Lions Club; William A. Patterson—United Air Lines (for freshmen & sophomores); Antone Vidinha Scholarship; Wahiawa Lions Club Scholarship.

Scholarships Administered by Private Organizations

Questions regarding the following independent scholarships should be directed to the individual sponsors of these awards: Aiea High School PTA; Aiea Lions Club; Ala Moana Lions Club; Associated Chinese University Women's Club Scholarship; Betty Crocker; Hope Bettilyon—National Association of Home Builders Scholarship; Brother David Paaluhi; Central Maui Hawaiian Civic Club; Chinese Women's Club; “Chu” Baldwin Kahanamoku Foundation; Dole Scholarship; Ewa Beach Lions; Filipino Scholarship Foundation; First Trust Company of Hilo; Fort Shafter NCO Wives' Club; Fort Shafter Women's Club; Fukunaga Scholarship; General Henry Arnold Education Fund, U. S. Air Force Aid Society; Harold B. Turney—Dorothy K. Gillett Music Fund; Hawaii Society of Medical Technologists Scholarship; Hawaii Veterans Memorial Fund; Hawaiian Civic Club; Honolulu Community Chest; Honolulu Japanese Junior Chamber of Commerce (Nursing); Hui O'Wahine; IBEW, Unit I, Local Union 1186; Independent Telephone Pioneer Association; Joseph F. Smith Memorial; Kailua High School; Kailulani Trust; Kalia Lions Club; Kamehameha School; Leeward Oahu Lions Club; Leilehua F.T.A.; Leonard's Bakery; March of Dimes Health Careers; McKinley High School National Honor Society; Miles E. Cary Memorial; Pacific Fellowship (sponsored by the American Association of University Women); Pali Lions; Rama Watumull Fund; Ralston Purina; Ruth C. Scudder Memorial (sponsored by the Women's League of Central Union Church); Society of American Military Engineers; Standard Oil Co. FFA; Star Markets, Ltd.; United Okinawan Association of Hawaii; Wahiawa Hawaiian Civic Club; Waialua Hawaiian Civic Club; Waialua High School P.T.A.; Wallace Rider Farrington (for graduates of Farrington High School sponsored by the Honolulu Star-Bulletin); Wong Kong Har Tong Society; Hawaiian Telephone.

Loans

Short-Term Student Loan Program. The University of Hawaii administers a Short-Term Student Loan Fund Program financed by monies from private individuals, civic groups and organizations. The purpose of this loan program is to assist full-time students in meeting small financial emergencies with loans that do not bear any interest charges.
First-year students (freshmen and transfers) are not eligible for these loans if their permanent residence is other than Hawaii. Loans are made only to students who: (1) are registered as full-time students; (2) have already earned at least 25 University of Hawaii credits (exclusive of transfer credits) at the time of application; (3) have a minimum of a 2.0 cumulative grade-point average at the time of application; and (4) have cleared any and all financial obligations to the University of Hawaii (previous student loans, traffic fines, deferred tuition, etc.) at the time of application.

Funds from the Short-Term Student Loan may not be used for the down payment on Deferred Tuition. Loans will be available to students only during the fall and spring semesters and up to the last three weeks of instruction in each semester.

Students wishing to make use of these funds should consult one of the financial aids counselors. Loan funds include the following:

- Alumni Fund—Molokai Chapter
- Andrew J. Salz Fund
- Carey D. Miller Fund
- Chinese Students’ Alliance Fund
- Commerce Club Fund
- Doin Kwon Memorial Fund
- Edgar Wood Memorial Fund
- Future Farmers of America, Uniwai Chapter Fund
- George H. Lamy Fund
- Gruscidada Fund
- Hawaiian University Association Fund
- Helen Strong Carter Dental Fund
- Honolulu Civic Association Fund
- Inez Wheeler Westgate Fund
- Japanese Students’ Alliance Fund
- Louise S. Jessen Memorial Fund
- Mary L. Kelsey Fund
- Minnesota Club Fund
- Moir-Ross Health Fund
- N. G. B. Fund
- Ruth Alexander, M. D., Student Fund
- Representatives Club Fund
- Ruth Betzner Fund
- Senior Class Fund
- Student Fund of the College of Education
- Theodore T. Kawahara Memorial Fund
- Wahiawa-Waialua Rotary Fund

**Federal Loan Programs.** The National Defense Student Loan, Nursing Student Loan, Medical Student Loan and Law Enforcement Loan programs are available to qualified students attending the University of Hawaii. Students are not required to repay any of the principal or interest until nine months after leaving their studies. For the borrowers who enter the teaching or nursing professions, it is possible for them to cancel part or, in case of some teachers, all of their loans if certain conditions are met. Applications for these loans are available in the Financial Aids Office.

Students wanting to borrow through the Federal Guaranteed Loan Program must process their applications through the agency designated in the state where they maintain permanent residence. Hawaiian students are required to go through the State Department of Budget and Finance. (In Hawaii this is the same as the United Student Aid Fund Loan. Application forms are available from the Department of Budget and Finance, commercial lending institutions, or Financial Aids Office, University of Hawaii.)

**State Higher Education Loan Program.** This loan program is available to qualified full-time resident students attending the University of Hawaii.
Payment of interest and principal is not required until six months after termination of full-time studies. The loan interest rate shall be one-half of the commercial loan interest rate prevailing in the state at the time the borrower ceases full-time studies.

**Student Employment**

The University of Hawaii participates in the Federal College Work-Study Program and also employs students to work part-time in offices, laboratories, libraries, in maintenance work and other jobs on campus.

Students who plan to work their way through college are advised to have funds for all major expenses (tuition, books, room, board, clothing and travel) for the first year. Keen competition for jobs as well as the problems of adjusting to university life make it difficult for first-year students to earn more than limited spending money.

Applications for student employment are obtained from the Financial Aids Office. Preference is given to students with greatest need for financial assistance in order to continue their education.

**PRIZES AND AWARDS**

**General Honors**

**Deans' List.** Shortly after the close of each semester the *Deans' List* gives the names of all full-time undergraduate students who achieved a grade-point average of 3.5 or above for the preceding semester.

**Honorary Societies.** Chapters of national honorary societies at the University include Phi Beta Kappa Alpha chapter (liberal arts and sciences); Phi Kappa Phi Hawaii chapter (general scholarship); Sigma Xi (sciences); Pi Gamma Mu (social sciences); Phi Delta Kappa (education); Sigma Pi Sigma (physics); Chi Epsilon (civil engineering); Eta Kappa Nu Association (electrical engineering); Omicron Delta Kappa (scholarship and leadership); Phi Eta Sigma (freshman men); Mortar Board Hui Pookela chapter (senior women); Alpha Lambda Delta (freshman women); Pi Lambda Theta Beta Zeta chapter (women in education); Delta Phi Alpha (German); Pi Delta Phi (French); Beta Phi Mu (library studies); Beta Gamma Sigma (business administration).

**General Awards**

American Institute of Chemists' Award for outstanding achievement in chemistry.

Arthur Lyman Dean Prize for Undergraduate Research—any senior may compete for this prize by presenting a thesis reporting fully his research in any field of intellectual endeavor. The winning paper is placed in the Hawaiian and Pacific Collection of Sinclair Library.

Bernadine Siu Yin Ho Memorial Speech Award, a cash prize for excel-
lence, dedication and service to the University's forensics program. The winner's name is engraved on a perpetual trophy.

Carl F. Knobloch Prize in Government, cash prize to the outstanding student in the field of political science.

Charles Eugene Banks Memorial Prize, cash prize awarded each year to the student whose manuscript is judged the best in a creative writing contest. This manuscript is placed in the Hawaiian and Pacific Collection of Sinclair Library.

Charles F. Loomis Prize, cash award to an undergraduate for outstanding contribution to understanding of people and events in Asia or the Pacific Basin. Entries in the competition may be research or interpretive papers.

Departmental Awards, ASUH Certificates, to students who performed outstanding services for their departments while maintaining excellent scholastic records.

Ernest Hemingway Memorial Award, annual cash award to junior student, resident of this state, for creative and original writing ability.

Faculty Club Prize, cash award to the senior who graduates with the second highest scholastic record in the class.

Hawaiian Botanical Society Award, annual cash award and perpetual plaque in the department of botany, honoring a senior for outstanding academic record in the plant sciences.

Health Award Scholarship in medicine, for outstanding academic record and achievement in the pre-medical program.

Joseph Fielding Smith Memorial Award, annual cash award for outstanding performance in speech-communication arts. Academic record considered.

Library Prize for Pacific Research, two cash awards (graduate and undergraduate) for the best papers based upon research in the Pacific area. The prize-winning papers are placed in the Hawaiian and Pacific Collection of Sinclair Library.

Merck Drug Co. Award, for outstanding achievement in chemistry.

O. C. Magistad Award of the Hawaiian Section of the American Chemical Society. A one-year membership and subscriptions to several journals to the outstanding senior in chemistry. The winner’s name is engraved on a bronze plaque.

Phi Beta Kappa Recognition Award, made in recognition of high scholastic standing among sophomores in arts and sciences.

Phi Kappa Phi Prize, cash awarded by the Hawaii Chapter to the senior who graduates with the highest scholastic record in the class.

Ralph S. Kuykendall Prize in History, granted to the outstanding history major in the graduating class.

Real Dean Award of Honor, medal award in recognition of four years of outstanding service in student activities.

Sigma Pi Sigma Scholarship Award, presented annually to outstanding student in physics.
STUDENT AFFAIRS

Taraknath Das Prize in Asian History and Politics, an annual cash prize, offered by the Taraknath Das Foundation, to a senior submitting the best essay on a selected topic in the field.

Theatre Group Annual Award, medal awarded to an undergraduate for outstanding contribution to the University Theatre.

Theatre Group Playwriting Prizes, cash prizes awarded annually for the three best original short plays written by Hawaii residents.

Agriculture

Danforth Summer Fellowship Award, given by the Danforth Foundation and Ralston Purina Company of St. Louis, to an outstanding junior in agriculture.

Alonzo Gartley scholarships, awarded to undergraduate agriculture students.

Ralston Purina Company scholarship, awarded to an outstanding student in agriculture.

Zera C. Foster Memorial Award, to an outstanding student in the field of soil science.

Business Administration

Business Education Award of Merit for outstanding achievement in the field.

Dean Wermel Memorial Plaque, a perpetual plaque honoring the outstanding senior in business administration each year.

Outstanding Junior in Business Administration, a plaque awarded to the outstanding junior in the field.

Outstanding Seniors in Accounting, cash awards made annually to three outstanding seniors in the field.

Outstanding Senior in Business Economics and Statistics, a perpetual plaque honoring the outstanding senior in the field.

Outstanding Senior in Finance, Insurance, Law, and Real Estate, a perpetual plaque honoring the outstanding senior in the department.

Outstanding Senior in Management, a perpetual plaque honoring the outstanding senior in the field.

Outstanding Senior in Marketing, a perpetual plaque honoring the outstanding senior in the field.

Outstanding Senior in Personnel and Industrial Relations, a perpetual plaque honoring the outstanding senior in the field.

Outstanding Senior in Travel Industry Management, a perpetual plaque honoring the outstanding senior in the field.

Engineering

American Society of Civil Engineers Award, Hawaii Section, a cash prize and a year's membership in the Society to an outstanding senior in civil engineering.

American Society of Civil Engineers Wives' Auxiliary Award, to five outstanding graduates in civil engineering.
American Society of Mechanical Engineers Wives' Auxiliary Award, to three outstanding seniors in mechanical engineering.

Chi Epsilon Freshman Award, to an outstanding engineering freshman.

Eta Kappa Nu Sophomore Award, to the engineering sophomore making the highest grade-point ratio.

Robert Edwin Hughes Award in Engineering, for outstanding engineering report-design, accomplishment or achievement by an undergraduate in the field.

Human Resources Development

Carey D. Miller Award, annual cash award to a senior outstanding in scholarship and leadership.

Hawaii Home Economics Association, annual cash award to an outstanding sophomore.

Human Resources Development Faculty Award honoring the freshman and senior with highest grade-point averages.

Hawaii Dietetics Association Award, annual cash award to an outstanding senior graduating in Dietetics.

University of Hawaii Chapter of American Home Economics Association Award honoring the outstanding member of the Chapter.

Stokely-Van Camp Silver Trivet Award to a top-ranking graduating senior in Food and Nutritional Sciences.

Danforth Summer Fellowship Award given by the Danforth Foundation and Ralston Purina Co. of St. Louis to an outstanding junior.

Military Science and Aerospace Studies

Best Soldier Award, to the sophomore Army ROTC cadet who attained highest ROTC grades for the academic year.

Best Soldier Award, medal presented by the Honolulu Star-Bulletin to the freshman cadet who attained the highest grades in ROTC for the academic year.

Captain H. Gaylord Dillingham Memorial Award, to the Air Force ROTC cadet having the highest scholastic record at the end of the sophomore year and who is approved for advanced training.

Major John A. Johnson Memorial Award, cash award, presented to the Army ROTC cadet with the best scholastic record at the end of the sophomore year and who is approved for advanced training.

Warrior of the Pacific Trophy. The Department of the Army supervises an annual rifle marksmanship competition among ROTC infantry units in universities for possession of a bronze statuette of a native Hawaiian soldier. Residents of Hawaii offer the trophy.

Society of American Military Engineers, a cash award to distinguished junior and senior engineering cadets in both Army and Air Force ROTC.

Air Force ROTC scholarships to deserving applicants which cover tuition, fees, laboratory and graduation expenses.
Tuition and Fees*

Regular Session Fees

Fees are charged according to the number of semester hours carried by the student; auditors (those enrolled in a course for no credit) pay the same fees as students enrolled for credit.

*Full-time students* (12 or more credit hours) per semester:

<table>
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<tr>
<th></th>
<th>Resident</th>
<th>Non-resident</th>
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<tr>
<td>Tuition</td>
<td>$85.00</td>
<td>$340.00</td>
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<tr>
<td>General Fee</td>
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</table>
| Course fees for applied music and institutes  
(see listings under appropriate colleges) |          |              |
| Activities Fees†  
(for all undergraduate students) | 13.25     | 13.25        |

*Part-time students* (less than 12 credit hours)

Resident tuition (maximum of $85.00) —
(per credit hour) 9.00

Non-resident Tuition (maximum of $340.00) —
(per credit hour) 30.00

No General Fee

No Activities Fees

Summer Session Fees

Tuition (courses audited or taken for credit)  
(per credit hour) $20.00       $30.00

Student Activity Fee (applies to 1st term)  2.50       2.50

Course fees for applied music, institutes, and other special programs as noted in *Summer Session Bulletin.*

*The tuition and fee schedule set forth here is subject to change.

†The activities fees are optional and the benefits limited for graduate students and for those taking fewer than 12 credit hours. In such cases they are payable at the Student Activities Office where complete details are available.
TUITION AND FEES

Division of Continuing Education Fees

Students registered in courses offered by the Division of Continuing Education pay fees as indicated in the bulletins of that division.

Other Registration Fees

Late registration fee which is added to the student fees when a student registers or pays the fees after the announced days of registration ......................................................... $5.00

Change of program after the initial registration ................. 2.00

(does not apply to complete withdrawals from the University)

Graduation Fees and Rentals

Graduation Fee: (payable at time of application)

Bachelor's degree (each) .................................................. 5.00
Advanced degree (each) .................................................. 5.00
Five-Year certificate ..................................................... 2.50
Associate of Science .................................................... 2.50

Thesis Binding, 2 copies .................................................. 4.00
Rental of Cap and Gown .................................................. 4.00*
Rental of Master’s Hood .................................................. 4.50*
Rental of Doctoral Hood .................................................. 5.00*

Special Fees

Evaluation Fee (all out-of-state applicants)† .......................... 10.00
Transcript of Record (no charge for first copy) ................... 1.00
Credit by Examination (per course) .................................. 5.00
(payable at time of application)

Special Examination ..................................................... 10.00
(in regularly constituted courses at other than the specified times, except for make-up examinations)

*The rental schedule set forth here is subject to change.
†Applications from outside Hawaii must be accompanied by a $10.00 application (money order, cashier's check, or certified check). This fee is not refundable and does not carry credit toward tuition, even though the applicant may be admitted to the University.
Replacement of laboratory equipment
(items broken or lost) ........................................... Cost of Item

Check tendered to University or any department therein
and returned for any cause:

Drawn on bank within State of Hawaii .......................... 5.00
Drawn on bank outside State of Hawaii ......................... 10.00

Payments

For registration to be official all fees must be paid within 24 hours
after the close of the final day of regular registration.

Refunds

Only tuition and special course fees for the academic year may be re­
frunded to students who withdraw from courses, the percentage refunded
to be in accordance with the following schedule:

Withdrawal during
  first two weeks of instruction, 80%
  third and fourth weeks of instruction, 40%
  remainder of semester, 0%

For summer session refund schedule see Summer Session Bulletin.

No reimbursement of student activities fees will be granted unless a
person withdraws within two weeks after registration or becomes a part­
time student during this period, whereupon he will receive 100% refund.
Applications for refunds must be made at the treasury office, and ap­
proved by the dean concerned.

G. I. Bill Educational Assistance Program

Veterans, orphans and widows of veterans who are registering for the
first time under any of the various Federal Veterans' Bills, must present a
proper Certificate of Eligibility and Entitlement or Certificate for Educa­
tion and Training to the Financial Aids counselor during registration
week.

Inquiries concerning attendance at the University of Hawaii under
the G.I. Bill should be directed to the Honolulu V.A. Regional Office,
P. O. Box 3198, Honolulu, Hawaii 96801.
STUDENT CLASSIFICATION

Persons attending classes at the Manoa campus of the University of Hawaii enroll as students or auditors. Undergraduates and graduate students enroll for credit. Auditors are permitted to attend classes but receive no credit for the course. Students may be designated as classified or unclassified, full-time or part-time.

Classified Students

Undergraduates are designated classified or unclassified students. Classified students follow prescribed programs of study leading to the bachelor's degree. Undergraduates are divided as follows: freshmen, 0-24 credit hours completed; sophomores, 25-54; juniors, 55-88; seniors, 89 or more. Freshmen and sophomores are lower-division students; juniors and seniors are upper-division students.

Graduate students (graduates of this University or other institutions of approved standing) are designated classified, professional diploma candidates or unclassified.

Those admitted to the University's Graduate Division are termed classified students, in one of three categories: regular, probational and special. These students work toward advanced degrees or in special non-degree training or certificate programs.

Professional diploma candidates are graduate students in the College of Education following a curriculum leading to that diploma.

Unclassified Students

Undergraduate and graduate students who are not candidates for a degree are termed unclassified students in their respective divisions and enroll in the Division of Continuing Education. Some unclassified graduate students work toward the professional certificate of the State Department of Education, and others later seek admission to the Graduate Division. The unclassified status may not be used to evade technical or scholastic requirements of the college, school or Graduate Division.

Full-time and Part-time Students

Undergraduates, graduates and unclassified students may be either
part-time or full-time students. Such terms are for registration purposes only and have no further significance. Ordinarily a full-time student carries a minimum of 12 credits. Graduate students are considered full-time or part-time according to Graduate Division regulation. Unclassified students are ineligible for student deferments by the Selective Service System.

Auditors

Auditors are those students who are permitted to attend certain classes with the consent of the instructor. No credit is given for a course which is audited. In general, auditors are not allowed in laboratory science, mathematics, elementary and intermediate modern languages, English composition, speech courses, or in classes limited in size where credit students might thereby be excluded. Auditors do not take course examinations. The extent of their classroom participation is at the option of the instructor. No records are kept by the admissions and records office for auditors.

ADMISSION INFORMATION FOR ENTERING STUDENTS

Admission of Undergraduates

Candidates for undergraduate admission to the Manoa Campus of the University of Hawaii must present satisfactory evidence of ability to do university work. Usually this is done in terms of previous academic records, scores on the Scholastic Aptitude Test and recommendations.

Applications and correspondence should be directed to:

Director, Office of Admissions and Records
Bachman Hall 125
University of Hawaii
2444 Dole Street
Honolulu, Hawaii 96822

Applications and all credentials must be received by July 1 for admission in the fall semester and by December 1 for the spring semester.

The University of Hawaii uses social security numbers as student numbers. Students are required to give their social security number on their application forms. Students should also acquaint themselves with zip codes of their permanent and local addresses for correspondence purposes.

Admission of Residents as Freshmen

Residents of the state of Hawaii applying for admission as freshmen must submit scores on the Scholastic Aptitude Test of the College Entrance Examination Board, high school transcripts and recommendations from qualified persons. A high rating in one factor will not insure admission, nor will poor performance in another area exclude an applicant
if other evidence indicates that he might be successful in university work. Ordinarily a student should have better than average grades in high school.

Candidates for fall admission should take the Scholastic Aptitude Test before or during December of the senior year in high school. Candidates for spring admission should plan to take the test before or during July. For information on the SAT test, consult a high school counselor or write to the nearest CEEB center:

College Entrance Examination Board  
c/o Educational Testing Service  
Box 1025 or Box 592  
Berkeley, California 94701 Princeton, New Jersey 08510

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<th>Minimum Unit Requirements for Admission</th>
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<td>From a 4-Year High School</td>
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(Total 5 to 15 units required for admission.)
Every applicant must take the SAT and submit evidence that he has satisfactorily completed at least 15 units of work in a four-year high school or at least 12 units of work in a three-year high school.

The word unit as employed here signifies the satisfactory completion of a full school year's course of study, or the equivalent for laboratory and shop exercises. For an acceptable distribution of units required of entering students, see the accompanying table.

Admission of Out-of-State Students as Freshmen

Candidates applying for admission as freshmen to the University of Hawaii from outside the state should meet all the requirements noted for Hawaii applicants (see above). Out-of-state candidates should await notice of acceptance before coming to Hawaii. No special consideration can be given to students who arrive at the last minute and whose credentials are not in order.

Admissions decisions are made without regard to the availability of housing. It is the student's responsibility to arrange for housing.

Admission of Transfer Students

Candidates for admission currently enrolled in other universities, colleges or institutions of higher learning must file their applications and credentials with the office of admissions and records by July 1 for admission in the fall semester and by December 1 for admission in the spring semester.

Students who transfer from other accredited universities and colleges may be granted advanced standing. Official transcripts from all institutions attended must be sent to the director of admissions and records. Each transcript must include a listing of courses taken, the grade received in each and a note of good standing or honorable discharge from the institution. These transcripts become a permanent part of University files. A supplementary transcript of courses in progress must also be sent to the admissions and records office at the end of the semester. If a supplementary transcript is not submitted, it will be assumed that the student has decided not to enter the University. Candidates who have not completed 24 acceptable academic credits, and candidates who apply from unaccredited institutions must also submit high school transcripts and scores on the Scholastic Aptitude Test of the College Entrance Examination Board.

Transfer credits are accepted only in subjects substantially equivalent to University of Hawaii offerings, and grades earned in these courses must be C or better to be recorded. However, all transfer credits allowed may not necessarily satisfy curricular requirements toward a degree. Therefore, the student may find that it will take longer to complete degree requirements than anticipated. No more than 60 semester hours are accepted in transfer from a junior college.
ACADEMIC REGULATIONS

Students transferring from unaccredited institutions must meet University of Hawaii standards of admission. Upon the completion of a minimum of 30 semester hours with an average of C or better, credit may be given for courses at the previous institution. Such credit, however, will not exceed 60 semester hours, and will be granted only for courses usually considered lower division and substantially equivalent to University offerings.

Admission of Foreign Students

Foreign candidates applying for undergraduate admission to the University of Hawaii must file their applications and credentials with the Office of Admissions and Records by June 1 for admission in the fall semester, November 1 for admission in the spring, and April 1 for admission in the summer. Candidates must present evidence of having completed or received the equivalent of a U.S. high school diploma and must submit official transcripts of all secondary and post-secondary work. These transcripts become a permanent part of the University’s files and cannot be returned to the students.

Candidates must also attain a minimal score of 450 on the Test of English as a Foreign Language (TOEFL). Applications for the test may be obtained by writing to TOEFL, Box 899, Princeton, N.J., U.S.A. 08540. If a foreign candidate has had four years of high school education in the United States, Australia, Canada, England, New Zealand or any other country in which the principal language is English, he may request exemption from TOEFL.

Requests for such exemption, and specific admissions information and materials should be directed to: Office of Admissions and Records, Bachman Hall 125, 2441 Dole Street, Honolulu, Hawaii 96822.

Students should have received official notification of acceptance from the University of Hawaii before coming to Hawaii. Upon arrival, foreign students are subject to English testing and placement in ELI courses. See p. 68 for details.

Candidates must present evidence of having completed or received the equivalent of a U.S. high school diploma and of having a satisfactory level of proficiency in English. Applicants must submit official transcripts of all secondary and post-secondary work. These transcripts become a permanent part of the University’s files and cannot be returned to the students. In addition, students must submit official results of the Scholastic Aptitude Test of the College Entrance Examination Board.

Admission of Mature Persons

Mature persons may register as special students when their backgrounds qualify them for credit work. Such students, however, will not be admitted to a degree-granting college or allowed to become a degree candi-
date unless all admission requirements have been satisfied. Approval from the director of admissions is needed before a student may register.

Admission as a special student in no case serves as a means of avoiding compliance with requirements laid down for regular students.

Admission of Veterans and Other Individuals

Veterans and other individuals may take examinations covering preparatory school subjects as a means of fulfilling unit requirements. Successful performance on these and the Scholastic Aptitude Test will admit these candidates to the University. Such individuals, however, must meet all special requirements for admission to such curricula as engineering, agriculture and nursing. It is understood that persons in this category will become degree candidates.

Admission of Returnees in Good Standing

A student who left the University of Hawaii in good standing or on probation and who has not attended another institution must submit a returnee form (available from admissions office) by July 1 for the fall semester, by December 1 for the spring semester, to the office of admissions and records. A student who has attended another institution applies as a transfer student.

Admission to Certain Undergraduate Programs

Candidates for admission to certain programs must meet special requirements. Each applicant should study the conditions set by the college he intends to enter and for the program he intends to pursue in that college. Special attention is directed to the following requirements.

Arts & Sciences

All prospective students of the College of Arts and Sciences are strongly advised to offer at least two years of college preparatory mathematics and three years of a foreign language.

Students who expect to select as their major areas of study mathematics, the natural, biological or physical sciences, and most social sciences, must have had plane geometry, two years of algebra, and trigonometry, or their equivalents. Solid geometry is also strongly recommended.

Engineering

Prospective engineering students must have had plane geometry, two years of algebra, and trigonometry. It is recommended that they also take mechanical drawing, physics and solid geometry. Engineering students
ACADEMIC REGULATIONS

who have not completed trigonometry or mechanical drawing in high school should endeavor to take these subjects during the summer session preceding their freshman year.

Allied Health

Applicants for admission to the dental hygiene program are required to take the American Dental Hygienists' Association Aptitude Test. Information about the test and the application may be obtained from the department of dental hygiene or the American Dental Hygienists' Association, 304 East 45th Street, New York, New York 10017.

Prospective students of medical technology should have completed at least two years of algebra, a unit of plane geometry and one of trigonometry. A course in pre-calculus is recommended. A year of chemistry and a year of physics are strongly advised.

Business Administration

Prospective students of the College of Business Administration should have completed two years of algebra and one year of plane geometry or their equivalent. Trigonometry is strongly recommended.

Early Admission

Qualified high school juniors and seniors may enroll in University courses. Juniors may be admitted to the summer session before their senior year, and seniors may carry one or two University courses during their last year of high school. Students desiring to take advantage of this program should ask their high schools to recommend them, arrange to have high school transcripts sent to the office of admissions and records, and take the Scholastic Aptitude Test of the College Entrance Examination Board. The continuance of these students in the early admission program is reviewable at the end of each term. Students in this program are invited to become affiliate members of the Honors Program.

Selected Studies and Honors Program

Admission to the Selected Studies Program is by invitation to freshmen and sophomores whose high school records and aptitude test scores, or whose recommendations from the University faculty, indicate that they have the qualities needed to profit from the opportunity.

Juniors and seniors who wish to graduate with honors degrees may join the Honors Program. Application for admission to the program may be made by any regularly registered undergraduate at the end of his sophomore year or during his junior year.
Admission of Graduate Students

Graduates of accredited colleges and universities who wish to undertake graduate study in the University of Hawaii Graduate Division should apply to:

Graduate Division, Student Services
Spalding Hall 354
2540 Maile Way
University of Hawaii
Honolulu, Hawaii 96822

Each application should be accompanied by two official transcripts of work completed at all institutions of higher learning including the University of Hawaii. Admission to graduate study is provisional until such records are on file. These transcripts become a permanent part of University files.

Applications must be received by May 1 for the fall semester, November 1 for the spring semester, and April 1 for the summer session.

Consult the Graduate Bulletin for advanced degree programs and requirements. The bulletin may be obtained by writing to: University Bookstore, 1760 Donaghho Road, University of Hawaii, Honolulu, Hawaii 96822. The price is $.40 surface mail and $1.00 airmail to the U.S. and Canada; to all other countries, $.25 plus sufficient postal coupons to cover airmail cost of 6-ounce catalog.

REGISTRATION FOR COURSES; WITHDRAWALS AND OTHER CHANGES

Regular Registration

Registration for courses is usually held one week prior to the opening of the semester. The dates for registration are given in the University Calendar (p. 3). Entering students receive circulars with instructions for registering. Courses are described in this catalog under the various college sections. A schedule stating the time and place of meetings for each course is issued by the records and admissions office prior to registration.

Regular attendance at class and laboratory sessions is expected for all courses in which a student enrolls. Unavoidable absence should be explained to the instructor concerned.

Undergraduates. Each undergraduate is assisted by a faculty adviser assigned by his college to help him prepare an academic program which meets the goals he sets for himself. Tuition and fees are payable at the
time of registration. A student is not officially registered until he has paid his tuition and fees.

**Graduates.** Graduates follow the same procedure in registration as do undergraduates. Consult the Graduate Division for special instructions.

**Auditors and Unclassified Students.** Auditors and unclassified students register after the period assigned for the registration of classified undergraduate and graduate students. Instructions for auditors and unclassified students are issued at the beginning of each semester.

**Late Registration**

With written approval from the dean of his college, a student may register for credit (initial or as a result of program changes) only during and not later than the first eight class days following regular registration. See Calendar, "Last day of registration for credit." Similar restrictions apply to Summer Session.

Registration to audit courses is permitted at any time, but auditors may not change to credit status after the above late registration period.

**Other Provisions**

**Maximum Registration.** Students may not register for courses in the Division of Continuing Education, for credit or audit, in excess of the maximum registration allowed by the college in which they are enrolled. Students must carry a minimum of 12 credits to be considered full-time. Graduate students should consult the Graduate Bulletin.

**Variable Credit Courses.** The number of credits obtainable in most courses is stated in this catalog and in the schedule of courses available shortly before registration. However, certain courses, designated by "hours arranged," offer variable credit. Students in these courses usually carry on individual work. The number of credits for which a student enrolls and will earn in such a course must be approved by the instructor at the time of registration. Students register for a definite number of credits and may earn no more or less than the stated number without the college dean's approval.

**Course Changes.** Students wishing to change a course or courses must follow the procedures given for withdrawing from a course (see below) and for late registration (see above). Forms are available at the college dean's office.

**Withdrawal from Courses**

To withdraw from a course, a student must have the signature of the instructor on a form available at the office of student services of his col-
College. Complete withdrawal from the University must be applied for on a form available only at the admissions and records office. Signatures as indicated on the form must be obtained, and the completed form turned in to the Treasury office in Bachman Hall. The usual charge for change of program is $2.00.

A student may withdraw from a course up to the last four weeks of the semester; he will receive a grade of W (withdrawal, not failing). After the last date for withdrawals, a student may receive a mark of W if (and only if) he completely withdraws from the University with the approval of the dean of the college in which he is registered.

When a student ceases to attend class without officially withdrawing prior to the last four weeks of class, the instructor may award any one of the following final course grades: A, B, C, D, F, P (pass), W or I. An instructor will award an I or a W on the basis of the feasibility of the student's making up the work within the prescribed time limit. If an I (incomplete) is awarded the instructor must also award an alternate grade to be recorded on the student's record if he does not undertake the work necessary to remove the I. This alternate grade may be any one of the following: A, B, C, D, F, P, or W.

Refunds for withdrawals are noted in the University's General Catalog under "Tuition and Fees—Refunds" (p. 41). Students seeking tuition refunds for withdrawals should go to the treasury office in Bachman Hall immediately after the withdrawal form has been completed and signed, bringing the form with them.

Transfers Within the University

A student may apply for transfer from one college to another during either semester. Application for transfer must be made on a form supplied by one of the deans concerned. The application must be approved by the deans of the two colleges and returned to the admissions and records office as soon as possible. Changes of college, curriculum or major are not permitted during registration periods.

CREDITS, GRADES, AND EXAMINATIONS

Work accomplished by students is usually recognized in terms of credits, grades, grade points and grade-point ratios. Grade reports are given out at the end of each term.

Credits. A credit (also called a semester hour or a credit hour) is given to a student for work satisfactorily accomplished during three hours a week spent in the preparation and recitation of assignments in a course, or in the field or laboratory. The normal division of time in non-labora-
tory courses is one hour in the classroom and two hours in preparatory work. Thus, a three-credit course signifies that the class usually meets three hours a week and that the student is expected to spend six hours in preparation of assignments.

**Grades.** Grades given in all courses are A, B, C, D, F, P, W, and I, except for 800 (thesis research) in which the grade of S (satisfactory) is given upon acceptance of the thesis. The lowest passing grade is D.

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 the failure was caused by conditions beyond the student's control and not by carelessness and procrastination. Each student receiving an I should contact his professor to determine the steps to be taken to remove the I. The deadline for removing an I received in the first semester is the Easter recess of the following semester; for removing an I received in the second semester or the summer session, the deadline is the Thanksgiving recess of the next semester. When the instructor records a grade of I on the final grade card, he must also record the grade to which the I will revert if the work is not made up by the deadline; that grade should be computed on the basis of what grades or other evidence the instructor does have, averaged together with F's for all the incompeleted work (including the final examination, if it is not taken). If the work is completed prior to the deadline, the instructor will report a change of grade, taking the completed work into consideration.

For undergraduate students, credit in a course for which an F is given may be obtained only by retaking and passing the course, or its equivalent, either at the University of Hawaii or at some other accredited institution of higher learning.

**Pass-Fail.** Undergraduate students may, with approval of their adviser, choose to take up to two courses a semester on a "pass" or "fail" basis, provided they are not on academic probation and that the course is not required by the college in the student's "major requirement." To qualify for a pass grade, the work of the student must be at least at the C-level. Departments may, at their option and upon the approval of the appropriate curriculum committee of the college, designate certain lower division introductory courses in the 100-199 series on a compulsory pass-fail basis, but these courses are exempt from the two pass-fail course maximum the student is permitted to take in any one semester and are also exempt from the requirement that the student not be on probation in order to take them. No more than forty (40) credit hours taken on a pass-fail basis may be counted toward the degree. A grade of "P" (pass) is not computed in the grade-point average; however, a grade of "F" (fail) is.

A course taken on a P-F basis may not be retaken for a A, B, C, D, F grade nor may a course in which a student earns a grade on the A, B, C, D, F basis be retaken for a P-F grade.
Grade points are given for all courses in which grades of A, B, C, D or F are reported. They are computed as follows: for each credit received in a course, 4 grade points are granted if the grade is A, 3 if B, 2 if C, 1 if D, 0 if F.

Students entering as undergraduates with advanced standing are not given grade points for work done elsewhere. But on work done at the University of Hawaii, such students must gain grade points in the same proportion to credit hours required for graduation as that demanded of other students.

Grade-point ratios are determined by dividing the total number of grade points by the total number of credits for which a student has been registered. Courses for which grades of W, I, or Pass have been recorded are not included in the computation of ratios.

Grade Reports. Grade reports are sent to students through the mail at the end of each semester and summer session.

Examinations

Course Examinations. Final examinations are required in all undergraduate courses except directed reading, research and seminar courses. No examinations (other than short quizzes) are allowed during the two weeks prior to the final examination period. The schedule of final examinations is issued by the office of admissions and records prior to the testing period.

Foreign Language Placement Examinations. All students who have had previous study of foreign language courses and intend to continue their study of that language at the University of Hawaii must, prior to enrollment in a course, take a placement test which will assist in determining in which course they should enroll. Registration for foreign language courses will not be permitted until proper placement has been determined. For further information, contact the offices of the European languages department or the Asian and Pacific languages department.

Credit for Previous Foreign Language Study. Credit towards graduation for learning of foreign languages which has been accomplished outside the University of Hawaii may be granted in one of five ways: by transfer from another institution, by placement, by regular credit by examination, by special credit by examination, or through the Advanced Placement Program.

For students who have taken the placement test (see above), completion with a grade not lower than C or its equivalent, of the course in which a student has been placed, will result in his automatically receiving credit not only for the course he has passed but also for all lower division courses which are prerequisite to that course, up to a maximum of 14 credits.
Students who do not wish to enroll in a foreign language course (e.g., because they have completed their requirement or because they are enrolled in a college which has no such requirement) may receive credit for lower division foreign language study completed outside the University of Hawaii (up to a maximum of 14 hours) by passing a special credit examination administered by the appropriate foreign language department. Apply to department offices for further details. Credit for other language work may be achieved by the regular credit by examination procedure (see below).

A minimum of four credits towards graduation may also be obtained by means of attaining a score of 3 or better on the Advanced Placement Examination in French, German, Latin or Spanish. (The amount of credits in excess of four is determined by the results of the placement examination administered by the European languages department.) The Advanced Placement Examinations are administered in high schools by the Educational Testing Service for the College Entrance Examination Board on a nationwide basis for students who have completed specific college level courses in high school. Further information may be obtained in most high schools, or directly from the Educational Testing Service, Princeton, New Jersey.

Credit by Examination. Students who can show reasonable cause to believe that they have mastered the basic courses in economics, calculus, general chemistry, psychology, or sociology and who wish to get credit by examination for these, should state their case to the department chairman. If he is convinced, he will so inform the Counseling and Testing Center. The student applies to the center, pays the fee (currently $5.00) and takes the corresponding general or subject examination under the College Level Examination Program. A satisfactory score on these examinations, as determined by the appropriate department, yields course credit.

For other courses the examinations have to be specially prepared by University faculty members, and so the requirements to take them are somewhat more stringent. An enrolled student with a grade-point average of 2.4 or better who presents evidence to his college dean that he has had the equivalent of a course through experience or training but has not received college credit for the course, may apply for credit by examination. (See preceding section for foreign languages.) Graduate students may also obtain credit in this manner for certain undergraduate courses. A $5.00 fee is charged for each examination.

In each case the examination must be prepared under the auspices of the department concerned, must be more comprehensive than the usual "final examination" and must be designed to serve as the scholastic equivalent of the course.

Courses passed by examination do not carry grade points.
ACADEMIC REGULATIONS

ACADEMIC PROBATION, SUSPENSION, DISMISSAL

If a student fails to meet the minimum scholastic requirements of the University, he is put on probation, suspended or dismissed. For purposes of measuring this minimum requirement, the grade-point ratio (GPR) is used. The following guidelines are generally applied:

Probation. A student is placed on academic probation at the end of any semester in which his cumulative GPR falls below 2.0. The probationary student continues work at the University, but he must achieve a GPR in each probationary semester of at least 2.0 to be allowed further registration.

Regulations governing academic probation will be applied at the end of each semester.

Suspension. A student who has been denied continuing registration for the first time is placed on academic suspension. A student will be suspended if, even though he is not on probation, he has failed, after taking 24 credits, to achieve a cumulative GPR of at least 1.7. A student will also be suspended if he is on academic probation at this University and has not maintained a GPR of at least 2.0 in the work of the probationary period.

Regulations governing academic suspension are applied at the end of each semester.

A suspended student is eligible to return to the University after he has remained out of the University for at least one semester (not including summer session). However, a student suspended at the end of the spring semester is permitted to attend the summer session immediately following his suspension. If he brings his cumulative GPR up to 2.0, the Committee on Admissions and Academic Standing has the option of setting aside the suspension period and allowing the student to enroll in the fall semester.

Dismissal. A student is dismissed (1) when he has been previously suspended and has failed on readmittance to maintain a GPR of at least 2.0 in his initial semester, or (2) when he is admitted on academic probation and fails to meet academic requirements during the probationary period. Such students will be readmitted only in unusual circumstances. Regulations governing academic dismissal are applied at the end of each semester.

Applications for Return from Suspension or Dismissal. Applications for return from suspension should be filed at the office of admissions and records by July 1 for the fall semester, by December 1 for the spring semester, and by April 1 for the summer session. The same deadlines apply for applications to return after dismissal, except that these applications should be filed at the student services office of the appropriate college.
Other Provisions. Warnings of low scholarship are given to the student approximately at mid-semester, but the student should not assume that his work is passing merely because he has not been warned. The University is not responsible if a warning mailed to a student fails to reach him.

Ordinarily, failure in the first semester of a year course bars a student from registering for the second semester of that course. However, there are a number of exceptions to this, wholly at the discretion of the individual departments. A department may choose to withhold credit from a student registered illegally in such a course.

Upon finding that a student is suffering from a physical or mental condition detrimental to the student or the University, the dean of students will, on medical advice, recommend proper action to the appropriate college dean. The dean may then request that the student be withdrawn officially, without prejudice or academic penalty. Readmission is contingent upon review and recommendation by the college dean and the dean of students.
Degree Programs

PROGRAMS LEADING TO ADVANCED DEGREES

At the graduate level, the University currently offers curricula leading to the Master's degree in 65 areas (including Arts, Science, Fine Arts, Business Administration, Education, Public Health, Library Studies and Social Work). Doctoral programs leading to the Ph.D. are presented in 11 fields. Post-graduate studies have been established in some of the sciences and medical arts. For information on these programs, and the five-year diploma curriculum in education, see "College of Education," and the annual Bulletin of the Graduate Division.

PROGRAMS LEADING TO THE BACHELOR'S DEGREE

Purposes of Undergraduate Instruction

Students come to American universities with many interests and motivations, both cultural and vocational. The University of Hawaii attempts to respond to as many of these interests as seem appropriate to an institution of higher education. Thus, it currently provides six different undergraduate degrees (bachelors of Arts, Fine Arts, Science, Business Administration, Education, Music) in a total of 65 academic fields, plus an experimental program which offers individual students an opportunity to design their own interdisciplinary field of concentration instead of a major.

The primary purpose of each undergraduate curriculum is intellectual—to educate students to think for themselves: to analyze, to apply appropriate standards, to arrive at their own judgments. In the process, students should gain knowledge and sharpen their ability to communicate, both in standard prose and in the symbolism of mathematics, logic and the arts.

Generations of students have discovered, though sometimes only after graduation, that there is no real conflict between the goals of liberal or general education set forth by a university and their individual career goals. There is no surer preparation for professional life and participation in society than an education which enhances the ability of the individual to keep learning all his life and to communicate effectively with his fellow students.
men, and such are the overall purposes of general education at the University of Hawaii.

Secondly, each undergraduate curriculum tries to lead the student to sufficient depth in a field of learning so that he can understand its central concepts, some of its methodology in examining problems, the standards of truth, value and relevance which it employs. Seldom in the contemporary world does the bachelor's degree signify that the student is ready to practice the art or science which he has been studying. (There are a few exceptions, such as nursing.) Usually the baccalaureate shows that the student is ready for specialized training in a field, either by graduate study or by work on the job, and that he has attained a general education illuminated by some beginning work in a particular field.

Undergraduate Degrees Awarded:

1. By the College of Arts and Sciences: bachelor of arts (B.A.), of fine arts (B.F.A.), of music (B.Mus.), bachelor of science (B.S.).

2. By the colleges of Tropical Agriculture, Engineering, or Health Sciences: bachelor of science (B.S.); the diploma designates the particular program of study completed.

3. By the College of Education: bachelor of education (B.Ed.), except in the recreation leadership program, where a bachelor of science (B.S.) is granted. Holders of bachelor's degrees who complete the five-year program in education receive a diploma certifying that.

4. By the College of Business Administration: bachelor of business administration (B.B.A.).

5. By the School of Nursing (in addition to baccalaureate program): associate of science (A.S.) for completion of two-year program in technical nursing.

University Requirements for Bachelor's Degrees

The liberal education objectives of undergraduate learning include an understanding of the fundamentals of major fields of knowledge which should be the common possession of educated men and women, whatever their specialized interest. This objective is not likely to be attained from a random arrangement of courses. Consequently, a program of liberal or general education is required of all students seeking a baccalaureate from the University. The general education "core," as it is frequently called, amounts to about a third of a four-year curriculum. It tries to assure for each student reasonable competence in organizing his thoughts in written and spoken English—and in understanding the expression of others—in mathematics, in the humanities, natural sciences and social sciences.
The "core" need not be completed during the first two years, though general education courses are frequently concentrated in the freshman and sophomore terms. General education requirements can be met either by completing appropriate courses—listed below—or by passing comprehensive examinations. (See "Credit by Examination.")

To qualify for any baccalaureate degree from the University of Hawaii, a student must satisfactorily complete: (1) the general education requirements of the University outlined immediately below; (2) at least 60 additional credit hours of non-introductory courses (i.e., those numbered 200 and above); and (3) the requirements of his college (which may overlap these University requirements).

Curricular Requirements. A program of study to accomplish the purposes of undergraduate instruction is worked out with each student within the college in which he registers. Curriculum requirements vary considerably from college to college. However, all students intending to receive a baccalaureate from the University are required to take courses, or by examination demonstrate their competence, in the following fields. (The courses indicated are intended to provide liberal education, rather than specialized training; the number of courses from which a choice is made by the students to satisfy core requirements is increased from year to year.)

Communications: Each student must have competence in expository writing and oral communication appropriate for study at an institution of higher learning. The usual means of fulfilling this requirement is to pass English 100 and Speech-Communication 145. Students who have this competence when entering the University may demonstrate it—and receive credit for the equivalent courses—by passing an examination.

Quantitative Reasoning: Ability to apply, understand or appreciate the uses of mathematics, or its philosophical base, is demonstrated by passing any mathematics course at the university level or Philosophy 210, symbolic logic, or by passing examinations equivalent to such courses.

World Civilizations: Adequate comprehension of the broad sweep of cultural development is usually demonstrated by passing History 151 and 152 World Civilization (or its counterpart in the Honors Program 161–162, or its upper-division equivalent, 351 and 352). However, with the concurrence of their academic advisers, students with an adequate understanding of Western civilizations may complete the requirement by passing courses in history of Asia, such as History 241 and 242 (same as Asian Studies 241–242). Conversely, students with a satisfactory comprehension of Eastern civilizations may fulfill the
DEGREE PROGRAMS

requirement by taking one or more courses in European or American history, such as 281 and 282, 401 and 402, 405 and 406, or American Studies 485 and 486.

**Humanities:** The educational objective sought here is to develop standards of value and beauty, to sharpen critical judgment by the study of literature and other creative arts, of philosophy and religion. Students may fulfill this requirement by passing at least 3 semester courses, distributed among 2 or more of the following 3 groups. The following list of courses is provided as a general guideline. Substitutions may be made upon the approval of the dean of the college in which the student is registered.

I: English 251, 252, 253, 254, 255, 256; Drama 160; literature courses offered by the language departments (in original language or in translation).

II: Philosophy 100, 200; Religion 150, 151.

III: American Studies 201, 202; Art 101, 270, 280; Interdisciplinary Studies 131, 133; Music 160, 170, 180, 265, 266.

**Natural Sciences:** Sought here is a critical understanding of natural phenomena and of the methods of science used in their study. Students may fulfill this requirement by passing at least 3 semester courses, chosen from the following, and preferably including both the biological and physical sciences. The following list of courses is provided as a general guideline. Substitutions may be made upon the approval of the dean of the college in which the student is registered.

Chemistry 113 and 115, 114 and 116, 117 and 118 (each combination of lecture and lab is here considered one course); Geography 101; Geosciences 101, 102.

Oceanography 201; Physics 100, 102, 110, 111, 151, 152, 170, 272, 274.

Biology 220; Botany 101, 201, 450; Genetics 451; Microbiology 130, 351; Zoology 101, 150.

General Science 121, 122, 121; Information Sciences 301, 302.

**Social Sciences:** The purposes of this requirement are (1) to seek an understanding of the extent to which scientific method can be used in studying human behavior and institutions and (2) to assist students in assessing their own behavior in society. Students may fulfill this requirement by passing at least 3 semester courses, including at least one semester course from each of the following groups. The following list of courses is provided as a general guideline. Substitutions may be made upon the approval of the dean of the college in which the student is registered.

I: American Studies 201, 202, 301, 302; Anthropology 150, 200; Bot-
DEGREE PROGRAMS

any 105; Psychology 100, 110, 112, 320, 321, 322, 430; Sociology 151, 201, 360.

II: Economics 120, 150, 151; General Engineering 203; Geography 102, 151; Political Science 110.

These general education requirements were adopted in 1966 and are required of undergraduate students entering the University, or becoming classified undergraduates, after June 1, 1966. Students who registered as classified undergraduates before that date may elect to complete their baccalaureate programs either under the newer requirements or those in effect before 1966.

Credit and Grade-Point Requirements. Minimum credit requirements for baccalaureate degrees are set by each college offering them. In addition, the student must have earned at least twice as many grade points as his total registered credits, i.e., have a C average.

Residence Requirements. Baccalaureate degrees are granted only those students who earn a minimum of 30 semester hours in residence (that is, taking credit courses or their equivalent by examination) at the University of Hawaii.

Degree candidates must be registered and in attendance during the semester or summer session in which the degree is to be granted. A college dean may modify this requirement, in exceptional cases, by granting a leave of absence.

Time Within Which Work Must Be Completed. The normal expectation is that students will complete their academic work in a ten-year period. Credits earned more than ten years before graduation in courses which have materially changed content or standards will be denied.

Application for Degree. An application for graduation must be filed at the admissions and records office, Bachman Hall 125, a semester, preferably a year, prior to graduation.
HONORS PROGRAMS

Selected Studies (lower division). The Selected Studies Program provides a group of academically promising freshmen and sophomores with an opportunity to use the University's facilities and resources more fully than usual. Each student has a faculty adviser to assist him to plan his curriculum and within certain limits to tailor it to his special interests and abilities. Special courses are available in history, in the physical and the social sciences, in the humanities, etc.; moreover, there are special sections reserved in basic freshman and sophomore courses in economics, English, languages, mathematics, oceanography, philosophy, political science and other subjects. Students who take the majority of their lower division work in these special courses and sections may be eligible for the award of Sophomore Honors.

Admission to the program is by invitation to freshmen and sophomores whose high school records and aptitude test scores, or whose recommendations from University faculty, indicate they have the qualities needed to profit from the opportunity.

Honors (upper division). Honors degrees may be granted only to participants in the University Honors Program. Successful completion of a program of honors work in the upperclass years entitles the student to a bachelor's degree with "honors," "high honors" or "highest honors." Application for admission to the program may be made by any regularly registered undergraduate at the end of his sophomore year or during his junior year.

During the junior year the nature of honors work is determined chiefly by the University department or curriculum in which the student is enrolled as a major. In the second half of his junior year and the first half of his senior year he participates in an interdisciplinary colloquium. In his senior year, with the guidance of a specialist in his field, he pursues a program of independent research that culminates in a senior thesis.

Full information about both programs may be obtained from the Director of Undergraduate Honors Programs in Sinclair Library.

Academic Distinction. Seniors who have a grade-point ratio of 3.4 or above but who have not completed the Honors Program will receive their
degree "With Distinction." At least 60 semester hours of this undergraduate work must have been taken at the University of Hawaii within six years prior to graduation.

Honors Courses

See pp. 4-5 for a discussion of course descriptions. (Limited to SSP and Honors students)

HON 151-152 Science and Ideas (4-4) I, II
Kay
Man's present understanding of nature and foundations upon which that understanding is based. Honors equivalent of Sci 121-122.

HON 317-318 Junior Honors Seminar (var.) I, II
Linn
Survey of research areas, specialized reading and preliminary experimentation; definition of a specific research problem. Available only in selected fields.

HON 485-486 Engineering Field Study (3-3) I, II
Fand
Field work in selected Oahu engineering firms, under supervision of professional personnel and faculty. Participation in research, development, consulting and manufacturing. (Satisfies Technical Elective requirement in Engineering.)

HON 491-492 Honors Colloquium (3-3) Yr.
Seifert
Weekly meetings for discussion of enduring issues and problems which are of interdisciplinary nature. Required of, and limited to, candidates for honors degree.

HON 493-494 Senior Honors Thesis (2-2) Yr.
Linn
Preparation of research paper under individual faculty supervision. Required for graduation with honors.

HON 499 Interdisciplinary Tutorial (3) I, II
Linn
Readings from a variety of disciplines. Consent of tutor and honors director. Limited to seniors. (See also Anthropology 491, English 393-394, 491-492, History 161-162, 396 among the departmental listings.)

Interdisciplinary Courses

In addition to the many interdisciplinary courses listed among the Honors courses and among the offerings of the departments of the several colleges in the following pages, there are a few such courses which do not fit within any department. Among the latter are the IS and SS courses below:

IS 203 Technology and Society (3) I, II
The nature of technology and its impact on society. Historical interactions, current aspects, projections for the future. Present problems and conflicts, and prospects of resolution. (Identical to GE 203).

IS 300 Field Study (arr.) I, II
Pre-arranged systematic investigation in the field of selected topics. Primarily for East-West grantees. Pre: permission of appropriate department chairman and dean.

IS 491-492 University Services Practicum (3-3) I, II
Linn
Research for service in selected campus committees or agencies; readings on problems to which those committees are directed.

IS 497 Seminar in Interdisciplinary Science Curriculum (3) II
R. Campbell
Fundamental science concepts from the viewpoints of physical, biological and earth sciences; integrative processes and conceptual schemes relevant for science curriculum
development; significance of ideas and models for contemporary and futuristic problem solving. (Identical to Ed CI 497)

**IS 600 Theory of Administration (3) I, II**
Buchele

This course is offered for students in business administration, political science, social welfare, educational administration, public health administration and possibly other programs. Students should consult advisers in their own departments for information on how this course may fit into their curricula. While the course is taught primarily by the professor listed, faculty members from each of these departments participate.

Critical review of key current and classic writings in the theory and practice of administration; development of a comprehensive, integrated understanding of the nature of administration.

**IS 700 Seminar in College and College Teaching (3) I, II**
Arkoff

Thought and research concerning college and college teaching. Current issues, problems, and developments in higher education. Limited enrollment; pre-registration requested.

### Special Studies

(Interdisciplinary courses sponsored by Honors Program but open to all students.)

**SS 101-102 The College Experience Seminars (2-2) I, II**
Arkoff

Student led seminars to explore purposes, processes and problems of higher education, and to give students perspective on their own college careers. Student participants enroll in SS 101, student leaders in SS 401.

**SS 193 Man and His City (3) I, II**
Arkoff

The 20th-century American city as an expression of attitude and value. Examination of Honolulu as example of various theories of function of the city. Fulfills Humanities Area Requirements.

**SS 221-222 International Agriculture (1-1) I, II**
S. Goto

Colloquium on role of agriculture in community development, with special emphasis on Pacific and S.E. Asia. May be repeated.

**SS 251 Cultural Confrontations in Community Development (3) II**
Forman

Specific problems in developing nations presented on an interpersonal level, with emphasis on reaching hypothetical solutions. Discussion of cases presented by former volunteers, members of international community and faculty.

**SS 291 Community Service Practicum (3) I, II**
Blaylock

Supervised field of work in selected community agencies; seminar in corresponding social problems. Pre: consent of instructor after interview.

**SS 293 Pre-Education Practicum (3) I, II**
Joseph

Tutoring the culturally disadvantaged; seminar compares the educational assumptions of subcultures in Hawaii.

**SS 311-312 Independent Study Tutorial (var.) I, II**
Clopton

Pre-arranged independent study, under the tutorial system, of selected topics not necessarily covered in standard course work. Comprising a full-semester load, course is limited to sophomores and above not on probation. Pre: permission of Liberal Studies Coordinator and appropriate faculty adviser.

**SS 321-322 Seminar in International Agriculture (1-1) I, II**
S. Goto

Continuation of SS 221-222 with emphasis upon leadership problems.

**SS 331 Legal Thought (3) I**
Frierson

History, philosophy and nature of law as a humanistic discipline. Open to anyone curious about the role of law in Western culture.

**SS 332 Legal Reasoning (3) II**
Gray

Principles of discerning and formulating reasoned agreement and disagreement. Problems of definition, classification, evidence and precedent in hypothetical legal cases.
**SPECIAL INSTRUCTIONAL PROGRAMS**

**SS 380–390 The Hawaii 2000 Constellation**
A cluster of seminars and colloquia addressed to the problem of planning the Hawaii of 2000 A.D. Students in any of the seminars must concurrently register for SS 380, where they test new insights upon members of the other constituent seminars.

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SS 380</td>
<td>Hawaii 2000: Colloquium (1)</td>
<td>Dinnell, R. Denney</td>
<td>Small group discussions to correlate the issues raised in the seminars. May be repeated.</td>
</tr>
<tr>
<td>SS 381</td>
<td>Hawaii 2000: Planning Hawaii Now (3)</td>
<td>Dinnell, R. Denney</td>
<td>Planning techniques and problems raised by those techniques. Particular attention to three transitional areas: Kalihi-Palama, West Hawaii and Waimanalo.</td>
</tr>
<tr>
<td>SS 383</td>
<td>Hawaii 2000: Social Change through Education (3)</td>
<td>Boyer</td>
<td>Development of proposals to make higher education more effective and responsible. Role of the educated in shaping the future.</td>
</tr>
<tr>
<td>SS 384</td>
<td>Hawaii 2000: Toward a Prescription for Survival (3)</td>
<td>Schwartz</td>
<td>Rearranging the physical, social and emotional climate. Examination of competing moralities of interested groups and institutional leaders.</td>
</tr>
<tr>
<td>SS 385</td>
<td>Hawaii 2000: Values and Utopias (3)</td>
<td>D. Weaver</td>
<td>Relation between utopian thought and social or political action. Attempts in social sciences to plan alternative futures.</td>
</tr>
<tr>
<td>SS 386</td>
<td>Hawaii 2000: Tourism (3)</td>
<td>R. Burns</td>
<td>Economic, political and sociological implications of the travel industry in Hawaii.</td>
</tr>
<tr>
<td>SS 388</td>
<td>Hawaii 2000: Political Futuristics (3)</td>
<td>Dator</td>
<td>Study, forecasting and design of alternative socio-political values, environments and organisms for the immediate and distant future. (Identical to PolSc 305 sec. 1)</td>
</tr>
<tr>
<td>SS 389</td>
<td>Hawaii 2000: Natural Resources and Economic Development (3)</td>
<td>Baker, Gopalakrishnan</td>
<td>Land and marine resources in Hawaii's future and economic principles to guide their use.</td>
</tr>
<tr>
<td>SS 390</td>
<td>Hawaii 2000: Design and the Physical Environment (3)</td>
<td>Burgess</td>
<td>Design in the urban and natural environment for optimum quality of human life.</td>
</tr>
</tbody>
</table>

**NOTE:** SS 133 may be taken as part of the constellation.

**SS 401 The College Experience Seminars (4) I, II**
Faculty-led seminars for leaders of the SS 101 groups. May be repeated. Pre: consent of instructor.

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**The Liberal Studies B.A. Program (Non-Major)**

In this period of rapid growth at the University, some students have come to feel regimented by the standardized curricular requirements of the school, or neglected as individuals in a large student body. As a partial response, the University has instituted a Liberal Studies Major B. A. Program (often called "the Non-Major Major Program") which leads to a bachelor of arts degree in liberal studies from the College of Arts and Sciences.
Currently administered by the Honors Program, Liberal Studies permits a qualified undergraduate to construct his own multi-disciplinary major-equivalent with the advice and consent of the Program Coordinator and a faculty member of his choice. At present, a student in the program must satisfy the University degree requirements, the Arts and Sciences credit requirements, and the Arts and Sciences language requirement. Also, he must maintain a 2.5 grade-point ratio in those courses which form his major equivalent. Courses in the major equivalent may not be taken on a pass-fail basis.

Any student not on academic probation may apply for admission to the program by appointment with the Program Coordinator in the Honors Office in Sinclair Library. Although there is no necessary connection between Honors and Liberal Studies, a student who qualifies may elect to be in both. Essentially, the Liberal Studies Major Program has been designed for the student who: (1) wishes to study a particular problem or theme, e.g., revolution or the urban crisis, through a multidisciplinary constellation of courses; (2) is unsure about his ultimate career goals and prefers to take a broadly based liberal arts program; or (3) wishes to create for himself an undergraduate major or program for which there are courses—e.g., linguistics, American studies, pre-law, pre-med, pre-library science, pre-public health, etc.—but for which a baccalaureate program has not yet been established. Thus, the main advantage of the Liberal Studies Major Program is that it opens new options to the undergraduate by allowing him to tailor his bachelor's curriculum to his individual interests and needs.

The Experimental College in the Humanities

("NEW COLLEGE")

Reuel Denney (American Studies); Ronald Kowalke, Duane Preble (Art); James Araki, Valdo Vigliehno (Asian and Pacific Languages); Frederick Greenwood, Lawrence Piette (Biochemistry & Biophysics); Edward Langhans (Drama); Asa Baber, Robert Bander (Hilo), Arnold Edelstein, Elizabeth Heine, Margaret Solomon, Susan Thompson (English); Gerhard Frohlich, Ernest Jackson, Robert Rorke, Richard Seymour (European Languages); Richard Rapson (Director), Burton Stein (History); Charles-James Bailey (Linguistics); Albert Benedict, Clair Folsome, Barbara Siegel (Microbiology); Peter Coraggio, Allen Trubitt (Music); Burke Townsend (Philosophy); Ann Boesgaard, Peter Dobson (Physics & Astronomy); Robert Cahill, James Dator, Henry Kariel, Charles Neff (Political Science); David Crowell, David Watson, Herbert Weaver (Psychology); Fritz Seifert (Religion); Patricia Steinhoff, Michael Weinstein (Sociology); Robert Potter (Education); Reynold Feldman (English)

"New College" begins as a group of experimental courses. With its
own faculty and student body, it is expected to evolve into a liberal arts college within the University of Hawaii pursuing goals of general education while maximizing opportunities for creative achievement. Freshmen and sophomores will be engaged in a core, multi-disciplinary curriculum; upper-division students will be granted an unusual degree of freedom from course work and freedom to pursue intellectual and artistic enterprises of special significance to each individual. "New College" will also form an intense sub-community within the larger University community.

NC 101 The Modern World (8) I

Bailey, Boesgaard, Coraggio, Dobson, Preble, Seifert, Solomon, Steinhoff, Thompson, Weinstein, Feldman

Multi-disciplinary examination of the meaning and consequences of mankind's experience in the 20th century. Presentations, lectures, seminars, and tutorials will be employed.

NC 102 Gods and Men (8) II

Staff

Multi-disciplinary examination of the philosophic and religious questions about existence, including a study of Judaeo-Christian, Greco-Roman, and various Eastern traditions. Presentations, lectures, seminars, and tutorials will be employed.

NC 220 Modes of Thought: Social Sciences (8) I, II

Cahill, Dator, Stein, Watson

Analysis of the methods of inquiry used to pose questions and seek answers in the social sciences.

NC 230 Modes of Thought: Natural Sciences (8) I, II

Benedict, Greenwood, Piette, Siegel, Townsend

Analysis of the methods of inquiry used to pose questions and seek answers in the natural sciences.

NC 240 Modes of Thought: Humanities (8) I, II

Bander, Edelstein, Heine, Kowalke, Langhans

Analysis of the methods of inquiry used to pose questions and seek answers in the humanities.

NC 399 Directed Work (15) I, II

Staff

Varied activities to launch each student on his creative project and on preparations for his comprehensive examinations.

Residential Learning Project—Johnson Hall

Freshmen students may apply for participation in a co-educational program of instruction conducted in Johnson Residence Hall. The program includes some of the courses offered in the University's general education core, plus academic advising and co-curricular activities. Approximately 200 students plus a small number of faculty members, who have offices in the project, form the community. Persons interested in learning more about the project should inquire at the College of Arts and Sciences, Office of the Associate Dean for Student Services, Bachman Annex 10.

Domestic Student Exchange Program

The Domestic Student Exchange Program was established to provide students with the opportunity to become acquainted with social and educational patterns found in different parts of the United States. Uni-
SPECIAL INSTRUCTIONAL PROGRAMS

University of Hawaii students who wish to do so may incorporate into their undergraduate program a year of exchange study at another university if that university can send a student in exchange. With a minimum of extra cost and waiver of out-of-state residence fees, a student may spend a year at another DSEP institution, receive credit and transfer of grades received.

Students who wish to participate should be sophomores or juniors and have a 2.5 cumulative grade-point average at the time of exchange and be in good standing at the University. Exchange will be based on a one to one ratio.

Institutions included in the Domestic Student Exchange Program are Illinois State University, Montana State University, Paterson (N.J.) State College, Portland State University, Grambling College, and the Universities of Alabama, Hawaii, Montana, Oregon, and Massachusetts.

Details on costs, application procedures, scholarships and loans, living facilities, and the universities involved are available from the DSEP Campus Coordinator in the Office of Admissions and Records, 124 Bachman Hall.

English Language Institute

For ELI course descriptions see "College of Arts and Sciences."

The University of Hawaii has established the English Language Institute (ELI) as its agency for assuring that the English proficiency of its foreign students is adequate for University coursework. ELI responsibilities include testing and evaluating the English of all new foreign students, and providing suitable instruction for those students whose English fails to meet standards determined by the University to be sufficient for the pursuit of full-time studies.

Testing and Evaluation. Upon arrival at the University, all foreign students are referred to ELI for evaluation of their English proficiency. Registration for University coursework is not permitted until this evaluation has been made.

Exemption from ELI. Following ELI's evaluation of their English proficiency, the following foreign students are exempted from ELI training: (a) those whose native language is English; (b) those who hold a bachelor's or master's degree from an accredited university in the United States, Australia, Canada, England, New Zealand; (c) those whose English meets the University's standards for full-time study.

Waivers. Academic departments may assume the responsibility of waiving any or all of a foreign graduate student's recommended ELI courses.
Assignment to ELI Courses. All foreign students not exempted on the basis of their entrance proficiency testing are assigned to an appropriate program of ELI instruction, except that foreign graduate students who can demonstrate that they have had all of their university work (with the exception of foreign languages) in English may, in counsel with their advisers, waive any or all ELI recommendations for course work. Because of their special purpose, ELI courses take precedence over all other course work. They may not be postponed to a subsequent semester, nor may they be dropped or taken with auditor status. Students who fail to comply with ELI assignments may be denied further registration at the University.

Relationship of ELI Assignments to Other Coursework. Students assigned to ELI training take a reduced academic load, in order to devote sufficient attention to gaining satisfactory English competence. Students required to take relatively large amounts of ELI work during their first and second semesters must expect to make proportionately slower progress in their regular University studies. This is an especially important factor in some graduate programs, and should be carefully considered by all foreign students whose time or financial support is limited.

Eligibility for Registration in ELI. Registration for ELI courses is limited to students who have been officially admitted to the University. Students who apply to the University for the sole purpose of entering ELI in order to improve their English will not be accepted, except during the summer session, at which time such students may be admitted on a space-available basis.

Ethnic Studies

Details of a program in Ethnic Studies, designed to service ethnic groups in the Hawaiian community, coupled with a strong academic component with particular emphasis upon inter-cultural relationships, should be available in a separate brochure by July 1, 1970. This program will be designed to permit the particular ethnic groups a considerable voice in determining the goals and content of the program. Students hoping to major in this field may be accommodated on an interim basis in the Liberal Studies Program, p. 65. For further information, inquire at the Office of the Dean for Academic Development.

Reserve Officers Training Corps

Army and Air Force ROTC units at the University offer programs leading to regular or reserve commissions in the U.S. Army and Air Force upon completion of the baccalaureate degree requirements.
Military Science (MS)

*For listing of courses, see "College of Arts and Sciences."

The *four-year program* is a voluntary program consisting of on-campus training during four semesters of freshman (MS I) and sophomore (MS II) years and is referred to as the basic course. Students who have participated in Junior Division ROTC or who have had active military service of more than four months may be exempt from a portion or all of the basic course. The advanced course consists of on-campus training throughout the junior (MS III) and senior (MS IV) years, plus a six-week summer camp between the junior and senior years at a mainland military installation. Subsistence pay of $50 per month is paid to students in the advanced course during the school year, and pay for the summer camp is at the rate of $206 per month. Training in the advanced course is selective, and successful completion of the training leads to a regular or reserve commission as a second lieutenant in the U.S. Army. To be eligible for the advanced training under the four-year program a student must: (1) be a citizen of the United States; (2) be selected for the advanced course under procedures prescribed by the professor of military science; (3) successfully complete the first two years (basic course) of a Senior Reserve Officers Training Corps course or the equivalent, as explained above.

The *two-year program* is essentially the same as above except that credit for the two-year basic course is gained by attendance and successful completion of a six-week summer camp at a mainland military installation prior to entry into the advanced course. Students interested in this program must have four semesters of college work remaining after completion of the summer camp and must apply for selection early in the spring semester of the year in which they plan to attend the basic summer camp. Pay for the summer camp is at the rate of $103 per month.

The Army Flight Training program is offered to qualified students in their senior year of the ROTC program.

Financial assistance scholarships are available for each year of the program. The scholarships provide payment for tuition, fees, books, laboratory expenses and $50 per month subsistence pay for the period of the scholarship. Applicants for the four-year scholarship normally apply during their senior year in high school. Applicants for the three, two, and one-year scholarships apply during the second semester at the University. Completion of the basic course is a prerequisite for the receipt of the one and two-year scholarships. For further information, inquire at the department of military science.

Aerospace Studies (AS)

The Air Force ROTC prepares selected college students for duty as professional Air Force officers. Recent far-reaching changes in teaching techniques, in curriculum, and in leadership development will better pre-
SPECIAL INSTRUCTIONAL PROGRAMS

prepare young men for the challenge ahead. Upon successful completion of the program and receipt of a degree, the student will be commissioned as a second lieutenant in the U.S. Air Force. Graduates will then either enter active duty or pursue an advanced degree in an "educational delay" status, should they so choose.

The AFROTC program at the University of Hawaii, referred to as the Professional Officer's Course (POC), is a voluntary two-year program. Applicants receive general military training during a six-week course at an Air Force base prior to their junior year. Once enrolled, students study aviation history, space operations and Air Force leadership and management in an interesting academically free student centered atmosphere. Senior cadets, who qualify as pilot candidates, will receive up to 36 hours of flying time which can be applied toward a private pilot's license.

All cadets accepted for the Professional Officer's Course receive $50 per month stipend and in addition are paid while attending summer field training. Scholarships are available for qualified cadets who have had the first two years of a four year ROTC program, either Army or Air Force. This scholarship consists of tuition, fees, books, plus $50 per month. Competitive examinations will be used to select these students. Interested students should contact the professor of aerospace studies early in their sophomore year.

Population Studies Certificate

For listing of courses, see "College of Arts and Sciences."

The graduate program in Population Studies is an interdisciplinary program involving the departments of anthropology, economics, geography, and sociology. The program is designed for students who are candidates for an advanced degree—M.A. or Ph.D.—in one of the cooperating departments and who wish to acquire an understanding of demographic structures and processes and to develop a special competence in the application of the concepts and tools of their primary discipline to the study of various aspects of the population problem. The program emphasizes the social and economic aspects of the causes and consequences of population trends and examines the rationale and the ways by which societies attempt to modify these trends with particular reference to the Asian and Pacific area. Special attention is paid to training in techniques of demographic analysis appropriate for deficient and erroneous data.

Students successfully completing an approved sequence of at least three courses in the program obtain a certificate in Population Studies if they have also fulfilled the requirements for a master's degree in anthropology, economics, geography, or sociology.
Russian Area Studies Certificate

A certificate in Russian Studies, signifying the completion of certain requirements in addition to a regular major, is offered by the Committee on Russian Studies of the University of Hawaii.

The certificate is awarded upon graduation to a student who completes (1) advanced reading and conversation courses in the Russian language equivalent to at least third year Russian and (2) 9 credits of work, exclusive of courses taken as part of the major, chosen from the offerings listed below.

- Geography 345  Geography of the Soviet Union (3)
- History 449-450  History of Russia (3-3)
- History 451-452  Modern Russia and Soviet Foreign Policy (3-3)
- History 453-454  Russian Intellectual History (3-3)
- History 497  Senior Tutorial in Russian History and Historiography (3)
- History S 457  The Russian Revolution (3)
- Philosophy 400  Political Philosophy
- Russian Literature 311-312  Introduction to Russian Literature and Civilization (3-3)
- European Languages 400  Contemporary Russian Literature in Translation (3)
- European Languages 402  19th-C. Russian Literature in Translation (3)
- Russian Literature 411-412  Literature of the 19th-C. (3-3)
- Russian Literature 413-414  Literature of the 20th-C. (3-3)
- Russian Literature 415  Russian Poetry (3)
- Russian Literature 417  Russian Drama (3)
- Russian Literature 418  Advanced Composition and Stylistics (3)
- European Languages 431-432  Contemporary Soviet Russia Through the Eyes of Soviet Literature (3-3)
- Religion 480-481  Russian Religion (3-3)

Further information from Professor Rex A. Wade, Committee on Russian Studies, Crawford 209D, ext. 8631. (Department of History)

Tutoring and Services to Handicapped

A tutoring service, called Kokua, is maintained by the University to assist undergraduate students who need special, but temporary, assistance in a particular subject. Normally, students are referred to Kokua by an academic adviser or by an instructor. Self-referrals are also accepted.

Students who will need special assistance because of physical handicaps should apply, as early as possible, to the Kokua office. Kokua provides student aides, help with registration, readers for the blind and other help to students who need special assistance in order to attend classes.
The programs of the College of Arts and Sciences are designed in the conviction that liberally educated persons must have a comprehensive knowledge of the major fields of learning—a general education—and an intensive knowledge of a particular field of the humanities, the social sciences, or the natural sciences.

In general education the College seeks to develop in students:

- an appreciation of our diverse cultural heritage and its relevance to modern life,
- criteria for the assessment of values in different kinds of society and the world community,
- aesthetic standards,
- a knowledge of themselves and their environment from a humanistic and scientific point of view,
- the ability to make sound judgments on disputed matters,
- an understanding of the interdependence of general and specialized education,
- a desire for continuing intellectual growth.

After a year or two of general education, a student undertakes a program of study offered by the College in a major field of concentration in the humanities, the social sciences, or the natural sciences; or he transfers to a program of another college of the University—e.g., Health Sciences or Education.

Because of its geographical position midway between continental America and Asia, the College is unusually conscious of the importance of the Far East; unique opportunities are provided for the study of the history, languages, literature, art, institutions and philosophies of the countries and peoples of this area.

Admission and Degree Requirements

Admission requirements for the College are the same as those for the University (pp. 43–48). However, candidates for admission are strongly advised, although not required, to offer a minimum of two years of college preparatory mathematics and three years of a foreign language.
To be entitled to a bachelor's degree offered by the College, a student must:

1. complete certain basic subjects specified by his degree program,
2. fulfill the prescribed requirements of a major field of concentration, and present to the student services office the goldenrod colored sheet attesting to completion of the major,
3. offer at least 60 semester hours of credit in other than introductory courses,
4. acquire an aggregate of 124 semester hours of credit, of which no more than 20 hours is acceptable in subjects not offered within the College,
5. earn at least a 2.0 grade-point ratio (C average) for all registered credits, and in the major field,
6. submit, during the semester preceding the award of the degree, two copies of an application for graduation, one to the office of admissions and records, and one to the office of student services,
7. pay a graduation fee of $5.00 to the treasury office.

No course will satisfy more than one kind of requirement.

Exemption by examination is possible in expository writing, speech-communication, and foreign language by applying to the appropriate departments. The speech-communication requirement is waived for students who have a one year course in high school in extemporaneous public speaking or debate with a grade of B or better. Credit by examination can be obtained in any course offered in the College which is required in a student's curriculum; it carries a corresponding reduction in the 124 hours required for graduation.

The dean of the College may exercise his discretion in modifying some of these requirements in exceptional cases after consultation with the graduation committee.

CURRICULA

Each program leading to the bachelor's degree is built around a major field of concentration—the major—which consists of a specific number of credits and required courses in a particular field or discipline, together with related courses (usually upper division) in other subjects which are associated with and contribute to that discipline.

The major must be indicated by the end of the sophomore year. For certain preprofessional programs, such as prearchitecture, predentistry, premedicine, and prepharmacy, and for the bachelor of fine arts, bachelor of music, and bachelor of science degree programs, it should be indicated at the beginning of the first year.

Students seeking baccalaureate degrees in medical technology, professional nursing, or education must complete the entrance requirements of
the program they wish to enter and transfer, ordinarily as juniors, to the
College of Health Sciences and Social Welfare, or the College of Educa-
tion. To be eligible for admission to any of these programs, a student
must generally have completed a minimum of 60 credit hours of study,
including the general education requirements of the University (pp. 58–
61) and certain specified courses.

ACADEMIC ADVISING

Assistance in planning academic goals and curricula, as well as help and
advice on a wide range of general or personal problems are available at
the student services office of the College. Advisers are specially trained
and oriented to assist students in selecting and achieving their academic
goals.

The service mentioned above applies to freshmen and sophomores.
When the student has completed 55 credits (junior standing), he is re-
quired to select a major field, at which time his records are transferred to
his major department and he is assigned an adviser from that depart-
ment’s faculty. In addition to their departmental adviser, juniors and sen-
iors may still call on the student services office for any special assistance,
and seniors should report to student services for a final check of their
records, preferably before registering for their final semester.

BACHELOR OF ARTS DEGREE PROGRAM

Basic Requirements

Completion of the University curricular requirements in communica-
tions, quantitative reasoning, and world civilizations. In addition, the
following are required: health and physical education, one activity course;
foreign language, intermediate year.

University requirements in communications courses are strongly sug-
uggested for the freshman year, since skills gained in those courses ought to
aid the student in many of his other subjects.

Area Requirements

HUMANITIES: 18 semester hours, including at least two English courses
from Group I, at least one course from Group II, and at least one
course from Group III.

I. Courses identical with those in University Group I
II. Courses identical with those in University Group II
III. Courses identical with those in University Group III
IV. American Studies 485, 486; Art 105, 106, 107, 108, 471; Asian
Studies 241, 242; Drama 240, 260; English 312 to 499 (not in-
cluding 397, 398, 497, 498); History 241, 242, 281, 282; Jour-
NATURAL SCIENCES: Completion of the University curricular requirements in Natural Sciences including one lab science.

SOCIAL SCIENCES: Completion of the University curricular requirements in Social Sciences, plus one additional course chosen from the University list.

Majors (B.A. Degree)

The following list indicates the major fields of concentration available to students and the requirements of each, viz., the number of semester hours and required courses (generally not to exceed 40 credits in any one subject), as well as related required courses. Major requirements become effective beginning with the junior year.

Anthropology. Major requirements: 27 semester hours. Required courses: 200, 210, 215 and six courses from the 300 and 400 levels. At the recommendation of the student's adviser 150 may be substituted for 200, 210, or 215. Three of the 300 and 400 level courses may be from related disciplines with prior approval of the student's adviser. Students going on to graduate school are urged to take 305 or 306 and one course from among 370, 380, or 381.

Art. Major requirements: 39 semester hours. Required courses: Art 101, 12 hours of introductory studio, 12 hours of art history, and 12 hours of emphasis in drawing and printmaking, painting, weaving and textiles, ceramics, sculpture, visual design or art history. Approved by College of Education for art education majors.

Asian Studies. Major requirements: 36 semester hours. Required courses: 241-242 (same as Hist 241-242); 310 or 312; 6 hours of a third-year Asian language or equivalent; one of two alternative choices: (1) 15 hours from one of the following fields: anthropology, art, Asian literature, economics, geography, history, philosophy, political science, religion, sociology; plus 6 hours of Asian courses outside this field of concentration from the humanities and social sciences, or (2) 15 hours of courses on one Asian country or region plus 6 hours of courses from another Asian country or region.

Biology. Major requirements: 30 semester hours including 220 and 250; and approved courses in genetics, physiology, and ecology. Chemistry 243-246; Physics 151-154 or 170-275; and Math 205-206 are also required. Additional non-introductory courses are to be selected from biochemistry, botany, genetics, microbiology or zoology. Students tentatively planning to major in biology should consult with the director of curriculum in biology, immediately on entering the University of Hawaii.
Botany. There are alternative pathways in obtaining a degree in botany.

Plan A. Major requirements: 32 semester hours including not more than 4 credits in courses below 200. Required courses: a core of 201, 410 and 470, preliminary to at least 16 credit hours in other courses above 200. Credits from two courses taken in other biological curricula as approved by adviser are required as part of the total of 32 credits. Related courses required: Chemistry 243–246, or 241–242 and Agricultural Biochemistry 402–403. Mathematics 205.

Plan B. Major requirements: 32 semester hours including not more than 4 credits in courses below 200. Required courses: a core of Biology 220, 250, Botany 201, 410 and 470, preliminary to at least 12 credit hours in other courses above 300. Related courses required: Chemistry 243–246, Mathematics 205.

Honors Program. Requirements as for Plan A or B but with the addition of Mathematics 206 and either Physics 151–154, or 170–171.

Students interested in majoring in botany should seek advice from the chairman of the department immediately on entering the University.

Chemistry. Major requirements: 24 semester hours, in addition to 114–116 or 117–118; including 133–134, 243–245, 244–246, 333, 351, 352, 353. A reading knowledge of scientific German, French, or Russian is required.

Chinese. Major requirements: 30 semester hours above the intermediate level.

Classics. Major requirements: 24 semester hours in upper-division Latin and Greek courses.

Drama and Theatre. The department views theatre not only as a craft, but as an art form capable of arresting statements of significant human experience. The student is therefore expected to develop his interests in literature and the arts, and to gain understanding of the relation of the theatre to other intellectual activities.

Underclassmen considering a major should complete History 151–152 and proceed with a foreign language. Recommended from the Area Requirements (p. 60) are Art 101, Drama 160, Drama 260, Music 160 or 170, Philosophy 200.

Major requirements: 24 semester hours, including a semester each of acting, technical theatre, history of the theatre, and directing. In addition to drama courses, 6 hours of dramatic literature are required. Majors acquire a working knowledge of the theatre through production experience in scenery, lighting, costumes, and acting, and take a major responsibility in at least one of these areas before graduation; a limited amount of credit for this work may sometimes be earned in Drama 299 and Drama 499.

English. Major requirements: 27 hours of upper-division courses. Normally required: 3 hours in Shakespeare; 3 hours in each of five of the following areas: Medieval, Renaissance, Restoration and Eighteenth Century, Romantic and Victorian Periods, Modern Literature, American Literature; 3 additional hours in one of these five chosen areas; 6 additional hours in courses numbered 300–499. Special major programs: Students with special interests in the study of language or in imaginative writing may substitute appropriate course work in these subjects for courses in one of the required “areas” listed above. Students with other special interests may, with the concurrence of their adviser and of the director of undergraduate advising, plan a major program of their own; this program may include related upper-division work outside the department of English, but must include a total of 27 hours of upper-division work.

French. Major requirements: 30 semester hours, exclusive of 101–102, 201–202, 301, 331–332, and 361 prerequisite to courses numbered 400 and above.

Geography. Major requirements: 25 semester hours. Required courses: 101, 151, 300, 370 or 375, 390, a 300 level regional course and 3 additional courses in systematic physical or cultural geography (all three preferably from one grouping or the other). Related courses required: 9 non-introductory credits in a related field(s) approved by the department. All majors are advised to take a course in statistical methods (Geography 380, or the equivalent). In choosing courses under the College area requirements, students are advised to select Anthropology 200 and Economics 151 under the Social Sciences options, Mathematics 134 and 201 or 205 under the Basic Requirements or Natural Sciences options, and basic courses in physics (151–154), chemistry, biology, or geosciences under the Natural Sciences options.

Geology. Major requirements: 24 semester hours beyond 101–102, and including 300, 305, and 410. As related courses, 16 hours chosen from chemistry, physics and/or biology. Recommended foreign languages are French, German, or Russian.

German. Major requirements: 30 semester hours of courses numbered 300 and above. 203 may count toward major.


History. Major requirements: 28 semester hours of courses over 200. Required courses: 497 and at least one course (3 credits) in each field (United States, Pacific and Asia, Europe). Honors program students take
493–494 instead of 497. No more than 6 credits applicable to the major may be taken at the 200 level. 200 level courses applied to distribution requirements may not be counted towards the major.

Japanese. Major requirements: 30 semester hours above the intermediate language level.


Mathematics. Major requirements: 18 semester hours in courses numbered above 300.

Microbiology. Major requirements: 24 semester hours. Required courses: 351 and 3 of the following: 431, 451, 461, 463, 475, 480, 490. Additional work to consist of an integrated group of courses selected from appropriate offerings in biochemistry, biology, botany, chemistry, genetics, microbiology, and zoology. As related courses, Chemistry 133–134 or 351; Mathematics 206; and Physics 151–154 or 170–273.

Music. Major requirements: 38 semester hours. Required courses: 181–182, 183–184, 265–266, 281–282, 283–284, and 6 hours in applied music, including 335–336. Music 399 or 494 (a project in the area of major emphasis) may be substituted for 336, as advised. For emphasis upon theory, 12 hours selected in upper division theory courses, as advised, plus either 464, 470, or 477. For emphasis upon music literature, 12 hours selected from upper division music literature courses in the 460 series, as advised, plus either 470, 477, or 485. All students tentatively planning to major in music should consult with the chairman of the music department immediately on entering the University of Hawaii.

Non-major Program (Liberal Studies): see p. 65.

Philosophy. 24 semester hours in addition to 210 and at least one of the following: 100, 200, 201. Undergraduates planning work in Asian and Comparative Philosophy should take introductory courses in Indian, Buddhist and Chinese Philosophy.

Physics. Major requirements: 32 semester hours including 170–171, 272–273, 274–275, 305, 310, 350, 430 or 450, 460, 480–481. These require the following in mathematics: 205–206, 231, 232, 402 or 403. Chemistry 113 through 116 or 117–118 are required. Upon recommendation of a physics department adviser, the requirements 170 through 273 may be satisfied by 151 through 154.

Political Science. Major requirements: 27 semester hours. Required courses: 110 and 300–301. As part of his major, each student is required
COLLEGE OF ARTS AND SCIENCES

to complete introductory one-year sequences in three subfields, numbered 300 and above, including 300–301, Political Thought. The balance of the political science courses may be taken either within the same subfields or in others. "Topics" courses will be offered. As their contents will vary from year to year, they may be taken more than once for credit.


Russian. Major requirements: 30 semester hours from courses numbered 209 and above.

Sociology. Major requirements: 24 semester hours. Required courses: 151 or 201, and one course from each of the following subdivisions: (1) 300–319 or 400–419; (2) 320–339 or 420–439; (3) 340–359 or 440–459; (4) 360–379 or 460–479; (5) 480–499.

Spanish. Major requirements: 30 semester hours above the intermediate level. Required courses: 303–304, 330, 351–352, 431 or 441 or 444, plus six units of literature. Majors must also pass the MLA Proficiency Tests for Teachers and Advanced Students (on Listening, Speaking, Reading and Writing). Portuguese 360 or 361 may be counted towards the major requirement.

Speech-Communication. Major requirements: 30 semester hours in speech. Required courses: 200, 201, 304, 305, 406. Additional requirements: one of the following: Psychology 322, Sociology 340, Sociology 360, Anthropology 330; and also one of following: Educational Psychology 430, Educational Psychology 311, Psychology 320.

Zoology. Major requirements: 24 semester hours. Required courses: either Biology 220 or a combination of Zoology 101 and Botany 101; Biology 250 or Zoology 430; and Zoology 490. Related required courses: Chemistry 113–116 or 117–118 and 243–246; and Math 134. Biology 220, 250, Genetics 451–452 and courses in entomology will apply towards the 24 required semester hours.

BACHELOR OF FINE ARTS DEGREE PROGRAMS

Basic and area requirements are those of the bachelor of arts degree programs except that a foreign language is not required.
Majors (B.F.A. Degree)

Art. This program is designed to provide basic preparation in ceramics, drawing, painting, printmaking, sculpture, textiles, visual design, and weaving. Requirements include 63 credits in the field of art of which 18 must be in art history. All majors must take 12 credit hours of introductory studio courses and Art 101 and are strongly advised to register for Art 101 and one of the introductory studio courses in their first semester.

Architecture. The department of architecture offers a number of programs in the field of environmental design which prepare students to participate at both the professional and non-professional levels in the decision-making processes shaping our physical environment.

Architecture: Major requirements: 65 credit hours. Required courses: one of 113, 114, 115, 116 and 271, 273, 274, 275, 276, 331, 332, 333, 6 credits of 399 and/or 400, 371, 372, 301, 302, 303, 321, 322, 311, 312, 351, 341 or 342.

Architectural Engineering: Offered at graduate level only.

Environmental Design: Major requirements: 64 credits of recommended courses on individual program basis and passing of general examination or thesis presentation.


Tropical Studies: Development: Offered at graduate level only.

Urban & Regional Design: Major requirements: 64 credit hours of urban & regional design courses, recommended courses or approved equivalents.

BACHELOR OF MUSIC DEGREE PROGRAM

Basic Requirements

English 100; Speech-Communication 145; History 151–152, or 351–352 or 161–162; Mathematics 100 or Philosophy 210; for students concentrating in voice, French 101–102 and German 101–102.

Distributive Requirements

A. Humanities: one course from the following:*

1. English 251, 252, 253, 254, 255, 256; Drama 160; literature courses

*This requirement is supplemented by Music 180 and 265–266 required in the music concentration.
offered by language departments in original language or translation.

2. Philosophy 100, 200; Religion 150, 151.

B. Natural Sciences: completion of the University curricular requirements in Natural Sciences.

C. Social Sciences: completion of the University curricular requirements in Social Sciences.

Music Concentrations


**Piano or Organ.** Basic theory: 180, 181–182, 281–282, 283–284; music history: 265–266; applied music: 8 credits in 135–136, 235–236 and 12 credits in 335–336, 435–436; secondary performance: 2 credits from 131, 231, 123–124; music literature: 469, 4 credits in 420 (21), 4 credits from 461, 462, 463, 464, 465, 466; advanced theory: 481, 483, 485–486; piano methods: 358–359; conducting: 325; keyboard ensembles: 2 credits in 401 (21), one credit in 401 (22), and one credit in 401 (23); organizations and other ensembles: 6 credits from 401, 402, 404, 405, 409; music electives: 6 credits; free elective: 6 credits.

**Voice.** Basic theory: 180, 181–182, 281–282, 183–184, 283–284; music history 265–266; applied music: 8 credits in 135–136; 235–236, 6 credits in 335–336 and 8 credits in 435–436; secondary piano: 6 credits from 131 (21), 231 (21); music literature: 8 credits in 420 (11), 2 credits from 461, 462, 463, 464, 465, 466, or 469; advanced theory: 2 credits from 481, 483, 484, 485; organizations: 6 credits in 404, 8 credits in 402; music electives: 7 credits.
BACHELOR OF SCIENCE DEGREE PROGRAMS

Basic Requirements

English 100; Speech-Communication 145; History 151–152 or 351–352; Chemistry 114–116 or 117–118; Mathematics 205–206; Physics 170 through 273, or 151–154.

Distribution Requirements

A. One course from each of the following groups:
   1. English 251, 252, 253, 254, or 255, 256; Drama 160.
   2. Philosophy 100, 200; Religion 150, 151.
   3. Art 101; Music 160, 170, 180.

B. Three courses, including at least one from each of the following groups:
   1. Psychology 100, 110, 214, 320, 322; Sociology 151 or 201, 360; Anthropology 150, 200; Social Sciences 301, 302.
   2. Economics 120, 150, 151; Political Science 110; Geography 102, 151.

Majors (B.S. Degree)

Biology. Major requirements: 37 semester hours including Biol 220; Biol 250; and approved courses in genetics, physiology, ecology, biochemistry and statistics. Chemistry 243–246 and Physics 151–154 or Physics 170–275 and Math 205–206 are also required. Additional advanced courses may be selected from biochemistry, botany, genetics, microbiology or zoology. Appropriate additional advanced courses in chemistry, physics or mathematics are recommended. An intermediate year of German, French, Russian or Japanese is also required. Students tentatively planning to major in Biology should consult with the curriculum director, immediately on entering the University of Hawaii.


As related courses German 211–212 or Russian 207–208, Math 231 and Physics 170–171, 272–273 are required.

Recommended electives are Math 232, 311, 402, 431, 432, Physics 274.

Geosciences. A student must concentrate in one of the following fields: general, geochemistry, geodesy, geology, geophysics, hydrology, meteorology, or oceanography. The field of concentration should be stipulated at the beginning of the third year and a suitable program of courses selected with department approval. As related courses, Physics 170–171 and 272–275 are required.
**Major requirements:** 38 semester hours, including 101–102 or the equivalent, from among appropriate offerings in geosciences and in departments such as biology, chemistry, civil engineering, geography, information sciences, mathematics, oceanography, physics, and soil science.

**Physics. Major requirements:** 35 semester hours, including 170–171, 272–273, 274–275, 305, 310–311, 350, 430 or 450, 460, 480–481. These require the following in mathematics: 205–206, 231, 232, and 402 or 403. An introductory year of a foreign language is required. Upon recommendation of a physics department adviser, the requirements 170 through 2/3 may be satisfied by 151 through 154. Requirements for courses above 310 may be modified in order to accommodate special emphasis or interdisciplinary programs for which the major in physics is appropriate—by recommendation of a physics adviser and by approval of the department chairman.

**Recommended First Year Program**

**For All B.S. Candidates**

For entering students who have had high school courses in mathematics through pre-calculus, the following first year course schedule is recommended:

<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 100 (or option)</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 205</td>
<td>4</td>
</tr>
<tr>
<td>Chemistry 117–118</td>
<td>5</td>
</tr>
<tr>
<td>Speech-Communication 145 (or option)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECOND SEMESTER</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 100 (or option)</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics 206</td>
<td>4</td>
</tr>
<tr>
<td>Physics 170–171</td>
<td>5</td>
</tr>
<tr>
<td>Option (or Speech-Communication 145)</td>
<td>3</td>
</tr>
</tbody>
</table>

If the student does not have a high school course equivalent to Math 134 (pre-calculus), he may take this course at the University during a prior summer session. Otherwise Math 134 must be taken in an alternative first year schedule. He should obtain the recommendations for such a program from the appropriate departmental adviser before registering.

**PREPROFESSIONAL PROGRAMS**

By careful planning, students in the College can prepare themselves adequately for admission to professional and graduate schools. This is especially true in view of the increasing emphasis placed upon a liberal arts background by most of the professions.

In planning a program, the recommendations of the appropriate national professional organizations should be followed. In addition, when the student has selected the professional school he desires to enter, he should elect courses to fulfill the specific requirements of that school.
COLLEGE OF ARTS AND SCIENCES

The College maintains a Premedical Sciences Committee prepared to give specific aid to students preparing for schools of dentistry, medicine, veterinary medicine, pharmacy, or public health.

Information regarding the scholastic requirements of the other professions, such as law, is available at the office of the dean of student services of the College and at the Counseling and Testing Center.

**Premedical Curriculum**

The following is based upon the general admission requirements of medical schools. The majority of schools, however, require the entering students to have a bachelor's degree, as well.

- Biology: Biology 220 and 250 (general), 320 (vertebrate), and 420 (embryology).
- Chemistry: Chemistry 114-116 or 117-118 (general), 243, 245, 244, and 246 (organic), 133 and 134 (quantitative).
- Physics: Physics 151 through 154 (general).
- Mathematics: Mathematics 205 and 206 (calculus).
- Desirable electives: Physical chemistry, statistics and genetics.

It is recommended that premedical students obtain the book entitled *Admission Requirements of American Medical Colleges* ($4.00; address: AAMC, Dept. 3B, 2530 Ridge Ave., Evanston, Illinois 60201) for detailed information on individual medical schools and their admission policies.

Requirements of dental schools are similar to those of medical schools, with the exception that more do not require a bachelor's degree. For details see *Admissions Requirements of American Dental Schools* ($2.00; address: AADS, 211 East Chicago Avenue, Chicago, Illinois 60611).

Schools of pharmacy usually require for admission one year of college study. This must include courses in English, chemistry, zoology, botany, trigonometry, and algebra.

Catalogs of individual schools of medicine, dentistry, veterinary medicine, and pharmacy with more specific admission requirements and information may be found in Sinclair Library. Interviews with the premedical adviser throughout the program are recommended.

**NON-MAJOR PROGRAM**

A non-major program, in which the student designs a related constellation of courses in consultation with a faculty adviser, is offered by the College of Arts and Sciences. Please see page 65 for further details.
ARTS AND SCIENCES COURSES

See pp. 4-5 for a discussion of course descriptions.

Aerospace Studies (AS)

Professor Hartel; Assistant Professors Kozuma, Nakaguma

Leadership Laboratory required 1 hour per week for each course listed.

301, 302 Third-Year Aerospace Studies (3, 9) I, II
Kozuma
Survey course about development of U.S. airpower and its concepts, doctrine, employment; and about astronautics and space operations and future development of aerospace power.

451, 452 Fourth-Year Aerospace Studies (3, 9) I, II Hartel, Nakaguma
Study of professionalism, leadership, management. Includes leadership theory, functions and practices as they apply to Air Force.

American Studies (AmSt)

Professors Brown, Denney, Lutsky, Matson; Associate Professors Gurian, McCutcheon, Neil; Assistant Professor Helbling; Instructors Alcantara, Kinghorn; Visiting Professors Kato, Laskowsky

201-202 Introduction to American Civilization (3-3) Yr.
Neil
Central themes of American life and experience studied in the perspectives of history, literature and the social sciences.

231-232 The Hero in the Western World (3-3) Yr.
Gurian
Study of how religious, mythic and historical hero-types have embodied humanistic values in Western societies. (Not offered 1970-71.)

301-302 Man in Society (3-3) Yr.
Denney, Lutsky
Some basic problems and processes of contemporary society, jointly examined by several social sciences. Pre: sophomore standing or consent of instructor. (May be repeated for credit.)

370 Music in Modern America (3) I, II
Trimillos
Varieties of music, including jazz and popular forms, in contemporary American life, with relevant antecedents. (Cross-listed as Music 370.) Pre: consent of instructor.

390 Introduction to Contemporary America (3) I, II
Lutsky
Survey of people, society, arts and sciences, business and government for foreign students only. Pre: consent of instructor.

435 The Radical Tradition in America (3) I, II
Gurian
Three varieties of American radicalism which have provided a continuing critique of prevailing religious, political, economic and social structures: Radical Spiritualism, Communist Utopianism, Anarchism. (Not offered 1970-71.)

460 Myths in American Development (3) II
McCutcheon
Examination of major American myths—success and failure, individualism, equality, progress, the concept of the wilderness and frontier and the American sense of mission.

465 Popular Culture in America (3) I, II
Matson
Examination of the major themes, modes and media of popular or mass culture in the U.S., with emphasis on cultural trends and social implications.
475 **American Taste** (3) Neil
Study of popular attitudes towards the arts, travel, fashions, craft and industrial productions, and recreation. Past will be used to explain present. (May be repeated for credit.)

485-486 **Contemporary American Civilization** (3-3) Yr. Laskowsky
Study of 20th century European and American intellectuals who have influenced contemporary American literature.

490 **Special Topics** (3) I, II
Problems of contemporary relevance presented by visiting faculty.

495 **Black Americans and American National Character** (3) I, II Helbling
Examination of the nature of American national character and of the role Black Americans have played in the making of that character. Pre: U.S. history and a survey course in either sociology or anthropology.

615 **Leaders and Movements in American Thought** (3) I, II Brown, Neil
Examination in depth of two or three significant personalities in American history and culture and the movements which originated from their ideas. Different personalities considered each semester. (May be repeated for credit.)

621 **The West in the American Consciousness** (3) I, II Gurian
In-depth exploration of the impact of Western myth and actuality on the American consciousness, with particular emphasis on politics and national character.

631 **The Mass Media in American Society** (3) I Matson
Examination of the relationship between mass communication media and patterns of culture, society and politics in America.

635 **Perspectives in Comparative Literature** (3) II Denney
To explore, in Asian and Western literary works, literary questions that are cross-cultural and comparative.

641 **Asian Influences in American Civilization** (3) I, II McCutcheon
To examine the influence of Asia in American history, literature, politics, thought, architecture, and fine arts.

650 **American Civilization and the Overseas American** (3) II Brown
Examination of American civilization with special reference to those issues, principles, and problems most significant to Americans preparing for work and study in other areas of the world. (Not offered 1970-71.)

665 **Seminar: Presidential Leadership & American Civilization** (3) I, II Brown
Interdisciplinary studies of the impact of various presidencies on social, political, economic, and cultural life of U.S. and the response of presidents to popular currents of thought. President F. D. Roosevelt is subject in Fall 1970. (Not offered Spring 1971.)

670 **Seminar: Sociability in the United States** (3) II Denney
Applications of concepts, definitions, classifications, and discriminations developed in the social sciences to materials dealing with institutions of sociability and hospitality in U.S.

672 **Environmental Design in Hawaii** (3) II Neil
Seminar on architectural aspects of American life, generally with contemporary relevance. (Cross-listed as Arch 672.)

685-686 **Seminar: Nature of American Society** (3-3) Yr.
Examination and interpretation of American people and society for foreign students. Pre: consent of instructor.

695 **Image of Man in Contemporary Social Sciences** (3) II Matson
Examination of American social science theory and research in terms of humanistic goals and commitments. Critical analyses of competing paradigms and basic assumptions regarding human nature and conflict.

701-702 **Proseminar** (3) I, II Helbling
Training in bibliography, research methods and readings in American Studies. (For degree candidates only.)
ANTHROPOLOGY

711 American Representative Institutions (3) I Brown
Examination of the American experiment with representative institutions, public and private. Pre: consent of instructor.

712 American Beliefs (3) II Denney
Intensive readings in the beliefs of Americans as expressed in character and culture studies. Pre: consent of instructor.

713 American Technology and Society (3) I Matson
Intensive readings concerned with the American industrial and technological complex and its effect upon both the individual and the culture. Pre: consent of instructor.

714 American Arts and Society (3) II Lutzky
Intensive readings in the elite, popular and folk arts and their relevance to American contemporary life. Pre: consent of instructor.

750 Seminar in the Interaction of Asia and America (3) II
Effect of inter-cultural exchange of ideas, values, and techniques between peoples of Asia and U.S. Pre: consent of instructor.

799 Directed Research (arr.) I, II
Pre: graduate standing; consent of instructor.

800 Thesis Research

Anthropology (Anth)

Professors Bateson, Lebra, Luomala, Marecki, Oliver, Solheim; Associate Professors Boggs, Dewey, Finney, Green (on leave 1970-71), Mahony, Pearson; Assistant Professors Griffin, Lessin, Lewis, Pietruszewsky, Quinn, Tuggle

Most 300 and 400 level courses have as a prerequisite one of the 200 level courses. If passed with a grade of “A” or “B,” 150 may be substituted for any of these 200 level prerequisites. Otherwise, written consent of the instructor will be required. 300 and 400 level courses may be taken for graduate credit with prior approval of the student’s adviser.

150 Introduction to Anthropology (3) I, II
Major principles and theoretical orientations of physical anthropology, archeology and ethnology. With grade of A or B, may serve as an introductory requirement to upper division courses; intended for non-majors.

200 Cultural Anthropology (3) I, II
Nature of culture; introduction to basic concepts for analyzing cultural behavior; patterning, integration, and dynamics of culture; culture and the individual.

210 Archaeology (3) I, II
Introduction to prehistoric archeology; methods and techniques of excavation and laboratory analysis; brief survey of man’s cultural growth in prehistoric times.

215 Physical Anthropology (3) I
Introduction to physical anthropology; primatology, fossil man, heredity, modern man, human growth and constitution.

300 Study of Contemporary Problems (3) I, II
Significance of anthropology for contemporary affairs, particularly American ethnic and minority group relations. Relevance and role of anthropology for various professions, governmental policy, political action, and accomplishment of change. No prerequisites.

305 History of Anthropology (3) I
Historical development of anthropology, emphasizing unity of diverse fields which constitute the study of man. Pre: 200.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>330</td>
<td>Social Organization</td>
<td>(3)</td>
<td>Systematic study of human social institutions; general principles of social interaction formulated from ethnographic data. Pre: 200.</td>
<td></td>
</tr>
<tr>
<td>340</td>
<td>World Ethnography</td>
<td>(3)</td>
<td>Comparative study of selected tribal, folk, peasant, urban societies of the world. Pre: 200.</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>Oceania</td>
<td>(3)</td>
<td>Introduction to native cultures of Polynesia, Micronesia, Melanesia, Australia. Pre: 200.</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>Ethnographic Field Techniques</td>
<td>(3)</td>
<td>Problems and techniques of cultural and social anthropological field work; ethnographic literature and work with informants. Pre: 200.</td>
<td></td>
</tr>
<tr>
<td>380</td>
<td>Archaeological Field Techniques</td>
<td>(3)</td>
<td>Archaeological survey and excavations; week-end field trips, mapping, photography, recording. Pre: 210.</td>
<td></td>
</tr>
<tr>
<td>381</td>
<td>Archaeological Laboratory Techniques</td>
<td>(3)</td>
<td>Laboratory analysis and evaluation of field data; preservation and restoration of artifacts. Preparation of materials for publication. Pre: 210.</td>
<td></td>
</tr>
<tr>
<td>385</td>
<td>Undergraduate Proseminar</td>
<td>(3)</td>
<td>Reporting and discussion of selected problems in current research. (1) Archaeology, (2) linguistics, (3) ethnography, (4) social anthropology, (5) applied anthropology, (6) psychological anthropology, (7) biological anthropology. Pre: written consent of instructor. May be repeated.</td>
<td></td>
</tr>
<tr>
<td>399</td>
<td>Directed Reading or Research (arr.)</td>
<td>I, II</td>
<td>Pre: 2.7 grade-point ratio, or 3.0 grade-point in anthropology, or written consent of instructor.</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>Anthropological Statistics</td>
<td>(3)</td>
<td>Introduction to statistical methods and their use in analysis of anthropological data. Pre: 200, 210, or 215.</td>
<td></td>
</tr>
<tr>
<td>415</td>
<td>Ecological Anthropology</td>
<td>(3)</td>
<td>Study of relationship of man with his natural environment, particularly emphasizing role of culture as dynamic component in ecological systems. Pre: 200. (Alt yrs.; offered 1970–71.)</td>
<td></td>
</tr>
<tr>
<td>416</td>
<td>Economic Anthropology</td>
<td>(3)</td>
<td>Analysis of economic activities in non-Western, non-industrial societies with emphasis on the production, distribution, and consumption of goods and services in a variety of cultural contexts. Pre: 200. (Alt yrs.; offered 1970–71.)</td>
<td></td>
</tr>
<tr>
<td>417</td>
<td>Political Anthropology</td>
<td>(3)</td>
<td>Character of political institutions and their development in non-Western and non-industrial societies. Pre: 200. (Alt yrs.; offered 1970–71.)</td>
<td></td>
</tr>
</tbody>
</table>
ANTHROPOLOGY

418 Culture and the Individual (3) II
Cultural factors in the development of personality, cognitive development, deviant behavior; psycho-cultural characteristics of the species. Pre: 200.

419 Oral Art (3) I
Oral prose and poetry in cultural perspective in nonliterate and literate societies; structural, functional, and linguistic description and analysis. Pre: 200. (Complements Music 471 and Art 472 in which credit towards the major will be granted.)

422 Comparative Religion (3) II

423 Social and Cultural Change (3) I
Consideration of various approaches to examples of social and cultural change in non-literate societies, e.g. evolution, diffusion, acculturation, revolution, etc. Particular emphasis upon problems of change associated with the historical features and social processes of colonialism. Pre: 200. (Alt. yrs.; not offered 1970-71.)

425 Regional Ethnology (3) I, II
Historical problems and regional developments in ecology, social structure, world view, and other aspects of indigenous cultures. (1) Continental East Asia, (2) Mainland Southeast Asia, (3) Island Southeast Asia, (4) Micronesia, (5) Polynesia, (6) Melanesia, (7) other to be announced. Pre: 200 and, for sections 1, 2, and 3, 355-356, for sections 4, 5, and 6, 350, or written consent of instructor. May be repeated.

460 Regional Archaeology (3) I, II
Regional surveys of prehistoric cultures, based on archaeological research. (1) Asia and Pacific, (2) Europe, Africa, and Near East, (3) North and South America, (4) other to be announced. Pre: 210. May be repeated.

480 Anthropological Applications (3) I, II
Anthropological theory, method, data applied to problems in specialized fields. Oriented to needs of students in professional fields who lack anthropological background. (1) Development, (2) health, (3) education. (Same as Ed EF 180.)

481 Applied Anthropology (3) II
Methods and results in the application of anthropological concepts to the practical problems of agricultural, commercial, and industrial development. Oriented toward majors in anthropology. Pre: 200. (Alt. yrs.; not offered 1970-71.)

483-484 Japanese Culture and Behavior (3-3) Yr.
Systematic analysis of socio-cultural factors for an understanding of Japanese behavior. Fall semester will give attention to social structure with particular emphasis on traditional institutions. Spring semester will emphasize behavior patterns with reference to cultural values, norms, and beliefs. Students may enroll in either semester or both. No prerequisites.

485-486 Peoples of Hawaii (3-3) Yr.
Intensive study of ancient and modern Hawaii from an anthropological viewpoint. All ethnic and social groups of modern Hawaii will be considered. Pre: 200. 485 is prerequisite for 486.

620 Theory in Social and Cultural Anthropology (3) I, II
Intensive examination of major theoretical problems in (1) kinship, (2) cognitive systems, (3) religion, (4) political institutions, (5) law and social control, (6) economics, (7) ecology, (8) other to be announced. Pre: written consent of instructor. May be repeated.

630 Theory in Physical Anthropology (3) II
Theory, method, and scope of physical anthropology: Human variation through time and space; primate studies; fossil man; heredity; modern populations; human growth and constitution. Pre: written consent of instructor.

635 Culture History (3) I
The relationship between data on prehistory recovered archaeologically and those derived from other sources, especially palaeophysical anthropology, historical linguistics,
history, ethnology, social anthropology and historical geography. Course is designed for non-specialists as well as archaeologists. Pre: written consent of instructor.

640 Method and Theory in Archaeology (3) I, II
   (1) Prehistory, (2) environmental archaeology, (3) other to be announced. Pre: written consent of instructor.

699 Directed Reading or Research (arr.) I, II
   Pre: classified graduate standing and written consent of instructor.

710 Seminar in Research Methods (3) I, II
   Theory construction and research design in social and cultural anthropology; techniques for collection of data; processing and evaluation of data. This seminar is intended for students preparing research of their own. Pre: classified graduate students in anthropology above first year level and written consent of instructor. May be repeated.

712 Data Processing in Archaeology (3) II
   Techniques of data retrieval; strategies of field work and data analysis which involve identifying, sampling, and processing large bodies of materials. Pre: classified graduate standing and written consent of instructor. May be repeated.

750 Research Seminar (3) I, II
   Reporting and discussion of selected problems in current research. (1) Archaeology, (2) linguistics, (3) ethnography, (4) social anthropology, (5) psychological anthropology, (7) biological anthropology. Pre: classified graduate standing and written consent of instructor. May be repeated.

800 Thesis Research (arr.) I, II

Architecture (Arch)

Professors Etherington, Terazaki; Assistant Professors Burgess, Mahoney, Minerbi; Instructors Gay, Watson; Lecturers Connors, Haines, Hughes, Katz, Kapololu, MacMahon, Morrison, Preuss, Rummell, Yanoviak; Colleagues Chalk, Tsuhoi, Tyrwhitt, Kikutake, Kobayashi, Wiederholt

The department may retain any student work for departmental use.

ARCHITECTURE

Program Chairman and Adviser, Hugh Burgess, A.I.A., Grg. Annex B-4

311 Construction Materials “A” (3) I (2L, 1 Lb) Rummell
   The properties and uses of construction materials and the reading and interpretation of construction drawings and plans.

312 Basic Drafting and Site Surveying “B” II (2L, 1Lb) Rummell
   Skills and techniques needed to survey and record existing site conditions as well as the preparation of drawings and details to describe the site design. Pre: 311 or equiv.

331 Architecture “A” (3) I, II (1 L, 3 Lb) Burgess
   Site planning and the relationship of building forms to the existing natural and man-made environments in terms of housing. Studio labs with lectures, assigned projects, sketch problems, as well as a student-generated project and a weekly seminar on architectural design theory and principles. Pre: approval of program chairman.

332 Architecture “B” (3) I, II (1L, 3Lb)
   Functional design in quantitative terms as it relates to building types of single activities. Studio labs with lectures, assigned projects, and sketch problems, as well as a student-generated project and a weekly seminar on architectural design theory and principles. Pre: 331 or equiv.
ARCHITECTURE

333 Architecture "C" (3) I, II (1L, 3 Lb)
Human factors in architectural design as it relates to building types of multiple activities. Studio labs with lectures, assigned projects, and sketch problems, as well as a student-generated project and a weekly seminar on architectural design theory and principles. Pre: 332 or equiv.

371 Principles of Architectural History and Theory (3) I (3L)
Yanoviak
Course emphasizes a knowledge of the theory of architecture in light of architectural history through lectures, slides, and individual projects. Pre: 271 or equiv.

372 Principles of Planning and Land Use (3) II (3L)
Yanoviak
Arrangement and disposition of buildings and exterior spaces to provide appropriate and effective relationships of traffic control, natural features and climate, including the relationships between architecture and urban problems. Pre: 371 or equiv.

394–395 Senior Honors Thesis (3-3) Yr.
Preparation of architectural design under individual faculty supervision. Required for graduation with honors. Pre: consent of instructor.

399 Directed Work (2-4 V) I, II Staff
Pre: 333 and consent of instructor and program chairman.

400 Special Projects in Architecture (2-4 V) I, II
Intensive and specialized work at an advanced level in fields of special interest of visiting staff. See announcement for current offering. May be repeated. Pre: advanced standing and consent of program chairman.

411 Building Construction "C" (3) I, II (2L, 1 Lb)
Rummell
Study of the uniform building code and the Honolulu Comprehensive Zoning Ordinance. Preparation of architectural drawings and details for current building construction practices and methods using a team approach. Pre: 312 or equiv. Taken with 401 and 431.

412 Building Construction "D" (3) I, II (2 L, 1 Lb) Staff
Continuation of 411. Preparation of preliminary working drawings and selected details for projects designed in 431. Pre: 411. Taken with 402 and 432.

431 Architecture "E" (4) I, II (1L, 3 Lb) Connors
Advanced site planning and building design. Emphasizes a thematic approach to relate functional requirements, human factors and the environmental setting in terms of architectural form and space. Studio labs, lectures. Assigned project, sketch problems and weekly seminar on design theory and principles. Pre: 333 and 6 credits or 399 or 400 or equiv. Taken with 401 and 411.

432 Architecture "F" (4) II (1L, 3 Lb) Connors
Development of 431 drawings in sufficient detail to include integration of structural, mechanical and electrical systems as well as building codes, economic and climatic limitations; including diagrams, presentation drawings, a model or models, and research brochure. Intermittent sketch problems and weekly seminar on architectural design theory and principles. Taken with 402, 421 and 412. Pre: 431 or equiv.

616 Professional Practice (3) I Haines
Ethical and economic problems of professional practice. Pre: consent of instructor.

699 Directed Work (arr.) I, II Staff
Pre: consent of instructor and program chairman.

ARCHITECTURAL ENGINEERING

Program Chairman and Adviser, T. David Terazaki, Grg. Annex B-7

Structural Systems

301 Architectural Structures "A" (3) I, II Powell
Structure in architecture. Introduction to strength of materials and basic mechanics. (Cross-listed as CE 301.)

302 Architectural Structures "B" (3) I, II Powell
Mechanics and strength of materials, design of simple beams, columns and trusses in various materials. Pre: 301. (Cross-listed as CE 302.)
ARCHITECTURE

303 Architectural Structures “C” (3) I, II
Terazaki

399 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman, 333.

400 Special Projects in Architectural Engineering (2–4 V) I, II
Intensive and specialized work at advanced level in fields of special interest of visiting staff. See announcement for current offering. May be repeated. Pre: advanced standing and consent of program chairman.

401 Architectural Structures “D” (4) I, II
Terazaki

402 Architectural Structures “E” (4) I, II
Staff
Analysis of statically indeterminate structures. Design of advanced structural systems. Ultimate strength and plastic design. Advanced structural analysis including introduction to computer applications. Pre: 401. Taken with 412 and 432.

601 Architectural Kinetics (4) II
Staff

699 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman.

Environmental Systems

321 Architectural Climatology (3) I, II (2L, 1 Lb)
Mahoney
How climate affects the design of buildings, with emphasis on tropical climates. Climate and comfort analysis, solar control, thermal control, design for air movement and ventilation. Thermal planning, design of external openings, design of solid elements. Evaluation of an existing building.

322 Mechanical and Electrical Equipment (3) I, II (2L, 1 Lb)
Hughes, McMahon

421 Environmental Control (3) II (2L, 1 Lb)
Terazaki

699 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman.

ENVIRONMENTAL DESIGN

Program Chairman and Adviser, A. Bruce Etherington, A.I.A., Grg. Annex B-1

101 Introduction to the Visual Arts (3) I, II
Preble
Nature of visual art and its expressions in various forms. Lectures, demonstrations. (Cross-listed as Art 101.)

113 Introductory Studio “A” (3) I, II
Staff
Emphasis on perception: visual responses to nature; materials, techniques, modes of representation. Problems in two and three dimensions involving photography, draw-
ARCHITECTURE

ing, painting, sculpture and construction. Pre: 101 or IS 131 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Art 113.)

114 Introductory Studio “B” (3) I, II
Emphasis on light: environmental; general intensity; value range; sources; chiaroscuro; pattern; principles of color. Problems in two and three dimensions involving drawing, painting, sculpture, design. Pre: 101 or IS 131 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Art 114.)

115 Introductory Studio “C” (3) I, II
Emphasis on space: environmental; actual and illusionary; changing spatial systems and space modifiers. Problems in two and three dimensions involving drawing, painting, sculpture, design. Pre: 101 or IS 131 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Art 115.)

116 Introductory Studio “D” (3) I, II
Emphasis on time, motion, systems: visual kinetics sequence, rhythm, order and systems. Problems in two and three dimensions involving drawing, painting, sculpture, design. Pre: 101 or IS 131 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Art 116.)

271 World of Environmental Design (3) I, II
Yanovik
World-wide survey of man’s attitude to the provision of shelter and the environmental setting of his life from prehistoric times to the present day.

273 Design Processes (3) I, II (2L, 1Lb)
Mahoney
Introduction to analytic and synthetic techniques in environmental design including use of the computer.

274 Communication and Presentation (3) I, II (2L, 1Lb)
Morrison
Basic graphic and written techniques for environmental design communication. Projection and perspective drawing, models, reports and photography.

275 Introductory Seminar (2) I, II
Katz
Study of the professions contributing to the field of environmental design.

276 Basic Environmental Design (3) I, II (3 2-hr Lb)
Studio problems with graduated stages involving the scope of environmental design and its component fields, i.e. world, national, regional, urban design and planning; architecture; landscape architecture, interior and industrial design. Studio lab and lectures. Pre: 274 and previous or concurrent registration in 273.

374 Computer Graphics (3) I, II (2L, 1Lb)
Applications and research related to architecture, visual design and planning. Description and generation of visual form. (Not offered 1970-71.)

375 Design and the Physical Environment (3) I, II (2L, 1Lb)
Burgess
Study of physical, psychological and social requirements of man in an attempt to define an optimum environment. Primarily for non-majors. (Not offered 1970-71.)

472 Japanese Architecture and Landscaping (3) II
Kobayashi
Review of Japanese architecture and landscaping from historical to present times including shrines, temples, gardens and domestic architecture with a study of the people, their motives and philosophies as they affect architecture. Pre: consent of instructor. (Offered summer 1970.)

477 Research Seminar (arr.) I, II
Staff
Research method for the qualitative development of space for human use. May be repeated.

496 Field Studies (arr.)
Etherington
Study tours to various countries to examine historical and contemporary art and architecture with lectures at various sites. May be repeated. Pre: consent of instructor. (Cross-listed as Art 496.)

672 Environmental Design in Hawaii (3) II (3L)
Seminar on architectural aspects of American life, generally with contemporary emphasis. (Cross-listed as Am St 672.)
699 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman.

INTERIOR DESIGN

Program Chairman and Adviser, A. Bruce Etherington, A.I.A., Grg. Annex B-1

361 Interior Design “A” (3) I
Evaluation of needs and objectives of man in relation to interior spaces. Introduction to thermal, luminous, aural, communicative, and hygienic systems as they influence interior space design. Pre: 271, 273, 274, 275, 276.

LANDSCAPE ARCHITECTURE

Program Chairman and Adviser, A. Bruce Etherington, A.I.A., Grg. Annex B-1

351 Elements of Landscape Architecture (3) II
Kapololu
Survey of the principles and theories of landscape architecture.

TROPICAL STUDIES AND DEVELOPMENT

Program Chairman and Adviser, Carl Mahoney, Grg. Annex B-6

399 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman, 333.

400 Special Projects in Tropical Studies (2-4V) I, II
Intensive and specialized work at advanced level in fields of special interest of visiting staff. See announcement for current offering. May be repeated. Pre: advanced standing and consent of program chairman.

621 Seminar on Tropical Architecture (2) II
Mahoney
Problems, philosophies and systems of tropical architecture from various areas of tropics and sub-tropics. Pre: consent of instructor.

640 Architecture and Planning in Tropical Areas (4) I
Mahoney
Socio-economic and political factors in physical development, formulation and execution of building programs. Programming as applied to housing and educational facilities. Pre: consent of instructor.

699 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman.

URBAN AND REGIONAL DESIGN


341 Elements of Planning Problems (3) I or II
Preuss
Introduction of urbanism and planning through study of the forces which shape the environment.

342 Elements of Planning Process (3) I or II
Minerbi
Planning as a decision making process for infra-urban and supra-urban environmental situations.

343 Elements of Urban & Regional Design (3) I or II (3-Hr L-Lb)
Planning the structure and function of urban and regional communities in relation to social change and technological innovation. Pre: 341, 342 or consent of instructor.

399 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman, 333.

400 Special Projects in Architecture (2-4 V) I, II
Intensive and specialized work at an advanced level in fields of special interest of visiting staff. See announcement for current offering. May be repeated. Pre: advanced standing and consent of program chairman.
ART

441 Strategy in Urban & Regional Design (4) I or II
Review of major theoretical contributions of urban and regional design to planning strategies.

442 Methods of Urban & Regional Design (4) I or II
Methods for the descriptive, predictive, prescriptive, implemental and managerial phase of the development and design of urban and regional patterns.

699 Directed Work (arr.) I, II
Pre: consent of instructor and program chairman.

Art (Art)

Professors Anderson, Cox, Horan, Kingrey, Neogy, Norris, Robinson, Turnbull; Associate Professors Ecke, Kimura, Kowalka, Lenox, McVay, Stasack; Assistant Professors Bushnell, Havaas, Myers, Preble, Sato, Wisnosky; Instructors Davidson, Gilbert, Katz, Salmo, Scott

The history of art as well as the studio programs are concerned with the creative, the experiential and the developmental aspects of art.

Except as noted, completion of introductory studio courses 113, 114, 115, 116 and 101 are the prerequisites to all studio courses numbered 200 and above. 101 is the prerequisite to all art history courses but other appropriate preparation may be substituted with the consent of the instructor.

For all courses with prerequisites, waivers may be granted for equivalent experience.

It is the policy of the department to retain selected student works for educational purposes with the consent of the student.

101 Introduction to the Visual Arts (3) I, II
Preble
Nature of visual art and its expression in various forms. Lectures, demonstrations. (Cross-listed as Arch 101.)

105 Elementary Studio—Ceramics (3) I, II
Studio experience mainly for non-majors. Lectures and projects. Credit cannot count towards major requirements in Art.

106 Elementary Studio—Sculpture (3) I, II
Studio experience mainly for non-majors. Lectures and projects. Credit cannot count towards major requirements in Art.

107 Elementary Studio—Photography (3) I, II
Studio experience mainly for non-majors. Lectures and projects. Credit cannot count towards major requirements in Art.

108 Elementary Studio—Drawing and Painting (3) I, II
Studio experience mainly for non-majors. Lectures and projects. Credit cannot count toward major requirements in Art.

113 Introductory Studio “A” (3) I, II
Emphasis on perception: visual responses to nature; materials, techniques, modes of representation. Problems in two and three dimensions involving photography, drawing, painting, sculpture and construction. Pre: 101 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Arch 113.)

114 Introductory Studio “B” (3) I, II
Emphasis on light: environmental; general intensity; value range; sources; chiaroscuro; pattern; principles of color. Problems in two and three dimensions involving drawing, painting, sculpture, design. Pre: 101 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Arch 114.)

115 Introductory Studio “C” (3) I, II
Emphasis on space: environmental; actual and illusionary; changing spatial systems
and space modifiers. Problems in two and three dimensions involving drawing, painting, sculpture, design. Pre: 101 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Arch 115.)

116 Introductory Studio "D" (3) I, II
Emphasis on time, motion, systems: visual kinetics sequence, rhythm, order and systems. Problems in two and three dimensions involving drawing, painting, sculpture, design. Pre: 101 (may be taken concurrently). Offered only as pass-fail. (Cross-listed as Arch 116.)

394–395 Senior Honors Theses (3–3) Yr.
Projects under individual faculty supervision. Required for graduation with honors. Pre: junior standing.

399 Directed Work (arr.) I, II
Pre: consent of instructor and chairman.

400 Special Projects in Art (arr.)
Intensive and specialized work at an advanced level in fields of special interest of visiting staff. Pre: advanced standing and consent of instructor.

699 Directed Work (arr.) I, II
Pre: consent of instructor and chairman.

800 Thesis Research (arr.) I, II

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
<th>Pre-requisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>270</td>
<td>Aspects of European and American Art (3) I, II</td>
<td>Major developments in arts of Europe and America.</td>
<td>Scott</td>
</tr>
<tr>
<td>280</td>
<td>Aspects of Asian Art (3) I, II</td>
<td>Major developments in arts of Asia.</td>
<td></td>
</tr>
<tr>
<td>370</td>
<td>Ancient Art (3) I</td>
<td>Arts of Mediterranean Basin, paleolithic through Egyptian. (Alt. yrs., offered 1970.)</td>
<td>Scott</td>
</tr>
<tr>
<td>371</td>
<td>Medieval Art (3) II</td>
<td>Arts of Europe from early Christian era to Renaissance. Pre: 270.</td>
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<tr>
<td>376</td>
<td>Modern Art (3) I</td>
<td>Architecture, sculpture and painting of Europe and America with emphasis on 19th century. Pre: 270.</td>
<td></td>
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<tr>
<td>384</td>
<td>Art of Japan and Korea (3) I</td>
<td>Major developments in arts of Japan and Korea. Pre: 280.</td>
<td>Ecke</td>
</tr>
<tr>
<td>385</td>
<td>Art of China (3) I</td>
<td>Major developments in arts of China. Pre: 280.</td>
<td></td>
</tr>
<tr>
<td>391</td>
<td>Art of South Asia (3) I</td>
<td>Major developments in arts of South Asia, West Asian context and growth of Southeast Asian art. Pre: 280.</td>
<td>Neogy</td>
</tr>
<tr>
<td>470</td>
<td>Renaissance Art (3) II</td>
<td>Architecture, sculpture and painting of Europe during Renaissance. Pre: 270.</td>
<td>Scott</td>
</tr>
<tr>
<td>471</td>
<td>Baroque and Rococo Art (3) I</td>
<td>Architecture, sculpture and painting of Europe in Mannerist, Baroque and Rococo periods. Pre: 270.</td>
<td></td>
</tr>
<tr>
<td>473</td>
<td>Contemporary Art (3) II</td>
<td>Arts of Europe and America with emphasis on 20th century. Pre: 270.</td>
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<tr>
<td>475</td>
<td>Arts of the Pacific (3) II</td>
<td>Stylistic and aesthetic characteristics of indigenous arts of Oceania, including Australia, Indonesia, Micronesia, Melanesia, Polynesia.</td>
<td>Cox</td>
</tr>
<tr>
<td>476</td>
<td>Primitive Art (3) I</td>
<td>Survey of styles and aesthetic characteristics of arts of pre-literate cultures.</td>
<td></td>
</tr>
</tbody>
</table>
ART

477  Primitive Arts of the Pacific Rim (3) II
Survey and comparative study of aesthetic and stylistic characteristics of prehistoric and tribal arts of areas bordering the Pacific.

483  Applied Arts of Japan (3) II
Architecture, gardens, lacquer, ceramics, textile, metal work. Pre: 280.

485  Applied Arts of China (3) II
Architecture, furniture, landscaping, ceramics, metal work, lacquer, textiles. Pre: 280.

491  Art of Islam (3) II
Major developments in arts and architecture of Islam. Pre: 280.

495  Art of Southeast Asia (3) I

496  Art and Architectural Field Studies (arr.)
Study tours to various countries to examine historical and contemporary art and architecture with lectures at various sites. May be repeated. Pre: consent of instructor (Cross-listed as Arch 496.)

675  Arts of Hawaii (3) I
Cox
Stylistic and aesthetic characteristics of arts of ancient Hawaii, their relationship to arts of Polynesia. Pre: consent of chairman and instructor.

676  Arts of Indonesia and Melanesia (3) II
Cox
Stylistic and aesthetic characteristics of arts of southwest Pacific cultures. Pre: consent of chairman and instructor.

685  Early Chinese Painting (3) I
Erke
From earliest times through Sung dynasty. Pre: consent of chairman and instructor.

686  Later Chinese Painting (3) II
Erke
From end of Sung dynasty to present. Pre: consent of chairman and instructor.

691  Art of Central Asia (3) I
Erke
Interacting modalities of art along caravan routes of Central Asia. Pre: consent of chairman and instructor.

780  Japanese Sculpture (3) I
From earliest times through Kamakura period. Pre: consent of chairman and instructor.

781  Japanese Painting (3) II
From earliest times through Edo period. Pre: consent of chairman and instructor.

791  Buddhist and Hindu Art (3) II
Neoey
Development of Buddhist and Hindu art in South and Southeast Asia. Pre: consent of chairman and instructor.

CERAMICS (Art)

243  Ceramics A (3) I, II
Introduction to ceramic forms using hand building and wheel throwing techniques. Introduction to glazing techniques and surface treatment. Seminars.

244  Ceramics B (3) I, II

341  Advanced Ceramics (3) I, II
Wheel throwing or hand building. Individual development. Seminars. Pre: 244. May be repeated.

342  Glaze Calculations (3) I, II
Molecular formulae of glazes; temperature effects. Analysis of quality of glazes clay bodies. Seminars. Pre: 244. May be repeated.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>646</td>
<td>Ceramics (3) I</td>
<td>Individual problems in advanced ceramics using hand building techniques.</td>
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<td>Seminars. Pre: consent of chairman and instructor. May be repeated.</td>
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<tr>
<td>647</td>
<td>Ceramics (arr.) II</td>
<td>Individual problems in advanced ceramics using potter's wheel.</td>
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<td>Seminars. Pre: consent of chairman and instructor. May be repeated.</td>
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<tr>
<td>648</td>
<td>Ceramic Glazes and Clay Bodies (3) I</td>
<td>Individual problems in glazes and firing techniques.</td>
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<td>Seminars. Pre: consent of chairman. May be repeated.</td>
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<tr>
<td>649</td>
<td>Ceramics (3) II</td>
<td>Individual problems in clay bodies and firing techniques.</td>
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<td>Seminars. Pre: consent of chairman and instructor. May be repeated.</td>
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<tr>
<td>213–214</td>
<td>Life Drawing (3) I, II</td>
<td>Drawing from the model. Pre: 213 is prerequisite to 214. 214 may be repeated.</td>
</tr>
<tr>
<td>313</td>
<td>Advanced Drawing Studio (3) I, II</td>
<td>Creative projects in drawing, graphic techniques. Pre: 213 and 214. May be</td>
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<tr>
<td></td>
<td></td>
<td>repeated.</td>
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<tr>
<td>401</td>
<td>Glass Blowing (3) I</td>
<td>Forming of glass while in a molten condition using off hand blowing and</td>
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<td>Horan</td>
<td>tooling techniques. Decorative techniques as applied both to the hot workable</td>
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<td></td>
<td></td>
<td>as well as the cooled annealed glass. Pre: 341 or 353 or consent of</td>
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<td></td>
<td></td>
<td>instructor.</td>
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<tr>
<td>402</td>
<td>Glass Blowing (3) II</td>
<td>Continuation of 401. The designing, construction and using of molds to blow</td>
</tr>
<tr>
<td></td>
<td>Horan</td>
<td>glass in, for utilitarian and sculptural objects. Construction of glass</td>
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<td>furnaces and lehrs.</td>
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<tr>
<td>220</td>
<td>Materials and Techniques (3) I, II</td>
<td>Painting studio with emphasis on materials and techniques.</td>
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<td></td>
<td>Gilbert</td>
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<tr>
<td>223</td>
<td>Painting “A” (3) I, II</td>
<td>Painting from studio and outdoor subject matter. Elements of pictorial style.</td>
</tr>
<tr>
<td>224</td>
<td>Painting “B” (3) I, II</td>
<td>Painting from identifiable sources; emphasis on expression and structure.</td>
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<td></td>
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<td>Oil and related media. Pre: 223.</td>
</tr>
<tr>
<td>225</td>
<td>Painting “C” (3) II</td>
<td>Emphasis on water-soluble media, including contemporary developments. Pre: 220</td>
</tr>
<tr>
<td>323</td>
<td>Advanced Painting (3) I, II</td>
<td>Development of independent expression with considerable freedom of choice.</td>
</tr>
<tr>
<td>Norris</td>
<td>Seminars. Pre: 224 or 225. May be repeated.</td>
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</tr>
<tr>
<td>624</td>
<td>Painting (3) I, II</td>
<td>Individual problems in advanced painting. Seminars. Pre: consent of</td>
</tr>
<tr>
<td>Norris</td>
<td></td>
<td>chairperson and instructor. May be repeated.</td>
</tr>
<tr>
<td>207</td>
<td>Photography A (3) I, II</td>
<td>Camera as tool of expression and photography as basic art form. Student</td>
</tr>
<tr>
<td>Salmo</td>
<td></td>
<td>required to have own camera.</td>
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<tr>
<td>Salmo</td>
<td></td>
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<tr>
<td>209</td>
<td>Basic Cinematography (3) I</td>
<td>Introduction to 8 and 16 mm film production. Pre: basic still-photography</td>
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<tr>
<td></td>
<td></td>
<td>experience. Students supply their own cameras.</td>
</tr>
</tbody>
</table>

101
ART

407 Advanced Photography (3) I, II Salmo
Individually problems in advanced photography. Seminars. Pre: 208. May be repeated.

PRINTMAKING (Art)

215 Printmaking—Intaglio (3) I, II Kowalke
Basic intaglio techniques of printmaking, including etching, engraving, drypoint, aquatint, plus perceptual and conceptual exercises in composition and pictorial structure.

315 Advanced Printmaking—Intaglio (3) I, II Kowalke
Advanced intaglio techniques of printmaking, including etching, engraving, drypoint, and aquatint plus complex two and three dimensional projects in composition and pictorial structure. Pre: 215. May be repeated.

316 Advanced Printmaking—Lithography (3) I, II Davidson
Advanced studio practice in independent projects related to lithography. Pre: 216. May be repeated.

617 Printmaking (3) I, II
Individual problems in intaglio, relief and planographic processes. Seminars. Pre: consent of chairman and instructor. May be repeated.

SCULPTURE (Art)

253 Sculpture (3) I, II
Study of form and structure, using variety of materials and techniques. Seminars.

254 Intermediate Sculpture A (3) I, II
Developing concepts of form and form relationships using a variety of materials with an emphasis on carving and casting. Seminars. Pre: 253.

255 Intermediate Sculpture B (3) I, II
Developing concepts of form and form relationships using a variety of materials with an emphasis on the additive process. Seminars. Pre: 253.

353 Advanced Sculpture (3) I, II
Individual projects stressing experimentation and subjective approach to form. Seminars. Pre: 254, 255. May be repeated.

653 Graduate Sculpture (arr.) I, II
Pre: consent of chairman and instructor.

TEXTILE DESIGN (Art)

230 Textile Design (9) I, II Havaas

330 Advanced Textile Design (9) I, II Havaas

630 Textile Design (3) I, II Havaas
Individual problems in areas of specific interest within textile field. Seminars. Pre: consent of chairman and instructor. May be repeated.

VISUAL DESIGN (Art)

265 Advanced Visual Design (3) I
Investigation into processes of visualization, its expression and control. Seminars. May be repeated.

266 Advanced Visual Design (3) II
Design and communication. Projects closely bound to idiom and problems of our time; systems, grid, module, computer, symbol. May be repeated.
361  Letter Forms (3) I
Design and communication. The letter as visual symbol and element in design organization.

362  Typography (3) II

463–464  Visual Communication (3–5) Yr.
Experimental problems of visual design which communicate creation of new images and symbols. Pre: consent of chairman and instructor.

665  Advanced Typography (3) I
Individual problems in typography. Seminars. Pre: consent of chairman and instructor. May be repeated.

773–774  Visual Design Research (arr.) Yr.
Advanced design and communication. Emphasis on problem-solving incorporating research. Seminars. Pre: consent of chairman and instructor. May be repeated.

WEAVING (Art)

238  Weaving (3) I, II
Creative processes of weaving. Warping and threading of simple hand looms and multiple harness looms. Seminars.

239  Weaving (3) I, II

338–339  Advanced Weaving (3–3) Yr.
Individual problems in weave construction and drafting; yarn and fiber characteristics as structural elements. Seminars. Pre: 239. May be repeated.

638–639  Weaving (3–3) Yr.
Individual problems in advanced weaving. Seminars. Pre: consent of chairman and instructor. May be repeated.

Asian and Pacific Languages


General (AP)

Courses in Cambodian, Cantonese, Pali and Vietnamese will be offered on demand. Courses in other languages of Asia and the Pacific area that are not listed below, may be arranged depending on demand and staff. In principle, classes will meet one hour daily, Monday through Friday. Pre: consent of instructor.

101–102  Directed Elementary Language Study (3–3) Yr.
Directed study of an Asian or Pacific language not regularly listed by the department. In principle, classes will meet 1 hour daily. Monday through Friday. Offering depending on demand and availability of staff. Pre: consent of instructor.

201–202  Directed Intermediate Language Study (4–4) Yr.
Continuation of 101–102. Pre: consent of instructor.
A & P LANGUAGES—CHINESE

300 Directed Third-Level Language Study (3) I, II
Directed study of one of the Asian and Pacific languages involving advanced structures, expressions, patterns. Pre: consent of chairman.

361–362 Southeast Asian Literature (3–3) Yr.
Historical survey of Southeast Asian verse and prose in relation to Southeast Asian culture. Conducted in English. Pre: two semesters of literature in English department.

400 Directed Fourth-Level Language Study (3) I, II
Directed study of one of the Asian and Pacific languages involving complex structures, expressions, patterns. Pre: consent of chairman.

451–452 Structure of an Asian or Pacific Language (3–3) Yr.
Structure of an Asian or Pacific Language, including Balinese, Cambodian, Cebuano, Fijian, Ilocano, Javanese, Korean, Lao, Marathi, Pali, Samoan, Tamil, Trukese, Urdu, Vietnamese or other Asian or Pacific language, depending on demand and staff. Pre: two levels of a Southeast Asian or Pacific language.

453–454 Survey of Southeast Asian Languages (3–3) Yr.
Introductory lecture course on history, spread, typology of the languages of Southeast Asia. Primarily for students of Southeast Asian languages. Pre: two levels of a Southeast Asian language.

493–494 Senior Honors Thesis (3–3) Yr.
Preparation of research paper under individual faculty supervision. Required for graduation with honors.

690 Directed Reading (arr.) I, II
Directed reading of advanced text written in one of the Asian and Pacific languages. Pre: consent of instructor.

Chinese (Chnse)

101-102 Elementary Chinese (3-3) Yr.
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday. Daily laboratory work.

103 Accelerated Elementary Chinese (6) I
Meets 2 hours daily, Monday through Friday, with daily laboratory drill. In one semester, content of 101-102 covered. Pre: consent of instructor.

105 Special Elementary Chinese (3) I
Rapid introduction to spoken and written standard Chinese for students who already have some knowledge of the writing system (including students who have a background in Cantonese, Hakka, Japanese, etc.). In one semester, the content of 101-102 is covered. Meets one hour daily, Monday through Friday. Daily laboratory work.

141 Introduction to Chinese Calligraphy (1) I, II
Practice in writing with a Chinese brush. Pre: credit or registration in 101 or equivalent.

142 Advanced Chinese Calligraphy (1) I, II
Introduction to various forms of cursive writing. Pre: 101.

201–202 Intermediate Chinese (4–4) Yr.
Continuation of 101–102. After completion student should be proficient in using major sentence patterns. Meets 1 hour daily. Monday through Friday. Daily laboratory work. Pre: 102 or equivalent.

204 Accelerated Intermediate Chinese (8) II
Meets 2 hours daily Monday through Friday with daily laboratory drill. In one semester, content of 201–202 covered. Pre: consent of instructor.

206 Special Intermediate Chinese (4) I
Rapid introduction to spoken and written standard Chinese for students who al-
ready have some knowledge of the writing system (including students who have a back-
ground in Cantonese, Hakka, Japanese, etc.). In one semester the content of 201–202 is
covered. Meets one hour daily, Monday through Friday. Daily laboratory work. Pre-
105 or equivalent.

301–302 Third-Level Chinese (4–4) Yr.
Emphasis on vocabulary building and extended mastery of sentence structures of
modern Chinese through reading and related conversation. Pre: 202 or equivalent.

303 Accelerated Third-Level Chinese (8) I
In one semester, content of 301–302 covered. Pre: consent of instructor.

321–322 Chinese Conversation (3–3) Yr.
Systematic practice on everyday topics of conversation. Laboratory drill. Pre: 202
or equivalent.

331–432 Chinese for Reading Knowledge (3–3) Yr.
Course conducted in English for students in other departments who are interested
solely in acquiring a reading knowledge of Chinese. Pre: 202 and consent of instructor.

361 Chinese Literature in Translation—To the 13th Century (3) I
Historical survey from earliest times through the Sung Period with emphasis on
analysis. Knowledge of Chinese not required. Pre: one semester of literature in the
English department.

362 Chinese Literature in Translation—Post-13th Century (3) II
Historical survey from the Mongol Period to the present, with emphasis on analysis
of dramatic and prose literature. Knowledge of Chinese not required. Pre: one semester
of literature in the English department.

401–402 Fourth-Level Chinese (4–4) Yr.
Extensive reading with emphasis on academic topics. Pre: 302 or 303.

404 Accelerated Fourth-Level Chinese (8) II
In one semester content of 401–402 covered. Pre: consent of instructor.

421–422 Advanced Chinese Conversation (3–3) Yr.
Systematic practice on academic topics of conversation. Laboratory drill. Pre: 202
and consent of instructor.

433–434 Selected Readings in Chinese (3–3) Yr.
Selected readings in various discipline areas, with specific areas determined on basis
of student interest and availability of staff. May be repeated for credit. Pre: consent of
instructor.

435–436 Introductory Classical Chinese (3–3) Yr.
Analysis of basic structural patterns in classical Chinese through selected readings
in various texts. Pre: 402 or equivalent, or consent of instructor.

437–438 Advanced Classical Chinese (3–3) Yr.
Advanced readings in classical texts. Pre: 436 or equivalent.

440 Chinese Composition (2) I, II
Training in modern Chinese composition. Pre: 402 or equivalent and consent of
instructor.

451–452 Structure of Chinese (3–3) Yr.
Introductory study of phonology, morphology, syntax of Mandarin Chinese includ-
ing some discussion of usage and linguistic geography. Pre: 202 or equivalent.

453–454 Study of Chinese Characters (2–2) Yr.
Study of origin, structure and evolution of Chinese characters. Pre: 402 and con-
sent of instructor.

461–462 Introduction to Modern Chinese Literature (3–3) Yr.
Selected readings in major genres, with an emphasis on analysis. Pre: 361 and 402.

470 Language and Culture of China (3) II
Extensive exposure, chiefly through tape recordings, classroom conversation and
outside readings, to the history, culture, and institutions of Chinese. Pre: 421–422 or
equivalent.
490 Reference Materials for Chinese Studies (3) I, II

611–612 Contemporary Chinese Literature (3–3) Yr.
Representative works of leading modern novelists, poets, dramatists since 1919. Pre: 462.

613–614 Chinese Poetry (3–3) Yr.
Critical study of classical Chinese poetry in various forms. Pre: 436 or equivalent.

616 History of Chinese Literary Criticism (3) II
Survey of Chinese literary criticism from Confucius to 20th century. Pre: 436 or equivalent.

617 Traditional Chinese Fiction (3) I
Study of major novels of Yuan, Ming, Ch‘ing periods. Pre: 436 or equivalent.

618 Traditional Chinese Drama (3) II
Study of major plays of Yuan, Ming, early Ch‘ing periods (e.g. Romance of the Western Chamber, The Peony Pavilion, The Peach Blossom Fan). Pre: 436 or equivalent.

631 Chinese Phonology (3) I
Phonological changes from archaic Chinese through ancient Chinese to modern Chinese represented by Mandarin. Lectures in English. Pre: 452 or equivalent.

632 Chinese Dialects (3) II
Study of major Chinese dialects. Lectures in English. Pre: 452 or equivalent.

641 Contrastive Analysis of Mandarin and English: Phonology (3) I
Similarities and differences between English and Mandarin phonology. Pre: 452 or equivalent.

642 Contrastive Analysis of Mandarin and English: Morphology and Syntax (3) II
Similarities and differences between English and Mandarin morphology and syntax. Pre: 641.
Methodology in Teaching Chinese as a Second Language (3-3) Yr.
Identification and analysis of problems in language learning and language teaching. Practice in preparing and presenting lessons with materials based on comparative linguistics analysis, using audio-lingual approach. Teaching materials, teaching aids, test construction. Pre: 452 or equivalent.

Historical and Philosophical Texts (3-3) Yr.
Readings and critical analysis of selected writings from Han to Ch'ing periods. Pre: consent of instructor. May be repeated for credit.

Methods in Chinese Studies (3-3) Yr.
Main fields of research, special methods evolved, principal sources of bibliographical information. Pre: 438 or equivalent.

Research Seminar in Chinese (3) I, II
Specialization in (1) language, (2) literature, (3) teaching methods. Pre: consent of instructor. May be repeated.

Thesis Research (arr.) I, II
Pre: consent of instructor.

Hawaiian (Haw)

Elementary Hawaiian (3-3) Yr.
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday. 4 out of 5 hours devoted to directed drill and practice. Daily laboratory work.

Continuation of 102. Meets 1 hour daily, Monday through Friday. At least 3 out of 5 hours devoted to directed drill and practice. Reading of traditional texts. Daily laboratory work. Pre: 102 or equivalent.

Third-Level Hawaiian (3-3) Yr.
Conversation and advanced reading. Pre: 202 or equivalent.

Hawaiian Literature in English (3) I
Survey of traditional myths, legends, chants, songs, sayings conducted largely in English. Pre: 202 or equivalent.

Fourth-Level Hawaiian (3-3) Yr.
Advanced reading and discussion in Hawaiian. Pre: 302 or equivalent.

Problems of translation of Hawaiian documents, legends, songs. Pre: 302 or equivalent.

Structure of Hawaiian (3) II
Detailed analysis of texts; contrastive analysis of Hawaiian and English as aid to prospective teachers of Hawaiian. Pre: 202 and Ling 202 or equivalent.

Hindi (Hindi)

Elementary Hindi (3-3) Yr.
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday. At least 3 out of 5 hours devoted to directed drill and practice. Daily laboratory work.

Continuation of 102. Meets 1 hour daily, Monday through Friday. At least 3 out of 5 hours devoted to directed drill and practice sessions. Daily laboratory work. Pre: 102 or equivalent.

Third-Level Hindi (3-3) Yr.
Conversation and advanced reading. Pre: 202 or equivalent.
**Indonesian (Ind)**

103 **Accelerated Elementary Indonesian (6) I**  
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 2 hours daily, Monday through Friday, 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work.

204 **Accelerated Intermediate Indonesian (8) II**  
Continuation of 103. Meets 2 hours daily, Monday through Friday, 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work. Pre: 103 or equivalent.

303 **Accelerated Third-Level Indonesian (6) II**  
Continuation of 204. Meets 6 hours a week. Study of modern written texts. Introduction of Arabic scripts. Laboratory work. Pre: 204 or equivalent.

404 **Accelerated Fourth-Level Indonesian (6) II**  
Continuation of 303. Meets 6 hours a week. Conducted in Indonesian. Advanced conversation and reading. Reading includes *hikayat* literature in Arabic script. Pre: 303 or equivalent.

**Japanese (Jpnse)**

101-102 **Elementary Japanese (3–3) Yr.**  
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday; 4 out of 5 hours devoted to directed drill and practice. Daily laboratory work.

103 **Accelerated Elementary Japanese (6) I**  
Meets 2 hours daily, Monday through Friday with daily laboratory drill. In one semester, content of 101–102 covered.

120 **Elementary Japanese—Review: Spoken (3) I, II**  
For students who have 102 equivalent writing ability but lack spoken proficiency. Content similar to spoken aspect of 101–102. Meets 3 times a week. Laboratory.

130 **Elementary Japanese—Review: Reading (3) I, II**  
For students who have 102 equivalent spoken ability but lack reading and writing proficiency. Content similar to reading and writing aspects of 101–102. Meets 3 times a week. Laboratory.

200 **Intensive Fundamental Japanese (14) I, II**  
Meets 4 hours daily, Monday through Friday, with daily laboratory drill. In one semester content of 103 and 201 covered.

201-202 **Intermediate Japanese (4–4) Yr.**  
Continuation of 101–102. After completion, student should be proficient in using major sentence patterns. Meets 1 hour daily, Monday through Friday; 4 out of 5 hours devoted to directed drill and practice sessions. Daily laboratory work. Pre: 102 or equivalent.

204 **Accelerated Intermediate Japanese (8) II**  
Meets 2 hours daily, Monday through Friday with daily laboratory drill. In one semester, content of 201-202 covered. Pre: 103 or equivalent.

301-302 **Third-Level Japanese (4–4) Yr.**  
Study of modern spoken and written Japanese involving advanced structures, expressions, patterns, *kyoooku kanji*. Meets one hour daily, Monday through Friday. Pre: 202 or equivalent.

303 **Accelerated Third-Level Japanese (8) I**  
Meets 2 hours daily, Monday through Friday. In one semester the content of 301–302 covered. Pre: 204 or equivalent.

311–312 **Japanese Aural Comprehension (3–3) Yr.**  
Building up comprehension ability by using aural practice through movies and other visual aids. Pre: 202 or equivalent.
A & P LANGUAGES—JAPANESE

Development of general oral-aural proficiency. Pre: 202 or equivalent.

331–332 Japanese for Reading Knowledge (3–3) Yr.
Reading course for those who are not Japanese majors but interested in developing skill in reading in their areas of research. Pre: 202 or equivalent.

340 Japanese Composition (2) I, II
Writing modern compositions following designated patterns, kanji and themes. Pre: 202 or equivalent.

361 Japanese Literature in Translation—Traditional (3) I
Historical survey from earliest times to 1868, with emphasis on analysis. Knowledge of Japanese not required. Pre: two semesters of literature in English department.

362 Japanese Literature in Translation—Modern (3) II
Historical survey from 1868 to present, with emphasis on analysis. Knowledge of Japanese not required. Pre: two semesters of literature in English department.

400 Intensive Advanced Japanese (16) I, II
Meets 4 hours daily, Monday through Friday, with daily laboratory drill. In one semester the content of 303 and 404 covered.

401-402 Fourth-Level Japanese (4–4) Yr.
Study of modern spoken and written Japanese involving complicated structures, expressions, patterns, tooyoo kanji. Meets one hour daily, Monday through Friday. Pre: 302 or equivalent.

404 Accelerated Fourth-Level Japanese (8) II
Meets 2 hours daily, Monday through Friday. In one semester the content of 401–402 is covered. Pre: 303 or equivalent.

411–412 Advanced Japanese Aural Comprehension (3–3) Yr.
Building up advanced comprehension ability by using aural practice through movies and other audio-visual aids. Pre: 312 or equivalent.

421–422 Advanced Japanese Conversation (3–3) Yr.
Systematic practice in academic topics of conversation. Lab drill. Pre: 302 or equivalent.

Rapid reading of material related to student's own areas of research or discipline. Pre: Japanese 332 or equivalent.

435–436 Introduction to Japanese Documentary and Epistolary Styles (3–3) Yr.
Systematic study of kambun and sōrubun styles and training in reading of various styles of calligraphy. Pre: 402 or equivalent.

440 Advanced Japanese Composition (2) I, II
Writing advanced modern composition following designated patterns, kanji, and themes. Pre: 302 or equivalent.

451–452 Structure of Japanese (3–3) Yr.
Phonology, morphology, syntax of modern colloquial grammar. Pre: 202 or equivalent.

455–456 Topics in Japanese Grammar (3–3) Yr.
Analysis of topics in modern colloquial Japanese grammar. Pre: 302 or equivalent.


461 Introduction to Modern Japanese Literature (3) I
Selected readings in major genres of post 1868 literature. Pre: 402 or equivalent and 362 (may be taken concurrently).

462 Introduction to Traditional Japanese Literature (3) II
Selected readings in major genres of pre-modern literature. Pre: 402 or equivalent and 361 (may be taken concurrently).
Language and Culture of Japan (3) I
Extensive exposure, chiefly through tape recordings, classroom conversation and outside reading, to the culture, history and institutions of Japan. Pre: 402.

Reference Materials for Japanese Studies (3) I, II
How to find, use, and evaluate reference materials basic to Japanese studies. Pre: 302, 461 or equivalent.

Japanese Interpretation (3-3) Yr.

Japanese Translation (3-3) Yr.

Japanese Poetry (3-3) Yr.
Historical survey of poetical types including tanka, haiku, senryuu, shi, folk songs. Pre: 402 or equivalent.

Contemporary Japanese Literature (3-3) Yr.
Literary movements and representative works since 1868. Pre: 402, 461 or equivalent.

Edo Literature (3) II
Reading and critical analysis of prose literature of Edo Period. Pre: 464 or consent of instructor. May be repeated for credit.

Medieval Japanese Literature (3) I
Reading and critical analysis of prose literature of Kamakura and Muromachi periods. Pre: 464 or consent of instructor. May be repeated for credit.

Classical Japanese Literature (3) II
Reading and critical analysis of Heian Period prose literature. Pre: 464 or consent of instructor. May be repeated for credit.

History of Japanese Literary Criticism (3-3) Yr.
Survey of Japanese literary criticism from ancient times to 20th century. Pre: consent of instructor.

Japanese Folklore (3) I
Investigation of folk beliefs and customs, particularly as manifested in traditional literature and narrative literature. Pre: 361, 402 or equivalent.

History of the Japanese Language (3-3) Yr.
Study of change and growth of Japanese language from ancient to modern periods. Pre: 452 or equivalent.

Advanced Japanese Structure (3-3) Yr.

Contrastive Study of Japanese and English Structure (3-3) Yr.
Study of similarities and differences between English and Japanese structures: phonology, morphology, syntax. Pre: 452 or equivalent.

Methodology in Teaching of Japanese as a Second Language (3-3) Yr.
Identification and analysis of problems in language learning and teaching. Practice in preparing and presenting lessons with materials based on comparative linguistic analysis, using audio-lingual approach. Teaching materials, teaching aids and test construction. Pre: 452 or equivalent.

Japanese Bibliography (3) I, II
Advanced studies in historical survey of bibliographic material. Research methods. Pre: 490 or equivalent.

Research Seminar in Japanese (3) I, II
(1) Language, (2) literature, (3) teaching methods. Pre: consent of instructor. May be repeated.

Thesis Research (arr.) I, II
Consent of instructor.
Korean (Kor)

101-102 Elementary Korean (3-3) Yr.
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday; 4 out of 5 hours devoted to directed drill and practice sessions. Daily laboratory work.

201-202 Intermediate Korean (4-4) Yr.
Continuation 101-102. After completion, student should be proficient in using major sentence patterns. Meets 1 hour daily, Monday through Friday; 4 out of 5 hours devoted to directed drill and practice sessions. Daily laboratory work. Pre: 102 or equivalent.

301-302 Third-Level Korean (3-3) Yr.
Advanced conversation, reading, writing. Additional Chinese characters. Pre: 202 or equivalent.

361 Korean Literature in Translation (3) I
Historical survey from earliest times to the present, with emphasis on analysis and comparison. Knowledge of Korean not required. Pre: one semester of literature in the English department.

362 Korean Literature in Translation—Selected Readings (3) II
Detailed study of select examples of masterpieces, with emphasis on analysis and comparison. Knowledge of Korean not required. Pre: 361.

401-402 Fourth-Level Korean (3-3) Yr.
Introduction to classical and contemporary literary styles. Pre: 302 or equivalent.

461 Introduction to Modern Korean Literature (3) I
Selected readings in major genres of modern literature. Pre: 302 or equivalent and 361.

462 Introduction to Traditional Korean Literature (3) II
Selected readings in major genres of premodern literature. Pre: 461.

694 Reference Materials for Korean Studies (3) D
Basic reference and bibliographic materials for research and use in Korean studies. Pre: 402 or equivalent.

750 Research Seminar in Korean (3) I, II
Specialization in (1) language, and (2) literature. Pre: consent of instructor. May be repeated.

Sanskrit (Sansk)

351-352 Introduction to Sanskrit (3-3) Yr.
Introduction to Sanskrit grammar, and reading of classical texts. Pre: consent of instructor.

461-462 Reading in Sanskrit Classical Literature (3-3) Yr.
Continuation of 352. Reading of classical texts with grammar review. Pre: 352 or equivalent.

661-662 Advanced Readings in Sanskrit Literature (3-3) Yr.
Reading of Vedic and advanced classical texts. Pre: 462 or equivalent.

Tagalog (Tag)

103 Accelerated Elementary Tagalog (6) I
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 2 hours daily, Monday through Friday. 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work.
Accelerated Intermediate Tagalog (8) II
Continuation of 103. Meets 2 hours daily, Monday through Friday. 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work. Pre: 103 or equivalent.

Thai (Thai)

Accelerated Elementary Thai (6) I
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 2 hours daily, Monday through Friday. 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work.

Accelerated Intermediate Thai (8) II
Continuation of 103. Meets 2 hours daily, Monday through Friday. 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work. Pre: 103 or equivalent.

Accelerated Third-Level Thai (6) I
Continuation of 204. Meets 6 hours a week. Study of modern written texts. Laboratory work. Pre: 204 or equivalent.

Accelerated Fourth-Level Thai (6) II
Continuation of 303. Meets 6 hours a week. Study of advanced written texts. Advanced conversation. Pre: 303 or equivalent.

Asian Studies (Asian)

Professors Bowers, Hung, Kornhauser, Kwok, Numm; Associate Professor Sharma; Assistant Professor Gething

Civilizations of Asia (3-3) Yr.
Historical survey of major civilizations of Asia from earliest times to present, including East Asia, Southeast Asia and South Asia. (Cross-listed as Hist 241-242.)

Asian Humanities (3) I
Inquiries through the colloquium and occasional lectures into Asian works of the imagination, faith, and enduring value. Pre: 211-212 or equivalent.

Contemporary Asian Civilizations: Problems and Topics (3) II
Examination by means of problems and topics into the modern and contemporary experiences of Asian societies. A multidisciplinary approach encompassing the social sciences. Pre: 211-212 or equivalent.

Technics of Japanese Civilization (3)
Consideration of man's interaction with his environment; interplay of tradition and change, evolution of social patterns, present economic organization. (Not offered 1970-71.)

Contemporary Chinese Studies Seminar
Readings and research into selected aspects of modern and contemporary China. Research paper required. Pre: Hist 409-410 or equivalent.

Seminar in Asian Studies (3)
(1) East Asia I, II. (2) Southeast Asia I, II. (3) South Asia II.

Directed Research (arr.) I, II
Individual problems and research. Pre: consent of instructor.

Thesis Research (arr.) I, II
BIOLOGICAL SCIENCES—BIOLOGY, BOTANY

Biological Sciences

Biology (Bioi)

A program offered by the departments of botany, microbiology and zoology.

Professor Townsley; Assistant Professors B. Z. Siegel, C. W. Smith

220 Biology (5) I (3 L, 2 Lb) B. Siegel, C. W. Smith, S. Townsley
Fundamentals of biology. Devoted to study of microorganisms, lower and higher plants and animals with emphasis on their comparative physiology, development, behavior, evolution, systematics. Pre: concurrent registration or completion of Chem 243, 245 and Math 205.

250 Biology (4) II (3 L, 1 Lb) B. Siegel
Cell structure and function. Patterns and operation of biologic organization, through which molecules, organelles, cells, and tissues give living organisms their basic properties. Pre: 220 or consent of instructor and concurrent registration or completion of Chem 244, 246.

401 Molecular Basis of Cell Function (2) II (2 L) Gibbons
Examination of relationship between structure and function at macromolecular level. Topics range from the properties of individual proteins to the organization of highly integrated molecular systems within cells. Pre: 250, Chem 243-246 or consent of instructor.

440 Environmental and Space Biology I (2) I (2 L) C. Folsome, S. Siegel
Conditions for organic existence and suitability of terrestrial and extraterrestrial environments; experimental simulation of extreme environments; concepts of space biology and human aspects of environmental biology. Pre: 220 and 250 or equivalent; Chem 245–246; and consent of instructor.

Botany (Bot)

Professors Baker, Cooil, Doty, Friend, Kefford, S. Siegel; Associate Professors Goos, Lamoureux, Mueller-Dombois, Putman; Assistant Professors Fournier, Lloyd, C. Smith
Instructor Gay

101 General Botany (4) I, II (3 L, 1 Lb) Friend, Gay, Kefford
Growth, functions and evolution of plants; their relations to the environment and particularly to man and his activities. Designed for non-science majors; with permission of instructor, students with previous biological training may proceed to higher level course.

105 Ethnobotany (3) I Krauss
Plants and their influence upon culture of Hawaii and Pacific; uses of cultivated and wild plants.

160 Identification of Tropical Plants (2) II Lloyd
Non-technical course in identification of common plants of tropics. Not open to students who have had 360; not credited for botany major.

201 The Plant Kingdom (4) II (2 L, 2 Lb) C. Smith
Comparative studies of structure and physiology of plants with reference to distribution and classification. Pre: 101 or Biol 220.

297 The Nature of Botany (1) I (1 L) Friend
Seminar discussions of topics of broad botanical interest. May be repeated. Pre: 201 or equivalent.

399 Botanical Problems (arr.) I, II
Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in botany. May be repeated.
BIOLOGICAL SCIENCES—BOTANY

410 Plant Anatomy (3) I (2 L, 1 Lb) Lamoureux
Structure of vascular plants; origin and differentiation of tissues; relation of structure to function. Pre: 2C1 or equivalent. Recommended: 470.

412 Microtechnique (3) I, II (2 L, 1 Lb) Lamoureux
Preparation of plant materials for histological and cytological study, photomicrography. Pre: 410 or consent of instructor.

430 Mycology (3) I (2 L, 2 Lb) Goos
Morphology, physiology, ecology of fungi; their identification. Pre: 201 or Biol 220 or consent of instructor.

435 Experimental Mycology (3) II (2 L, 2 Lb) Goos
Growth, development and reproduction of fungi as influenced by nutritional and environmental factors, with emphasis on experimental methods. Pre: 430 or Biol 250 or consent of instructor.

436 Medical Mycology (3) II (2 L, 2 Lb) Baker
Diagnostic morphology and physiology of fungi pathogenic to man. Pre: 430 or Micro 351, or consent of instructor.

440 Environmental and Space Biology I (2) I (2 L) S. Siegel, C. Folsome
Conditions of organic existence and suitability of terrestrial and extraterrestrial environments; concepts of space biology and human aspects of environmental biology. Pre: Biol 220 and 250 or equivalent; Chem 213-216; and consent of instructor.

450 Natural History of the Hawaiian Islands (2) II (2 L-Lb) Lamoureux, Gosline
Geography, geology, climatology, biotic environment of Pacific Basin and Hawaiian Islands; evolution of terrestrial biota of oceanic islands. Pre: one semester of biological science at college level. Identical with Zool 450.

453 Physiological Ecology (4) I (2 L, 2 Lb) Friend, Mueller-Dombois

454 Vegetation Ecology (4) II (2 L, 2 Lb) Mueller-Dombois

461 Systematics of Vascular Plants (4) I (2 L, 2 Lb) Lloyd
Principles of plant evolution, diversity, structure, and classification. Laboratory emphasizes plant identification and circumscription of plant families. Pre: 101 or Biol 220 or consent of instructor.

470 Principles of Plant Physiology (4) II (3 L, 1 Lb) Friend
Introduction to plant physiology. Pre: 201 or Biol 220, Chem 114, 116, Phys 160, or equivalents with consent of instructor.

480 Phycology (3) II (1 L, 2 Lb) Doty
Morphology, taxonomy, ecology of algae. Identification of common algae. Pre: 101 or Biol 220 or Zool 101 or Micro 351.

610 Botanical Seminar (1) I, II
Study and discussion of significant topics and problems in botany.

612 Advanced Botanical Problems (arr.) I, II
Investigation of any botanical problem; reading and laboratory work. Pre: consent of instructor. May be repeated.

615 Morphology Seminar (2) II Lamoureux
Recent developments in morphology, anatomy, cytology. Pre: consent of instructor.

618 Cytology (3) I (2 L, 1 Lb) Sagawa
Structure and function of cell components. Pre: Biol 250 or equivalent or consent of instructor. (Not offered 1970-71.)

620 Origin, Evolution and Distribution of Flowering Plants (4) I (3 L, 1 Lb)
Survey of evolutionary history of flowering plants and significance of their
geographic distribution. Pre: 210 or Biol 220 or equivalent and consent of instructor. Recommended: 410, 461.

631 Marine Phytoplankton (3) I (2 L, 1 Lb)  
Fournier  
Identification, systematic morphology, autecology distribution and abundance. Pre: graduate standing or permission of instructor.

640 Environmental and Space Biology II (arr.) I, II  
S. Siegel  
Orientation towards experimentation with biological systems in extreme environments and individual investigations with such systems. Pre: graduate standing and consent of instructor.

650 Environmental Phytoecology (2) II  
Mueller-Dombois  
Plant geography and general ecology with emphasis on tropical areas. Pre: 101 or Biol 220 or equivalent or consent of instructor.

651 Dynamics of Marine Productivity (3) II (2 L, 1 Lb)  
Fournier  
Primary productivity, its variation and methods of assessment; conversion of energy in food chains ecosystems; factors affecting productivity. Pre: graduate standing or permission of instructor.

662 Advanced Taxonomy (4) II (2 L, 2 Lb)  
Lloyd  
Principles of plant speciation and biosystematics with emphasis on modern techniques for gathering data. Pre: consent of instructor. (Alt. yrs.; not offered 1970–71.)

665 Nomenclature Seminar (2) II  
Doty  

670 Plant Nutrition and Water Relations (3) I (3 L)  
Cool  
Plants in relation to water and nutrient elements; absorption and translocation of water and solutes in plants. Pre: 470, Chem 244, Phys 161.

671 Energetics and Biosynthesis in the Plant Kingdom (3) II (3 L)  
S. Siegel  
Comparative and synthetic aspects of natural products in plant kingdom, their distribution, bioenergetic relationships and metabolism. Pre: Chem 244, Biol 250 or equivalent. (Alt. yrs.; not offered 1970–71.)

672 Techniques in Physiology (2) I (2 Lb)  
Putman  
Nutrient absorption and composition; osmotic relations. Pre: 470, Chem 244, Phys 161, consent of instructor.

673 Techniques in Physiology-Biochemistry (2) II (2 Lb)  
Putman  
Determining substances of physiological significance in plant materials. Pre: 672, consent of instructor.

675 Physiology Seminar (1) I, II  
Staff  
Significant topics and problems in physiology. May be repeated. Pre: consent of instructor.

681 Phycology—Chlorophyta (2) I (2 Lb)  
Doty  
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; offered 1970–71.)

682 Phycology—Phytoplankton (2) II (2 Lb)  
Doty  
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; offered 1970–71.)

683 Phycology—Myxophyta and Phaeophyta (2) I (2 Lb)  
Doty  
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; not offered 1970–71.)

684 Phycology—Rhodophyta (2) II (2 Lb)  
Doty  
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; not offered 1970–71.)

699 Directed Research (arr.) I, II  
Pre: candidacy for M.S. degree; consent of instructor.

799 Directed Research (arr.) I, II  
Pre: candidacy for Ph.D. degree; consent of instructor.

800 Thesis Research (arr.) I, II
Microbiology (Micro)

Professors Benedict, Berger, Contois, Folsome, Herzberg, Loh; Associate Professors Allen, Hall, Gundersen; Assistant Professors Adams, Baumann, Siegel

Biology 220 and Biology 250 are required of all students majoring in Microbiology. Microbiology 351 is prerequisite to all more advanced courses.

130 General Bacteriology (3) I, II
Adams, Gundersen
Fundamentals of bacteriology with emphasis on microorganisms as they affect people and their possessions. Not open to those who have credit in 351.

140 Microbiology Laboratory (1) I (1 Lb)
Primarily for students in nursing and dental hygiene. Pre: credit or registration in 130; Chem 113-115.

351 Procaryotic Biology (3) I, II (2 L, 2 Lb)
Berger
Study of bacteria: their anatomy, chemistry, physiology and development; their roles in natural processes. Pre: Biol 250; Chem 211-212 or 244, 246; or consent of instructor; Math 205 desirable.

431 Microbial Biochemistry and Function (4) I (3 L, 2 Lb)
Berger
Fundamental physiological and metabolic processes of microorganisms with emphasis on growth, synthesis of cellular constituents, energy-yielding processes. Pre: 351; credit or registration in Math 206; general biochemistry; or consent of instructor.

451 Bacteriology of Bacteria (4) II (1 L, 3 Lb)
Baumann
Detailed consideration of the cultivation, physiology, structure and taxonomy of the main groups of bacteria. Methods of isolation by enrichment culture. Pre: 351, 431; biochemistry is desirable.

461 Immunology (4) I (3 L, 2 Lb)
Benedict
Structure and biological actions of antigens and antibodies; fundamentals of antibody production. Pre: 351; Math 205; or consent of instructor; Bioch 441 or Ag Bioch 402 desirable.

463 Microbiology of the Pathogens (4) II (3 L, 2 Lb)
Herzberg

475 Microbial Genetics (4) II (2 L, 2 Lb)
Adams
Genetic analysis and molecular basis of transmission, replication, mutation, segregation, expression of heritable characteristics in procaryotes and unicellular eucaryotes. Pre: 351 or Biol 250 and consent of instructor; Math 206.

480 Microbial Ecology (4) I (2 L, 2 Lb)
Gundersen
Interactions between microorganisms and between microorganisms and other organisms in nature. Pre: 351 or consent of instructor.

490 Virology (4) II (2 L, 2 Lb)
Loh
Basic concepts of animal virology involving a comparative consideration of the physical, chemical, and biological properties of representative animal virions. Laboratory: emphasis on the use of animal tissue culture systems. Pre: 351, 461; Bioch 441; or consent of instructor.

499 Microbiological Problems (arr.) I, II
Staff
Directed reading and research. Limited to senior majors with 2.7 grade-point ratio, or 3.0 in microbiology.

625 Immunochemistry (3) II (3 L)
Benedict
Detailed reports and discussions on selected advanced topics and current research literature in immunochemistry. Pre: 461; Bioch 601; or consent of instructor. (Alt. yrs.; offered 1971-72.)

632 Advanced Microbial Physiology (3) II (3 L)
Hall
Selected topics. Pre: 451 or consent of instructor. (Alt. yrs.; offered 1970-71.)

642 Marine Microbiology (3) II (3 L)
Gundersen
Microbial activities in sea; ecology and physiology of marine microorganisms. Pre: 480; Ocean 620 or 623; or consent of instructor. (Alt. yrs.; offered 1971-72.)
BIOLOGICAL SCIENCES—ZOOLOGY

655 Virology (3) I (3 L)  
Loh  
Detailed reports and discussions on selected advanced topics and current research literature in virology. Pre: 463, 493; Bioch 441 or 601; and consent of instructor. (Alt. yrs.; offered 1970–71.)

661 Ultrastructure of Microorganisms (3) I (3 L)  
Allen  
Structural and molecular architecture of cell organelles; concepts of cellular integration. Pre: consent of instructor.

665 Electron Microscopy (2) II (2 Lb)  
Allen  
Introduction to use of electron microscope and preparative techniques. Pre: 661 and consent of instructor.

671 Microbial Genetics (3) I (3 L)  
Folsome  
Directed study and discussion of research literature dealing with bacterial and viral virus mutation, genetic recombination, evolution and control mechanisms. Pre: 475; Bioch 601; and consent of instructor (Alt. yrs.; offered 1971–72.)

675 Exobiology (3) II (3 L)  
Folsome  
Advanced introduction to literature dealing with the detection of extraterrestrial life, the basic organic chemistry pertinent to the origin-of-life problem, and the construction of exotic ecological systems. Pre: Chem 351, Biol 440.

681 Host-Parasite Relationships (3) I (3 L)  
Herzberg  
Mechanisms of pathogenicity of microorganisms and defense mechanisms of human and animal hosts. Review of contemporary literature. Pre: 463 or consent of instructor. (Alt. yrs.; offered 1971–72.)

690 Seminar (1) I, II  
Loh, Hall  
Significant topics in microbiology. Required of graduate students. May be repeated.

699 Directed Research (arr.) I, II  
Staff  
Selected problems in microbiology. Pre: consent of instructor.

795 Special Topics in Microbiology (arr.) I, II  
Staff  
Selected topics in any aspect of microbiology. May be repeated.

800 Thesis Research (arr.)  
Staff

Zoology (Zool)

Senior Professor Tester; Professors Banner, Berger, Chu, Gosline, Hsiao, Kamemoto, Townsley, van Weel; Associate Professors Reed, Reese; Assistant Professors Bailey, Branham, Haley, Losey, Popper, Stevens, Stimson

101 Principles of Zoology (4) I, II (3L, 1 Lb)  
Reed  
Introduction to zoology. Living animals, their structure, physiology, development, reproduction, evolution, habits, ecology, and their relationship to other living organisms and the environment. Pre: none.

310 Invertebrate Zoology (3) I, II (2 L, 1 Lb)  
Banner, Bailey  
Morphology, evolution, systematics, ecology, life history of invertebrate phyla. Pre: 101 or Biol 220.

320 Vertebrate Zoology (4) II (2 L, 2 Lb)  
Hsiao  
Classification, evolution, and comparative functional anatomy of vertebrates. Pre: concurrent registration or completion of 101 or Biol 220.

330 Principles of Ecology (2) I  
Reese  
Distribution and abundance of organisms discussed in relation to physical, physiological, population and community parameters. Pre: none. Recommended: introductory course in biology, botany, or zoology.

340 Parasitology (3) II (2 L, 2 Lb)  
Parasitology with reference to man and domestic animals; classification, comparative morphology, life history, control.
BIOLOGICAL SCIENCES—ZOOLOGY

416 Histology (3) I (2 L, 2 Lb)
   Stevens
   Studies of tissues, principles of histology, and microscopic anatomy of a limited number of vertebrates. Pre: 320 or completion or concurrent registration in 423.

417 Microtechnique (3) I (2 L-Lb)
   Fixing, staining, mounting of tissues, entire animals and organs.

420 Embryology (4) I, II (3 L, 1 Lb)
   Branham, Haley, Hsiao
   Analysis of developmental phenomena in animals. Pre: Biol 220.

430 Animal Physiology (4) I (2 L, 2 Lb)
   Stevens
   Introduction to function of tissues and organ systems of vertebrates.

435 Endocrinology (2) I
   Kamemoto
   Anatomy and physiology of the organs of internal secretion, role of hormones in metabolism and development. Pre: 1 course in biological sciences.

441 History of Zoology (2) II
   Banner
   Development of zoological science as specialized field of human knowledge. Pre: 101, Biol 220, or consent of instructor.

450 Natural History of Hawaiian Islands (2) II (2 L-Lb)
   Gosline, Lamoureux
   Geography, geology, climatology, biotic environment of Pacific Basin and Hawaiian Islands; evolution of terrestrial biota of oceanic islands. Pre: one semester of biological science at college level.

460 Avian Biology (3) II (2 L, 1 Lb)
   Berger
   Introduction to anatomy, physiology, annual cycle, behavior, distribution, taxonomy of birds; special attention given to Hawaiian and oceanic birds. Pre: 101 or Biol 220.

465 General Ichthyology (3) I
   Gosline
   Anatomy, physiology, ecology, distribution. Pre: 101 or Biol 220.

470 Limnology (3) II (2 L-Lb)
   Maciolek
   Biology, physics, chemistry of lakes, streams, estuaries, including field and laboratory techniques. Pre: 310, 330, or consent of instructor. (Alt. yrs.; offered 1971–72.)

480 Animal Evolution (2) II
   Popper and Stevens
   Processes of evolution; interaction between population genetics and natural selection in animals. Desirable preparation: Genetics 451.

490 General Zoology Seminar (1) I, II
   Staff
   Reports on research or reviews of literature. Required of students majoring in zoology or entomology.

493-494 Senior Honors Thesis (2-2) Yr.
   Staff

499 Directed Reading or Research (arr.) I, II
   Staff
   Limited to senior majors with 2.7 grade-point ratio or 3.0 grade-point ratio in zoology.

603 Zoogeography (2) I
   Animal distributions; physiographic, climatic, and historic factors.

605 Comparative Endocrinology (4) II (3 L, 1 Lb)
   Kamemoto
   Biology of hormonal mechanisms, with emphasis on invertebrates and lower vertebrates. Lecture only may be taken for 3 credits. Pre: 435 or consent of instructor.

606 Animal Behavior (3) II (2 L, 2 Lb)
   Reese
   Orientation and ethological approach stressed; behavioral physiology, genetics and learning theory discussed. Pre: undergraduate major, with permission of instructor, or graduate standing in zoology or psychology.

608 Growth and Form (4) II (2 L, 2 Lb)
   Haley
   Analysis of normal growth patterns. Regulating mechanisms of normal growth, differentiation and influence of environmental factors.

609 Biology of Symbiosis (3) I (2 L, 2 Lb)
   Losey
   Behavioral, physiological, and ecological relationships between species, including mimicry, commensalism, mutualism, parasitism and predation discussed, with emphasis on adaptive value and behavioral interactions. Pre: undergraduate major, with permission of instructor, or graduate standing in zoology or psychology.
610 **Topics in Developmental Biology** (arr.) I, II  
Discussion and survey of literature pertaining to specific topics in developmental biology.  
*Staff*

611 **Principles of Systematic Zoology** (3) I  
Taxonomic categories; processes of evolution in their development; taxonomic data; rules of nomenclature.  
*Staff*

620 **Marine Ecology** (3) II (2 L, 2 Lb)  
Bailey  
Principles of ecology are discussed in relation to marine biota and environment.  
Pre: undergraduate major, consent of instructor, or graduate standing in zoology, oceanography, or botany.

622 **Isotopic Tracers in Biology** (3) II (2 L, 1 Lb)  
Townsley  
Chemical and physical features of radioactive isotopes used in biological work.  
Methods of detection; application to biological systems.

631 **Biometry** (3) I (2 L-Lb)  
Tester  
Elementary statistical methods; confidence interval, chi-square, t-test, normal distributions, regression, correlation. Pre: Math 134.

632 **Advanced Biometry** (3) II (2 L-Lb)  
Tester  
Analysis of variance and covariance, curvilinear regression, multiple correlation, design of experiments. Pre: 631.

646 **Comparative Invertebrate Physiology** (3) II (2 L-Lb)  
van Weel  
Life processes, with emphasis on marine invertebrates.

666 **Advanced Ichthyology** (3) I  
Gosline  

691 **Seminar in Zoology** (1) I, II  
Staff  
Reports on research or reviews of literature. Graduate students required to take this course or one Topics course per year.

699 **Directed Research** (arr.) I, II  
Staff  
Directed research and reading in various fields of zoology.

702 **Preparation of Scientific Manuscripts** (1) I  
Berger  
Use of bibliographical tools; styles and methods of preparation for publication. Required of all students for Ph.D. degree in zoology or entomology.

714 **Topics in Animal Behavior** (arr.) I, II  
Staff  
Lecture-discussion of selected topics in the behavior of animals. Pre: permission of instructor.

715 **Topics in Invertebrate Zoology** (3) I, II (2 L, 2 Lb)  
Staff  
Comparative morphology, development, taxonomy, and phylogeny of invertebrate taxa.

716 **Topics in Fish and Fisheries Biology** (3) II  
Staff  
Lecture-discussion of various aspects of fish and fisheries biology.

718 **Topics in Animal Physiology** (3) II  
Staff  
Selected problems in general physiology, physiological ecology, electrophysiology, or neurophysiology. Basic concepts and measurements of function at the organismic or cellular level in animals.

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**Chemistry (Chem)**

*Professors* Inskeep, Naughton, Scheuer, Zeitlin; *Associate Professors* Andermann, Gilje, Ihrig, Kiefer, Larson, Liu, Mann, McDonald, Schaleger, Waugh; *Assistant Professors* Bopp, Buddemeier, Cramer, Hubbard, Moore, Muenow, Seff

113-114 **General Chemistry** (3-3) Yr. (3 L)  
Fundamental laws, principles, methods. Pre: high school algebra and plane geometry.
CHEMISTRY

115 General Chemistry Laboratory (1) I, II (1 Lb)
Experiments illustrating fundamental principles of chemistry. Pre: credit or registration in 119.

116 General Chemistry Laboratory (1) II (1 Lb)
Continuation of 115. Pre: 115, credit or registration in 114.

117 Principles of Chemistry (4) I, II (4 L)
Principles, theories, elementary analytical methods. Pre: high school chemistry, credit or registration in 118, and Math 205.

118 Principles of Chemistry Laboratory (1) I, II (1 Lb)
Principles, techniques, elementary analytical methods. Pre: credit or registration in 117.

133 Elementary Quantitative Analysis (2) I, II (2 L)
Beginning gravimetric and volumetric analysis. Pre: 114, 116 or 117, 118.

134 Elementary Quantitative Analysis Laboratory (2) I, II (2 Lb)
Gravimetric and volumetric analysis. Pre: credit or registration in 133.

141 Elements of Organic Chemistry (3) II (3 L)
Primarily for students in dental hygiene program. Pre: 113–115. Note: those who have credit in 114 or 117 must enroll in 241.

142 Elements of Organic Chemistry Laboratory (1) II (1 Lb)
Laboratory techniques. Pre: 115 and credit or registration in 141.

241 Survey of Organic Chemistry (3) II (3 L)
Structure, nomenclature, properties, reactions of organic compounds emphasizing those of practical importance in related fields. Pre: 114, 116 or 117, 118.

242 Survey of Organic Chemistry Laboratory (1) II (1 Lb)
Techniques of preparation, purification, identification of organic compounds. Pre: 116 or 118 and credit or registration in 241.

243–244 Organic Chemistry (3–3) Yr. (3 L)
Carbon compounds. Topics include molecular structure, stereochemistry, nuclear magnetic resonance, reactions and methods of preparation of principal classes of organic compounds. Pre: 114, 116 or 117, 118.

245 Organic Chemistry Laboratory (1) I (1 4-hr. Lb)

246 Organic Chemistry Laboratory (1) II (1 4-hr. Lb)
Continuation of 245. Pre: 245, credit or registration in 244.

333 Intermediate Quantitative Analysis (4) I (2 L, 2 Lb)
Introductory instrumental analysis. Pre: 134, credit or registration in 351.

351–352 Physical Chemistry (3–3) Yr. (3 L)

353 Physico-Chemical Measurements (2) II (2 Lb)
Modern laboratory techniques. Pre: 333, GE 251, credit or registration in 352.

399 Directed Reading or Research (arr.) I, II
Limited to majors with 2.7 grade-point ratio or 3.0 grade-point in chemistry. May be repeated.

422 Intermediate Inorganic Chemistry (3) II
Classification, description, fundamental theory. Pre: credit or registration in 352.

444 Qualitative Organic Analysis (4) I (2 L, 2 Lb)
Identification and characterization of organic compounds and mixtures. Pre: 134, 246, credit or registration in 351.

445 Intermediate Organic Chemistry (3) II (3 L)
Modern synthetic methods. Pre: 244.
493–494 Senior Honors Thesis (2–2) Yr.
Research problem under individual faculty supervision. Required for graduation with honors in departmental honors program.

621 Introductory Quantum Chemistry (3) I

622 Advanced Inorganic Chemistry I, Theoretical (3) II
Principles of modern inorganic chemistry. Pre: 621.

623 Advanced Inorganic Chemistry II, Structure and Mechanisms (3) I
Principles of modern inorganic chemistry. Pre: 422.

631 Instrumental Methods of Analysis (4) I (2 L, 2 Lb)
Theory, instrumentation, applications. Pre: 333.

632 Electroanalytical Chemistry (3) II
Advanced electroanalytical determinations, theory, instrumentation. Pre: 333.

633 Introduction to Spectroscopy (3) II

641–642 Advanced Organic Chemistry (3–3) Yr.
Structure, stereochemistry, reaction mechanisms. Pre: 244, 352.

651 Intermediate Physical Chemistry I (3) I
Chemical thermodynamics. Pre: 352.

652 Intermediate Physical Chemistry II (3) II
Chemical reaction kinetics. Pre: 651.

655 Radiochemistry and Nuclear Reactions (3) I
Radioactive decay processes, radiation effects and detection, nuclear phenomena, applications of radioactivity. Pre: 352 or consent of instructor.

656 Radiochemical Techniques (1) I (Lb)
Radiation measurement, modern radiochemical practice, use of isotopes as tracers and in analysis. Pre: credit or registration in 655.

691–692 Seminar (1–1) Yr.
Current topics in chemistry. May be repeated.

721–722 Special Topics of Inorganic Chemistry (arr.) I, II
Theory and application of modern inorganic chemistry. Pre: consent of instructor. May be repeated.

731–732 Special Topics in Analytical Chemistry (arr.) I, II
Theory and application of modern analytical chemistry. Pre: consent of instructor. May be repeated.

744 Organic Applications of Spectroscopy (3) II
Interpretation of IR, UV, NMR and mass spectra of organic compounds. Pre: 444, 641.

751–752 Special Topics of Physical Chemistry (arr.) I, II
Theory and application of modern physical chemistry. Pre: consent of instructor. May be repeated.

753 Quantum Chemistry (3) I
Review of basic principles of quantum mechanics, with emphasis on matrix representation of operators important to molecular structure theory. Application of the formalism to modern theories of chemical bond. Pre: 621.

756 Statistical Mechanics (3) II
Principles of statistical mechanics and statistical thermodynamics, with applications to chemical systems. Pre: 621, 651, suggested Math 232.
758 Crystallography (3) II (3 L)

799 Directed Research (arr.) I, II
Pre: consent of department chairman. May be repeated.

800 Directed Research (arr.) I, II
Pre: candidacy for M.S. or Ph.D. degree; consent of thesis chairman.

Drama and Theatre (Drama)

Senior Professor Ernst; Visiting Professor Graham; Professors Brandon, Trapido; Associate Professors Knapp, Langhans, R. Mason; Assistant Professors Cannon, Carroll, Heron, Lev, Sasa, Wolz

160 or 260, and 240 are prerequisites to all courses in direction, design, stagecraft, and lighting.

160 Introduction to Drama and Theatre (3) I, II
Representative plays studied as illustrative of changing forms in the theatre and dramatic literature.

221-222 Beginning Acting (3-3) Yr.
Individual exercises and group rehearsals with emphasis on voice, movement, relaxation. Students must perform in direction class scenes.

240 Basic Stagecraft and Stage Lighting (3) II
Introduction to theory and practice of stagecraft and lighting.

260 Dramatic Production (3) I
Introduction to process of converting the play into the performance.

281-282 Beginning Modern Dance (3-3) Yr.
Introduction to the vocabulary of movement of classical ballet.

283-284 Beginning Ballet (3-3) Yr.
Introduction to the vocabulary of movement of classical ballet.

299 Theatre Practice (3) I, II
Supervised work in one or two areas: stagecraft, lighting, costuming, make-up. Term paper required. May be repeated.

321-322 Intermediate Acting (3-3) Yr.
Emphasis upon individual work in characterization and improvisation. Students must perform in direction class scenes. Pre: 221-222 or consent of instructor.

330 Direction (3) I
Readings, reports, discussion of theory and practice of stage direction.

340 Advanced Stagecraft (3) I
Principles applied, techniques employed, in contemporary staging.

353-354 Design in the Theatre (3-3) Yr.
Principles of design as related to scenery, costume, lighting for the stage.

356 Costume for the Stage (3) II
Survey of historical costume, with special emphasis on translation of historical styles into theatrical form.

370 Creative Dramatics (3) I, II
Intensive study of dramatic activities for children and young people. Designed for teachers, group workers, recreation majors, others dealing with children. May be repeated.
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<td>620</td>
<td>Advanced Acting Techniques (3) II</td>
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</table>
631–632 Seminar in Direction (3–3) Yr. Ernst
Directorial analysis of plays of different styles and periods; exercises; preparation of prompt books.

640 Problems in Stagecraft and Stage Lighting (3) II Trapido
Special topics in staging and lighting of plays, and in planning and use of various types of modern theatres.

650 Advanced Design (3) I Mason
Advanced study, analytical and creative, of visual aspects of dramatic art. Pre: 353–354.

660 Theories of the Theatre (3) I Carroll
Theories of production, from Aristotle to Brecht.

662 Seminar in Drama and Theatre (3) II
Special topics in Western theatre.

664 Seminar in Oriental Theatre (3) II Brandon
(1) India and Southeast Asia. (2) China and Japan. Pre: consent of instructor.

699 Advanced Theatre Practice (3) I, II
Special projects in one or two areas: stagecraft, lighting, costuming, make-up. Term paper required. May be repeated.

730 Seminar in Direction (3) I Cannon
Organizational and artistic processes of the director. Pre: 631–632.

750 Seminar in Design (3) II Mason
Design projects emphasizing conversion of historic materials to use in the theatre. Pre: 650.

760 Seminar in Aesthetics of the Theatre (3) II Ernst
Consideration of the theatre as an art form.

799 Directed Work (arr.) I, II Staff
Reading or research in theatre theory or history; reading and practice in particular areas of dramatic production. Pre: consent of instructor.

Economics (Econ)

Professors: Deneny, Gorter, Hung, Kamins, McManus, Miller, Oshima; Associate Professors: Campbell, Joun, Lim, Miklius, Naya, Walton, Yeh; Assistant Professor: Ahudz; Ashby, Chan, Ghali, Haines, Mak, Overbeek, Pollock, Psacharopoulos, Rose; Acting Assistant Professors: Burchoff, Collman, Ebel, Hight, Holmsen, Moncur, Tawil; Visiting Professor: Aklilian; Visiting Associate Professor: Heller

120 Introduction to Economics (3) I, II
One-semester course for non-majors. Provides general understanding of functioning of economic systems, including various approaches to organization of production and allocation of resources, and of policies designed to achieve national economic goals.

150 Principles of Economics (3) I, II
Analysis of functioning of economic systems with emphasis on forces determining levels and changes of national income and employment. Describes basic economic institutions, e.g., markets, money, banks, labor organizations, corporations.

151 Principles of Economics (3) I, II
Analysis of how commodity and factor prices are determined. Discusses policies for efficient allocation of scarce resources. Required of all economics majors.

300 Intermediate Economic Theory: National Income (3) I, II Ebel, Yeh
Concepts; determination of income, employment, price levels; effects of fiscal, monetary, other policies. Pre: 150.

301 Intermediate Economic Theory: Price Theory (3) I, II Burchoff, Collman
Price determination and resource allocation under competition, monopoly, oligopoly, monopolistic competition. Theories of demand, cost, partial, general equilibrium. Pre: 151.
ECONOMICS

310 Economic Development for Non-majors (3) I, II
Lim, Hung
Introduction to issues in economic development. Considers dualistic development, role of foreign trade, agricultural transformation and industrialization, property rights, investment policy, sources of savings, scope and techniques of development planning. Emphasis on case studies of Asian underdeveloped countries. Pre: 120 or 150 or equivalent.

321 Introduction to Statistics (3) I, II
Moncur, Tawil
Basic elements of statistics, including descriptive statistics, probability and inference, distributions, hypothesis testing, and regression and correlation analysis.

340 Money and Banking (3) I, II
Ashby, Mak
Nature and role of money; development of national and international monetary standards; role of commercial banking and financial intermediaries; development and function of central banking. Pre: 150.

399 Directed Reading (arr.) I, II
Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in economics, on recommendation of department chairman only.

400 Growth and Fluctuations (3) II
Campbell

404 History of Economic Thought (3) I
Overbeek
Survey of economic thought from Adam Smith to present with emphasis on theory of value and distribution. Pre: 300, 301.

405 Comparative Economic Systems (3) I
Abudu, Burcroff
Analysis of structure, institutions, operation, performance, growth of private enterprise, socialist, communist and mixed economies with emphasis on U.S., U.S.S.R. and underdeveloped economies. Pre: 150, 151 or consent of instructor.

410 Economic Development (3) I
Burcroff, Tawil
Study of characteristics of underdeveloped economies, theories of economic growth, strategies of economic development, and investment criteria. Pre: 300, 301 or consent of instructor.

411 Economic Development of Europe (3) I
Mak

412 Economic Development of U.S. (3) II
Walton
Emphasizes period since World War I. Consideration of changing patterns of investment, consumption and employment. Pre: 150, 151.

414 Economic Development of Japan (3) II
Oshima
Study of history and economic development of Japan from Meiji period to present; factors which contributed to take-off; structural changes since World War II. Pre: 150–151 or consent of instructor.

415 Asian Economic Development (3) I
Naya
Study of history and economic development of Asian nations other than Japan. Resources, population and income, savings, investment and consumption patterns. Role of government and private enterprise. Pre: 150–151 or consent of instructor.

420 Mathematical Economics (3) II
Ashby, Moncur, Tawil
Review and application of mathematical techniques in economic analysis: differentiation, integration, differential equations, difference equations and linear programming. Pre: 300, 301, and Math 205 (calculus).

425 Econometrics I (3) I
Chau, Ghali, Tawil
Review of matrix algebra; examination of bi-variate and multivariate regression analysis, correlation theory, properties of least squares and maximum likelihood estimates under different assumptions; examination of estimation problems likely to be encountered. Pre: 321.
426 Econometrics II (3) II
Ghali, Tawil
Reviews of matrix algebra, multiple regression and problems of statistical estimation including the identification problem. Exploration of methods of simultaneous equation estimation such as indirect least squares, two-stage least squares, limited information maximum likelihood, three-stage least squares, and full information maximum likelihood. Pre: 424.

430 Economics of Human Resources (3) I
Haines, Hight
Economic analysis applied to the labor market with particular emphasis on investment in human capital, economics of education, health, migration, etc. Pre: 301.

440 Monetary Theory and Policy (3) I
Ashby, Miller
Critical analysis of monetary theory and policy with special emphasis devoted to quantity theory, national income theory, and tools of central banking and debt management. Pre: 300, 340.

450 Public Finance (3) I
Ebel, Pollock
Considers governmental expenditures, revenues and debt, both descriptively and theoretically. Fiscal policy considered, as are budgeting and tax administration. Pre: 300, 301.

452 State and Local Finance (3) II
Ebel, Pollock
Intensive study of fiscal institutions, operations, and policy questions within state and local governments in U.S. Consideration of grant programs and other links with central government. Pre: 150-151 or consent of instructor.

460 International Trade Theory (3) I
Naya, Yeh
Theoretical, institutional and historical aspects of international economic relations considered, including foreign exchange rates, balance of payments adjustment, tariffs, quotas, trading blocks. Pre: 300, 301.

461 International Finance (3) II
Comitini, Yeh
Institutional and theoretical aspects of international financing; balance of payments, exchange rates, capital movements, and multilateral equilibrium in world money market. Pre: 300, 301.

470 Industrial Organization and Public Control of Business (3) I
Hight, Miklius

480 Transportation and Public Utilities (3) II
Rose
Economic characteristics of transportation and public utility industries. Analysis of objectives, problems and effects of government regulation of these industries. Pre: 300, 301.

490 Location Theory and Regional Analysis (3) I
Holmsen, Joun
Location theories concerned with agricultural, manufacturing and tertiary activities and with urban systems. Basic methods of locational analysis. Paths towards application in regional economic planning. Identical to Geog 420. Pre: 300, 150.

492 Regional Economic Development (3) II
Holmsen, Joun
Sources of regional economic growth and of regional development planning. Emphasis on Hawaiian economy and experience. Pre: 300, 301 or consent of instructor.

496 Selected Topics in Contemporary Economic Problems (3) II
Ashby, Campbell
Problem areas of contemporary interest, such as welfare economics, economics of foreign aid, economic integration, crisis in international payment mechanism, topics in state and local finance, non-economic aspects of economic development, economic implications of political changes, etc. Selection of topics to depend on instructor. Pre: 120 or consent of instructor.

600 Macroeconomic Theory (3) I
Ashby, Campbell
Keynesian and post-Keynesian theories of aggregative economics with special attention to factors determining levels of employment, prices, real income. Stabilization policies. Pre: 300.

601 Microeconomic Theory (3) I
Alchian, Hung
Rigorous analysis of consumer's choice; pricing of products and factors of produc-
tion under competitive conditions, partial and general equilibrium monopoly and imperfect competition, risk and uncertainty, and capital theory. Pre: 301.

602 Economic Growth and Fluctuations (3) II
Campbell
Aggregate dynamic models of growth and fluctuations; current literature including neo-classical and neo-Keynesian models of economic growth, dynamic Leontief models and activity analysis. Pre: 600.

603 Advanced Microeconomic Theory (3) II
Hung, McManus
Topics include analysis of market structure; welfare economics; linear programming; risk and uncertainty; capital theory; decision theory. Pre: 601.

604 History of Economic Thought (3) I
Development of economic theories, including classical economics, marginal utility theory, socialism, neo-classical theory, welfare economics, Keynesian and post-Keynesian systems. Pre: 404 or consent of instructor.

605 Mathematical Economics (3) I
Ashby, McManus
Application of mathematical methods to economic theory. Partial differentiation, integral calculus, series and expansion, vectors, and matrices, determinants, systems of difference and differential equations, stability conditions, inter-industry relations, programming of activities and allocation of resources, aggregation problem, elementary theory of games. Pre: 420 or consent of instructor.

606 National Income Accounts (3) II
Oshima
Theory underlying construction of national economic accounts, methods of estimation of entries in accounts; uses of national accounting statistics. Pre: consent of instructor.

610 Economic Development I (3) I
Lim, Oshima
Theoretical analysis of factors underlying economic development with reference to underdeveloped nations. Survey of theoretical literature on economic development, dealing with causes of underdevelopment and development, alternative development models and their policy implications. Pre: consent of instructor.

611 Economic Development II (3) II
Lim
Design of policy measures to accelerate economic development in underdeveloped countries (e.g. investment criteria). Various techniques of development planning (including input-output analysis, linear programming and macroeconomic models) applied to problems of economic development. Pre: 610.

613 Economic Development of the West (3) I
Walton
Analysis of growth, structural change, and development patterns in Western Europe and the U.S. since the Industrial Revolution. Comparison with Russian experience since 1917. Pre: 610 or consent of instructor.

614 Economic Development of Japan (3) I
Oshima
Analysis of growth from Meiji period to present. Problems of population change, capital formation, income distribution, industrial structure. Pre: 610 or consent of instructor.

616 Economic Development of China and Korea (3) II
Burcroy, Hung, Lim
Analysis of growth, structural change, development patterns, and problems of mainland China, Taiwan, and Korea. Pre: 610 or consent of instructor.

618 Economic Development of Southeast Asia (3) I, II
Burcroy, Lim, Naya, Oshima
Analysis of growth, structural change, development patterns and problems of countries in the region with special emphasis on Indonesia, Malaysia, Philippines, Thailand and Vietnam. Pre: 610 or consent of instructor.

624 Advanced Econometrics I (3) I
Chau, Ghali
The classical linear regression model, its concepts and properties; analysis of variance, analysis of covariance; problems in applying the regression model to test single-equation economic relations; extension and revisions of the basic model; use of computer to perform regression calculations. Pre: 321, 426.

626 Advanced Econometrics II (3) II
Chau
Linear regression with stochastic regressors; estimations of systems of simultaneous linear relationships; econometric models of the economies; recent developments. Pre: 624.
627 Economic Programming (3) II Ghali, Joun
Application of input-output analysis, linear programming, and macro-economic models to problems of economic development and planning. Pre: 420 or consent of instructor.

640 Monetary Theory (3) II Ashby, Campbell
Analysis of selected problems in monetary economics, with emphasis on monetary and banking policy. Pre: 440 or consent of instructor.

650 Theory of Public Finance (3) II Ebel, Pollock

660 International Trade Theory (3) I Gorter, Naya, Yeh
Modern development in national income theory and welfare economics with relation to international trade. Pre: 460 or consent of instructor.

662 International Finance (3) I Heller, Yeh
Balance of payments, exchange rates, capital transfers, international financial equilibrium. Pre: 461 or consent of instructor.

670 Human Resources and Manpower Economics (3) I Haines, Hight

672 The Economics of Population Growth (3) I or II Demeny
Analysis of demographic aspects of economics development with particular reference to demographic determinants of consumption, saving, employment and productivity. Population growth and the problem of natural resources. The role of demographic factors in theories of economic development. Economic aspects of population policies. Pre: consent of instructor.

690 Regional Economic Analysis (3) I Holmsen, Joun, Renaud
Selected problems of regional economic analysis and regional projections. Discussion of specific regional and interregional input-output models. Identical to Econ 620. Pre: 310 or 492 or equivalent.

698 Seminar in Marine Economics (3) I Comitini
Application of techniques of economic analysis related to the unique problems of utilization and development of marine resources. Topics include: economics of the fisheries and other uses of the seas; institutional and legal aspects of ocean use; resource management and public policies regarding rational use of marine environment; development and rate of diffusion of marine technology. Pre: consent of instructor.

699 Directed Research (arr.) I, II
Pre: consent of department chairman.

700 Seminar: Macroeconomic Theory (3) I Campbell, Miller
Critical evaluation and application of macroeconomic theory. Pre: 600.

701 Seminar: Microeconomic Theory (3) I Hung, McManus
Critical evaluation and empirical application of microeconomic theory. Pre: 601 and 603.

710 Seminar in Economic Development (3) II Lim, Naya
Case studies, emphasizing research approaches and techniques. Theories of economic development applied to experience of certain Asian nations. Pre: 610 or consent of instructor.

730 Research Seminar (3) I, II Renaud, Pollock, Miller, Haines
Review of recent literature and intensive discussion of selected issues emphasizing research approaches in one of the fields listed below. (a) Urban and regional economics, (b) Public finance, (c) Money and finance, (d) Human resource economics. Pre: consent of instructor.

745 Workshop: Financial and Monetary Aspects of Economic Development (arr.)
Role of monetary system and non-bank financial institutions in developing nations and in development planning considered. Research papers required. Pre: 610, 640 or consent of instructor.
ENGLISH

760 Seminar in International Economics (3) II  
Gorter  
Special studies in theories of international trade and international finance. Pre: 660, 662 or consent of instructor.

780 Selected Topics in Economic Analysis (3) I, II  
Special topics in economic analysis and in applied economics not covered in other courses. Pre: 600, 601 or consent of instructor.

800 Thesis Research (arr.)

English (Eng)


100 Expository Writing (3) I, II  
Larson, Staff  
Study of principal steps in effective exposition—discerning, interpreting, and evaluating data through observation and reading; deciding upon an appropriate organizational plan; choosing a voice and style suitable to the writer's audience and the occasion for writing — accompanied by practice in the analysis of expository pieces by professional writers.

100 (or 101–102, or 105) is prerequisite to all sophomore literature courses.

Any of the following six semester courses (251–256) satisfies the requirement for sophomore literature.

251–252 Major Works of British and American Literature (3–3) Yr.  
Stillians, Staff  
251: British literature from Middle Ages to 1800. 252: British and American literature from 1800 to present.

253–254 World Literature (3–3) Yr.  
Sinclair, Staff  
Major works of classical, Oriental, European, American literature. 253: Classical times to Renaissance. 254: 1600 to present.

255–256 Types of Literature (3–3) Yr.  
Huntsberry, Staff  

Two semesters of sophomore literature (251, 252, 253, 254, 255, 256) are prerequisites for upper division courses beginning with English 312.

309 Written Communication (3) I, II  
Kennedy, Staff  
Practice in informative, analytical, persuasive writing. Open only to students in business administration and home economics. Pre: 100 and sophomore literature, or equivalents.

310 Technical Exposition (3) I, II  
Leib, Staff  
Analysis of selected scientific prose; principles and practice of presenting technical information. Open only to juniors and seniors in scientific fields.

312 Literary Writing (3) I, II  
Krause  
Writing and criticism of essays, designed to develop effective expression, with emphasis on lively and individual style. Pre: consent of instructor.
ENGLISH

313 Introduction to Imaginative Writing (3) I, II Huntsberry, MacMillan, Thompson
The basic principles of the writing arts explored through the composition of poems, short stories, and one-act plays.

315 Advanced Expository Writing (3) I, II Gray, Staff
Writing of essays from logical and rhetorical principles, especially modes of definition, assertion, proof. Emphasis on clarity, coherence, style.

320 Introduction to Language (3) I, II Fellmeth, Staff
Examination of modern concepts of structure and use of language, with special reference to English.

321 Introduction to Poetry (3) I, II Solomon, Staff
Written and oral analysis of imagery, sound, language, form and structure of poems, leading to increased awareness of nature of poetry.

325 Backgrounds of World Literature (3) I, II Backus
Most important sources of European literary themes and allusions, including King James Bible and western European myth and legend.

326 Introduction to Literary Problems (3) I, II Bouslog, Staff
Critical evaluation of the genres of literature, of various modes of analysis, of problems involved in literary perception.

331 Masters of Literary Criticism (3) I Staff
Survey of the chief writings in criticism from Aristotle through Arnold (in English), with emphasis on classical answers to critical problems.

351-352 English Literary History (3-3) Yr. Staff
Readings in representative authors and works, with emphasis on history of ideas and development of literary forms. 351: beginnings to 1798. 352: Romantics to present.

393-394 Junior Honors Program in English (3-3) Yr. Bouslog, Staff
Tutorials in English and American literature. Consult departmental honors adviser for course particulars. Consent of instructor or instructors required.

399 Directed Reading (arr.) I, II Staff
Individual reading. Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in English. Pre: consent of instructor and department chairman.

401 Modern English Grammar (3) I, II Crymes, Fellmeth, Shen
Syntax of modern English examined within framework of recent linguistic scholarship. Pre: 320 or consent of instructor.

402 History of the English Language (3) I, II Lester, Wel Mein
Introduction to older stages of English and processes by which modern English evolved.

404 English Phonology (3) I Shen
Study of English sound system (including morphophonemics) and of recent theories of phonological interpretation. Pre: 320, 401, Ling 102, S p 211 or equivalent.

411 Poetry Writing (3) II Friedson, Thompson
Writing and criticism of poetry. Pre: 331, consent of instructor.

413 Form and Theory in Writing Fiction (3) I, II Huntsberry, Staff
Study of techniques of prose fiction from standpoint of the writer.

414 Narrative Writing (3) I, II Huntsberry, Staff
Instruction and practice in writing short story. Pre: 413 or equivalent.

415 Advanced Narrative Writing (3) I, II Huntsberry, Staff
Developing skill in story telling (either short story or novel). Pre: 414 or equivalent.

421 English Drama to 1642 (3) II Fujimura, Lowers, Summersgill
Origins of English drama; medieval drama and theatre; contemporaries and successors of Shakespeare.

431, 432 The English Novel (3,3) Yr. Heine, Hollingshead
Historical and critical study of development of English novel. 431: during 18th and early 19th centuries, with emphasis on rise of realistic novel. 432: from Dickens to Hardy.
ENGLISH

433 20th-Century British Novel (3) I, II  Creed, Friedson, Menikoff

442 Chaucer (3) I, II  Summersgill, Taylor, Wellein
Study of Chaucer’s development from early poems through The Canterbury Tales.

445, 446 Shakespeare (3, 3) Yr.  Staff
Critical study of Shakespeare’s plays. 445: from the beginning to Hamlet. 446: Hamlet through last plays. Both semester courses taught each semester.

447 Milton (3) I  Larson, McCutcheon
Selected poetry and prose.

451 Medieval English Literature (3) I  Leib, Taylor
Representative Old and Middle English poetry, prose, exclusive of Chaucer, with continental backgrounds; chiefly in translation.

453 16th-Century English Literature (3) I  Lowers, McCutcheon
Poetry and prose of Tudor period, exclusive of the drama.

454 Early 17th-Century English Literature (3) II  Fujimura, McCutcheon
Poetry and prose of 17th century to 1660, exclusive of the drama.

456 Restoration Literature (3) II  Anderson, Fujimura, Larson
Poetry, prose, drama from 1660 to 1700, exclusive of Milton.

457, 458 18th-Century English Literature (3, 3) Yr.  Anderson, Fong, Fujimura, Maltby
Poetry, prose (exclusive of the novel), drama. 457: from 1700 to 1740, with emphasis on Pope and Swift. 458: 1740 to 1780, with emphasis on Johnson and his circle.

461 The Romantic Movement in England (3) I  Fong, Stempel, Stillians
Poetry and prose from 1780 to 1832, exclusive of the novel.

463, 464 Victorian Literature (3, 3) Yr.  Frierson, Stempel

469 Studies in British Literature (3) I, II  Staff
Some aspect of British literature, such as genre, one or more major authors, etc. May be repeated for credit.

471, 472 American Literature (3, 3) Yr.  Staff
Critical study of American literature. 471: from beginnings to Civil War. 472: from Civil War to present. Both semester courses taught each semester.

475, 476 The American Novel (3, 3) Yr.  Bouslog, Canary, Levy
Development of American novel. 475: beginnings to 1900. 476: 1900 to present.

479 Studies in American Literature (3) I, II  Staff
Some aspect of American literature, such as genre, one or more major authors, etc. May be repeated for credit.

480 Literature of the Pacific (3) II  Backus, Leib, Sinclair
Pacific Islands, Australia: narratives of voyagers, translations of native literature. fiction by Melville, Stevenson, London, Becke, Nordhoff, Hall.

482 The Narratives of Oral Tradition (3) II  Staff
Examination of folk narratives (prose types of folktale, ballad and related types of poetry, and epic); their relation to art-literature.

483, 484 Modern Dramatic Literature (3, 3) Yr.  Friedson, Maltby, Teevan, Topham
483: European, Ibsen, and Chekhov to Shaw, 1880-1920. 484: European and American, O’Casey to Miller, 1920 on.

487, 488 20th-Century British and American Poetry (3, 3) Yr.  Heine, Sinclair, Teevan, Thompson
487: Study of the classic moderns in 20th-century poetry, such as Yeats, Pound, Eliot, W. C. Williams. 488: Study of other 20th-century poets, such as Stevens, Auden, Dylan Thomas, Lowell, Roethke.

491–492 Senior Honors Tutorial (6-6) Yr.  Stempel, Stillians, Staff
Tutorials in English and American literature, criticism. Intensive individual reading, occasional group meetings. Consent of instructor or instructors required. Consult departmental honors adviser for course particulars.

493–494 Senior Honors Thesis (2-2) Yr.  Stempel, Stillians, Staff
Of the graduate courses that follow 660, 675, 735, 745, 757, 775, 780, and 785 may be repeated for credit.

610 Rhetoric: Theories and Applications (3) II  
Larson  
Major rhetorical theories from Aristotle to the present; uses of rhetorical perspectives in the analysis of non-fiction prose, the interpretation of imaginative literature, and in oral and written composing; current developments and issues in rhetorical theory.

630 Seminar in Research Methods (3) I, II  
Backus, Bouslog, Gray  
Kinds of research, problems of bibliography, fundamentals of thesis writing. Required of all candidates for M.A. degree in English.

637, 638 History of Literary Criticism (3, 3) Yr.  
Fujimura, Simson, Stempel  
Chief theories of literary criticism, with readings (in English). 637: from Plato to the late 19th century. 638: modern literary criticism.

640 Old English (3) II  
Lester, Wellcin  
Structure of the language, relation to present English; reading of selected prose and poetry. Pre: consent of instructor.

660 Major Authors (3) I, II  
Study of one or more authors. English or American.

675 Literary Genres and Problems (3) I, II  
Staff  
Study of one area of English or American literature.

735 Seminar in Comparative Literature (3) I, II  
Staff  
Introduction to comparative literature; relationship of English to other literatures; sources and influences. Pre: consent of instructor.

745 Seminar in English Language (3) II  
Staff  
Intensive study of one topic in English linguistics. Pre: consent of instructor.

757 Seminar in Shakespeare (3) I, II  
Staff  
Intensive study of Shakespeare. Pre: consent of instructor.

775 Seminar in English Literature (3) I, II  
Staff  
Study of authors or a period. Pre: consent of instructor.

780 Seminar in American Literature (3) I, II  
Staff  
Intensive study of one or two writers. Pre: consent of instructor.

785 Seminar in American Literature (3) I, II  
Staff  
Study of a problem or a period. Pre: consent of instructor.

799 Teaching Composition (3) II  
Larson  
Theory and observation of teaching of composition, principally at college level, but with some applications to composition in secondary school. Limited number of secondary school teachers of English admitted. Pre: consent of instructor.

791 Student Teaching of College Composition (3) I  
Larson  
Supervised experience in teaching composition at college level. Pre: 790 or equivalent.

799 Directed Research (arr.) I, II  
Staff  
Individual reading or research. Pre: consent of instructor.

800 Thesis Research (arr.) I, II  
Staff  
Pre: consent of instructor.

Journalism (Journ)

150 The Press and Society (3) I, II  
Nam  
Analysis and evaluation of American journalism as shaped by historical, legal, economic, social forces; comparison/contrast with the world press.

205 News Writing (3) I, II  
Nam, Wiley  
206 News Editing (3) I, II
News and photo editing, headline writing, publications makeup. Pre: 205.

216 Typography (3) I
Basic printing procedures and design; history of typography. Scott

255 Public Affairs Reporting (3) I, II
Legal, technical and professional problems in public affairs reporting. Pre: 205. Wiley, Staff

260 Mass Media (3) I
Mass communications as a result of technological, industrial organization; characteristics of mass media and consumer response to media. Scott

305 Advanced Reporting (4) I, II
Intensive training in reporting and writing in sensitive news areas for the advanced student; field work. Pre: 255. Wiley, Staff

306 Advanced Editing (4) I, II
Intensive training in selecting and editing news material for accuracy, adequacy, clarity and relevance. Pre: 255. Scott, Staff

316 Editing and Publishing (3) II
Illustration and typographical design; printing processes; newspaper and magazine management; editorial responsibility; laws of libel and copyright. Pre: 216. Scott

325 Writing Non-Fiction (3) II
Writing non-fiction articles for magazines and newspapers; preparing material for specific audience; marketing articles. Pre: consent of instructor. Wiley

350 Problems in Journalism (3) I, II
Professional problems of news media as public institutions. Pre: consent of instructor. Staff

385 Directed Work (3) I, II
Internship in media operations under professional and faculty supervision. Pre: consent of instructor. Scott, Wiley

English as a Second Language (ESL)

Associate Professors Higa, Lester, Plaister, Rodgers; Assistant Professors Alter, Arapoff, Blatchford, Collier, Jackson, Mason, Steinberg, Whitman, Wilson; Instructors Cramer, Day, Harrington, Johnson, Rickard; Associate Professor Crymes

English Language Institute (ELI)

Note: Initial placement in ELI courses is by examination only. A grade of P (Pass) is prerequisite to subsequent promotion or exemption. See "Special Instructional Programs" for further discussion of assignment to and exemption from ELI courses. Normal course sequencing and progression is as follows: 60, 70, 80; 61, 71, 181; 62, 72; 63, 73, 183.

60 Oral English for Foreign Students (0) I, II
Intensive drill to develop facility in speaking and understanding. Language laboratory work also required. Equals 4 credits.

61 English Structure for Foreign Students (0) I, II
Intensive drill on recognition and production of English grammatical signals. Equals 2 credits.

62 Reading Program for Foreign Students (0) I, II
Instruction and practice in developing improved reading comprehension and speed, and in effective use of textbooks and reference materials. Equals 3 credits.

63 Writing Program for Foreign Students (0) I, II
Instruction and practice in factual reporting and summarizing: effect of grammatical devices on meaning and organization. Equals 3 credits.
ENGLISH AS SECOND LANGUAGE

70 Intermediate Oral English for Foreign Students (0) I, II
Further practice in spoken fluency and accurate aural comprehension. Language laboratory work required. Equals 3 credits.

71 Intermediate English Structure for Foreign Students (0) I, II
Further drill on English grammatical patterns. Equals 1 credit.

72 Intermediate Reading Program for Foreign Students (0) I, II
Further work on reading comprehension and speed, techniques of skimming and rapid review. Equals 2 credits.

73 Intermediate Writing Program for Foreign Students (0) I, II
Instruction and practice in essay-type writing; gathering, classification, organization of facts. Equals 2 credits.

80 Advanced Oral English for Foreign Students (0) I, II
Emphasis on comprehension of unmodified streams of speech and extended oral discourse. Equals 1 credit.

181 Advanced English Structure (or Foreign Students (2) I, II
Emphasis on construction of complex spoken and written syntactical constructions.

183 Advanced Writing Program for Foreign Students (3) I, II
Practice in writing interpretative, critical, and evaluative essays.

English as a Second Language (ESL)

610 Teaching English as a Second Language (3) I, II
Analysis of methods of teaching English as a second language. Attention to implications for language teaching of recent and current research in language and language learning. Pre: Ling 320. For non-majors, consent of instructor.

613 Experimentation in Language Acquisition and Modification (3) I, II

625 Reading (3) I, II
A survey of research related to the reading process and the development of methodology in the teaching of reading. Particular attention given to psycholinguistic investigations of reading in a second language. Instructors: Mason, Lester, Plaister, Jackson, Rodgers.

630 (Pro) Seminar in Hawaiian English (3) I
Survey of the major historical, descriptive and pedagogical aspects of English in Hawaii, with emphasis on basic problems in such areas as pidgin and creole languages, linguistic change, and language variation. Instructor: Stan Tsuzaki (Linguistics). Pre: At least one course in general Linguistics or the structure of a particular language.

640 Contrastive Analysis and Linguistic Universals (3) I, II
A critical survey of the psychological and linguistic theories concerning linguistic universals and the procedures and purposes of contrastive analysis. Implications of these theories for language teaching methodology and materials. Instructors: Jackson, Whitman. Pre: Permission of the instructor.

650 Psycholinguistics in Second Language Learning (3) I, II
A critical survey of theories of language and language processes that relate to 2nd language acquisition. The relation of language to mind, behavior and culture is considered. Instructors: Higa, Rodgers, Steinberg.

660 Culture in 2nd Language Learning (3) I, II

670 Comparison of 1st and 2nd Language Acquisition (3) I, II
Survey of developmental, experimental and clinical studies of first language acquisition with reference to the ways in which 1st language acquisition can be said to parallel
second language acquisition, followed by laboratory controlled experiments in teaching and learning second languages. Instructors: Higa, Rodgers, Steinberg. Pre: ESL 650 or equivalent.

710 Materials Selection and Adaptation (3) I, II
Discussion of principles of materials selection and reasons for supplementation and adaptation; preparation of supplements to and adaptations of selected materials following, in the main, the assumptions already underlying those materials. Pre: ESL 610. Instructors: Jackson, Mason, Wilson.

711 New Materials Development (3) I, II
Individualized projects in designing, writing, trying out, and revising innovative materials for real situations; attention to implications of language and language learning theories with special emphasis on current work in linguistics, psycholinguistics, and sociolinguistics. Instructors: Crymes, Jackson, Mason, Plaister, Wilson, Whitman.

720 Second Language Testing (3) I, II
Measurement and evaluation of achievement and proficiency in second language learning. Pre: 610 or consent of instructor. Instructors: Blatchford, Jackson, Mason, Plaister.

730 Seminar in TESL (3) I, II

European Languages and Literature

Professors Aspinwall, Dauer, Fairbanks, Hadlich, Holton, Jackson, Knowlton, Lusseyran, Seymour; Associate Professors S. Baciu, Burns, Gasinski, Klimenko, M. Montes, Niedzielski; Assistant Professors Bacalski, M. Baciu, Elliott, Fröhlich, Gray, Heien, Ignatius, Lerond, Miller, Y. Montes, Moore, Roldán, Scherer, Schweizer, Tyler, Varela-Ibarra; Instructors Cannaday, Durbin, Hull, Fassler, Rorke, Stuebe, Young, Zbinden; Visiting Assoc. Professor Temple; Asst. Professors Kleinbergs, Kratky, Tucker

General (EL)

Literature Courses in English

Note: These courses, given in English, do not require knowledge of a foreign language. They do not count toward requirements for any major in this department.

111 Latin and Greek in Current Use (2) I or II
To broaden English vocabulary through study of Latin and Greek elements in English, with emphasis on words in current literary and scientific use.

112 Greek and Roman Mythology (3) I or II
The principal myths of Greek and Roman literature.

303 Greek Literature (3) I
Major writers of ancient Greece in English translation.

304 Roman Literature (3) II
Major writers of ancient Rome in English translation.

356 Latin American Literature (3) II
Reading and discussion of classic works of Latin American literature in English. Purpose is to provide insight into Latin American culture through its literature.

371 The French in the Pacific (3) I or II
French presence in the Pacific, especially Tahiti, in relation to French literature, art, culture, and civilization with particular attention to the works of Bougainville, Diderot, Voltaire, Pierre Oti and Paul Gauguin.
EUROPEAN LANGUAGES—DUTCH

373 European Poetry in the Middle Ages (3) I or II Scherer
   Heroic poetry of medieval Europe: the Nibelungenlied, the Chanson de Roland,
   the Cid, and Scandinavian sagas; magical incantations; war chants; vassal bond lyrics and
   love lyrics of the troubadours and Minnesingers of the Hohenstaufen Age; courtly epics,
   including Parzival and Tristan.

375 French Literature Since 1800 (2) I or II Aspinwall, Jackson
   Rapid reading in translation; lectures, discussions, and reports.

380 The Classical German Poet (3) I or II Scherer
   Readings in translation from dramatic works of Lessing, Goethe, and Schiller, and
   lectures on philosophic and aesthetic viewpoints of leading writers of the German
   Enlightenment, Storm and Stress, and Classical period.

381 The Modern German Poet (3) II Scherer
   Perspective of reality and poetic representations in the 20th-century world, including
   influences from the Orient and Eastern philosophy. Open to lower division students.

400 Contemporary Russian Literature (3) II Klimenko
   Reading and discussion of short stories, plays, and poetry by Pasternak, Evtushenko,
   Solzhenitsyn and others.

402 19th-Century Russian Novel (3) II Klimenko
   Survey of important novelists in English translation, particularly Gogol, Gon·
   charov, Turgenev, Saltykov, Dostoevsky, Tolstoi.

431–432 Contemporary Soviet Russia (3–3) Yr. Klimenko
   Reading and discussion of contemporary Soviet prose, poetry and plays in English
   translation.

LANGUAGE COURSES

199 Directed Language Study (arr.) I, II
   Directed study in European languages not taught on regular basis (e.g., Danish,
   Romanian, etc.), depending on demand and staff. Pre: permission of department chair·
   man.

399 Directed Reading (arr.) I, II
   Individual projects in various fields. Limited to senior majors with 2.7 grade-point
   ratio, or 3.0 grade-point in the department major. Pre: permission of department chair·
   man.

610 Contrastive Analysis of Spanish and French with English (3) I or II
   Structures of Spanish and French contrasted with English on phonemic, morpho·
   logical, and syntactic levels. Elucidation of nature and cause of learning problems of
   French or Spanish students. Pre: Span 431 or Fr 306. English 320 or 401 recommended.

621 Comparative Romance Linguistics (3) I
   Comparative study of linguistic development of Romance Languages from Latin.
   Pre: Ling 320 or the equivalent. Reading knowledge of at least one Romance language
   and of Latin recommended. (Alt. yrs.)

630 Seminar in Research Methods (1) I
   (1) French, (2) Spanish, (3) German, (4) Classics. Study of source materials with
   emphasis upon basic research tools and methods.

699 Directed Research (arr.) I, II
   Pre: consent of chairman.

Dutch (Du)

311–312 Reading, Comprehension, and Speaking Skills (3–3) Yr.
   Introduction to modern Dutch designed for students who wish to study a second
   foreign language. Reading, grammar, with some conversation and laboratory drill. Can·
   not be used to fulfill a language requirement.
French (Fr)

Note: All courses are conducted in French.

101-102 Elementary French (4-4) Yr.
   Conversation, laboratory drill, grammar, reading.

103 Intensive Elementary French (8) I, II
   Class meets 2 hours daily, Monday through Friday. In one semester the contents of
   French 101-102 will be presented.

201-202 Intermediate French (3-3) Yr.
   Reading, conversation, laboratory drill, composition. Pre: 102 or equivalent for
   201; 201 or 207 for 202.

204 Intermediate: Scientific Readings (3) II
   Accurate reading over wide range of subjects. Practice in translation from French
   to English. Laboratory practice in listening to professional speeches in French. B.S.
   candidates only or permission of department chairman. Pre: 201.

207-208 Intermediate French: Culture and Conversation (3-3) Yr.
   Reading and discussion of varied material dealing with French culture and daily
   life. Various realia and audio-visual aids will be used. May be taken in lieu of 201-
   202. Pre: 102 or equivalent for 207; 207 or 201 for 208.

210 Accelerated Intermediate French (6) I, II
   Course contents of 201-202 covered in one semester. Class meets daily for one hour.
   Monday through Saturday. with daily laboratory practice. Pre: 102 or equivalent.

301 Phonetics and Pronunciation Practice (3) I, II
   Analysis of French phonological system. Practice and laboratory drill designed to
   improve the student's pronunciation. Pre: 101 or two years of high school French.

306 Structure of French (3) II
   Study of structure of contemporary French as analyzed by descriptive linguists. Pre:
   202 or equivalent.

311 Advanced Conversation (3) I, II
   Systematic practice designed to develop student's control of spoken French. Attention
   to further development of vocabulary which will permit accurate and mature expres­
   sion on variety of topics. Pre: 202 or equivalent.

312 Advanced Composition (3) I, II
   Emphasis on strengthening facility with language through further training in

331-332 Survey of French Literature (3-3)
   Survey of French literature covering major authors and movements. Pre: 311-312
   with which either 331 or 332 may be taken concurrently.

361 French Civilization (3) I
   Survey of culture and institutions of modern France. Pre: 202. May be taken
   concurrently with 311 or 312.

407 Introduction to Medieval Language and Civilization (3) I
   Introduction to medieval language through contrastive analysis with modern
   French. Selected readings on medieval history and civilization. Pre: either 311-312 or
   306.

408 Masterpieces of Medieval Literature (3) II
   Samplings taken from each genre: epic, novel, verse and prose tale, lyric poetry,
   chronicle, theatre, didactic literature. Elementary readings in original text with edition
   giving modern French translations. Pre: 407 or equivalent.

410 Masterpieces of 16th-Century Literature (3) II
   Samplings taken from all major writers of the period. Readings in original text
   with edition giving modern French equivalents for difficult words. Pre: 331 or 332.

411-412 Masterpieces of 17th-Century Literature (3-3) Yr.
   Ist sem.: Drama. Study of the principal works of major dramatists of the 17th
EUROPEAN LANGUAGES—FRENCH

century: Corneille, Molière, Racine. 2nd sem.: Non-dramatic literature. Study of the principal movements and major authors of non-dramatic prose and poetry of the 17th century. Pre: 331 or 332.

413 Masterpieces of 18th-Century Literature (3) II Jackson, Lusseyran
Pre: 331 or 332.

415–416 Masterpieces of 19th-Century Literature (3-3) Aspinwall, Jackson
415: Poetry; 416: Prose. Pre: 331 or 332.

420 20th-Century French Novel (3) I or II
Study of major French novelists of 20th century and their works. Gide, Proust, Mauriac, Sartre, Camus, etc. Pre: 331–332.

421 20th-Century French Theatre (3) I or II

422 20th-Century French Poetry (3) I or II
Explication and discussion of poems by such poets as Valéry, Claudel, Apollinaire, Supervielle, Saint-John Perse, Breton, Desnos, Eluard, Aragon, Char, Reverdy. The goal is appreciation. Desirable preparation: 331–332.

491 Seminar in French Literature (3) I, II
Study of authors or a period. Pre: senior standing, honors, or permission of division chairman. May be repeated for credit.

591 Seminar in Contemporary French Literature (3) I or II Aspinwall
Study of authors and movements of modern period.

592 Seminar in French Poetry (3) I or II Aspinwall
Technical study of representative poems from Renaissance to present.

599 French Renaissance (3) I or II Jackson
Poetry, theatre, prose. Emphasis on Montaigne and Rabelais. Lectures, discussions, reports.

610 Masterpieces of the Baroque Age (3) II

651 Philosophic Currents in the 18th Century (3) I or II Lusseyran
Study of philosophic movements and their impact on the social, political and literary life of the period and the modern era.

661 Stylistics (3) I Lerond
Designed to give mastery of structure and phrasing. Translation into French, discussion, composition.

666 Seminar in History of French Literary Criticism (2) I or II Jackson
Study of important literary criticism in France from Renaissance to present and its influence upon French literary history.

671 History of the Language (3) I Niedzielski

672 Medieval Literature (3) II Niedzielski
Early Medieval literature: Genesis and evolution of literary genres in Old French.

681 The Novel in France (3) I or II Jackson
Historical development of genre and study of major novels which have influenced movements or established techniques. Pre: 6 credits at 400 level or equivalent. (Alternates with 690.)

685 Seminar in Realism in French Literature (3) I or II Jackson
Study of the major authors and works relevant to the development of the realistic school in the novel and the theatre.

690 The Theatre in France (3) I or II Lusseyran
Historical development of genre and study of major dramatists who have influenced movements or established techniques. Pre: 6 credits at 400 level or equivalent.

699 Directed Research (arr.) I, II
Pre: consent of chairman.
### EUROPEAN LANGUAGES—GERMAN

**735 Seminar in French Literature (3) I or II**  
Study of authors or a period. Pre: consent of chairman of graduate field.

**800 Thesis Research (6)**  
Jackson

**German (Ger)**

*Note: All courses are conducted in German.*

**101-102 Elementary German (4-4) Yr.**  
Conversation, laboratory drill, grammar, reading.

**197 German Workshop I (2) I, II**  
Semi-independent individual or small group study and practice of any aspect of German on the first-year level. May be taken concurrently with or independently of other German courses. May be repeated for credit. Cannot be used toward meeting the foreign language requirement. (See also 297.)

**201-202 Intermediate German (3-3) Yr.**  
Reading, conversation, laboratory drill, composition. Pre: 102 or equivalent for 201; 201 or 207 for 202.

**203 German Phonetics (3) I or II**  
Exercises in German pronunciation, reading, speaking; laboratory exercises. Pre: 102. May be taken concurrently with 201, 202, 207, or 208.

**207-208 Perspectives of Contemporary Germany (3-3) Yr.**  
Discussions, in the language, of the modern German scene. Emphasis on developing practical communication skills utilizing records, tapes, videotapes, films, film strips, slides, newspapers, magazines, etc. Pre: 102 or equivalent for 207; 201 or 207 for 208. Completion of 208 satisfies the B.A. language requirement.

**211-212 Intermediate: Scientific German (3-3) Yr.**  
Emphasis on developing rapid reading skill for comprehension. Practice in listening to papers, lectures, etc., in scientific fields. Pre: 102 or equivalent for 211; 211 for 212. B.S. candidates only; B.A. science majors by permission of chairman.

**297 German Workshop II (2) I, II**  
Semi-independent individual or small group study and practice of any aspect of German on the second-year level. May be taken concurrently with or independently of other German courses. May be repeated for credit. Cannot be used toward meeting the foreign language requirement. (See also 197) Pre: 102 or equivalent.

**305-306 Composition and Conversation (3-3) Yr.**  
Frohlich, Moore, Passler  
Designed to develop proficiency in German sentence structure and phrasing; conversation; laboratory drill; exact composition on literary subjects. Pre: 202 or equivalent. Pre: for 306: 305 or permission of chairman.

**311-312 Introduction to German Literature (3-3) Yr.**  
Miller, Scherer  
Representative reading and discussion of cultural periods in chronological order; laboratory exercises. Pre: 306. For majors, concurrent registration with 305-306 is permitted.

**315 Structure of the German Language (3) I**  
Moore, Seymour  
Phonological, morphological, syntactic structure of contemporary German, as analyzed by descriptive linguists. Pre: 202 or equivalent.

**318 The 19th-Century (3) II**  
Frohlich  
Short prose form of the 19th century as a basis for techniques in literary analysis. Pre: 202 or equivalent; 315 recommended.

**409 Enlightenment—Sturm Und Drang (3) I or II**  
Schweizer  
Pre: 306 or equivalent; 318 recommended.

**410 Classicism (3) I or II**  
Schweizer  
Classical writings of Goethe and Schiller with some reference to other writers. Pre: 306 or equivalent; 318 recommended.

**411 Romanticism (3) I or II**  
Dauer, Schweizer  
Pre: 306 or equivalent; 318 recommended.
413-414 German Literature From 1880 to the Present (3-3) Yr. Frohlich, Scherer
413: Origins of German Naturalism and transition into Neo-Romanticism as exemplified in works of Gerhart Hauptmann and others. Pre: 306 or equivalent; 318 recommended. 414: Survey of simultaneous currents in German literature since 1918, with emphasis on lasting trends. Pre: 413 or equivalent.

432 Stylistics (3) I or II Moore
Analysis of prose selections through identification of their structural and semantic elements. Written and oral styles with attention to specific structural elements and their semantic effect. Pre: 306 and 315.

451 Introduction to History of German Language (3) I Seymour
Survey of important developments of the German language from the earliest beginnings to the present. Pre: 306 or equivalent.

452 Introduction to Middle High German (3) II Seymour
Introduction to the phonology and morphology of Middle High German with selected readings. Pre: 413 or equivalent.

699-710 Middle High German (3-3) Yr. Seymour
1st sem: Study of grammar, syntax, phonetics, rhythm, meter (alliteration), reading. 2nd sem: Middle High German literature. Reading of Nibelungenlied, Parzifal, Minnesang and other poetry and prosework of the Middle Ages.

615 History of the German Language (3) I Seymour
Fundamentals of linguistics; development of the language from Middle High German to the present.

616 History of the German Language (3) II Seymour
Development of the language from the beginnings through the Old High German period. Pre: 615 or consent of instructor.

651 Seminar: The German Novelle (3) I or II Dauer
Discussion of representative works of this genre from end of 18th century up to 1955.

652 Seminar: German Drama (3) I or II Dauer, Schweizer
Development of dramatic theory and literature exemplified by typical works of literary periods.

653 Seminar: Lyric Poetry (3) I or II Scherer
Interpretation and comparative study of works of representative German poets.

654 Seminar: The German Novel (3) I or II Scherer
Reading and discussion of novels representative of a period, movement, or author.

655 Faust I (3) I or II Schweizer
Short history of Faust theme; Goethe's image of the "small world" or lower plane of human striving. (Alt. yrs.)

656 Faust II (3) I or II
Symbolic "greater world" or higher plane of human aspiration.

699 Directed Research (arr.) I, II Seymour
Pre: consent of chairman.

735 Seminar in German Literature (3) I, II
Study of authors, a genre, or a period. Pre: consent of chairman of graduate field.

800 Thesis Research (6) Seymour

Greek (Greek)

101-102 Elementary Greek (3-3) Yr.
Introduction to literary Greek, with readings.

201-202 Intermediate Greek (3-3) Yr.
Selected readings in Greek literature; introduction to Christian origins, readings in New Testament. Pre: 102 or the equivalent.
409 Plato (3) I or II
Selections from the Apology, Crito, Phaedo. Pre: 202 or permission. (Alt. yrs.)

410 Historians (3) I or II
Selections from Herodotus, Thucydides. Pre: 202. (Alt. yrs.)

421 Homer (3) I or II
Selections from Iliad and Odyssey. Pre: 202 or permission.

422 Lyric Poetry (3) I or II
Selections from lyric poets. Pre: 202 or permission. (Alt. yrs.)

431 Introduction to Drama (3) I
Selected readings in Greek dramatists. Pre: 202 or permission. (Alt. yrs.)

432 Drama (3) II
Reading of entire dramas by Aeschylus, Sophocles, Euripides. Pre: 431 or 421 or permission. (Alt. yrs.)

441 Pre-Socratics (3) I or II
Study of the fragments from the early Greek philosophers. (Alt. yrs.) Pre: permission.

442 Aristotle (3) I or II
Selected readings in Aristotle. (Alt. yrs.) Pre: permission.

490 Seminar (3) I, II
Investigation in depth of a specific author or phase in field of Hellenic studies with individual research by participants. Pre: permission. May be repeated for credit.

651 Seminar in Greek Literature (3) I, II
Study of an author, genre, period, or work of Greek literature. May be repeated for credit.

699 Directed Research (arr.) I, II
Pre: consent of chairman.

800 Thesis Research (6)

Italian (It)

311-312 Comprehension, Speaking and Reading Skills (3-3) Yr.
Introduction to modern Italian designed for students who wish to study a second foreign language. Reading, grammar, conversation, laboratory drill. Cannot be used to fulfill a language requirement. Pre: equivalent of Latin, Spanish, French or Portuguese at the 102 level.

361-362 Intermediate Italian (3-3) Yr.
Continuation of 311-312. Reading, conversation, grammar, laboratory practice. Cannot be used to fulfill a language requirement. Pre: 312 or equivalent.

Latin (Latin)

101-102 Elementary Latin (3-3) Yr.
Vocabulary and grammar, with reading of simple Latin.

201-202 Intermediate Latin (3-3) Yr.
Review of grammar, reading of selections from prose and poetry. Pre: 102 or the equivalent.

301-302 Structure of Latin (3-3) Yr.
Intensive study of structural idiomatic and stylistic aspects of Latin. Pre: 202 or permission.

401 Historians (3) I or II
Reading of Livy, Sallust, Tacitus and other Roman historians. (Alt. yrs.) Pre: 202 or permission.
EUROPEAN LANGUAGES—PORTUGUESE, RUSSIAN

409 Lyric Poets (3) I or II
Selections from foremost Latin lyricists, Horace, Catullus, Propertius, Tibullus.
Pre: 202 or permission. (Alternates with 401.)

420 Vergil (3) I or II
Pre: 202 or permission. (Alt. yrs.)

427 Satire (3) I or II
Selections from Horace, Juvenal, Martial. Pre: 202 or permission. (Alt. yrs.)

428 Drama (3) I or II
Selected dramas of Plautus and Terence. Pre: 202 or permission. (Alternates with 427.)

433 Roman Philosophy (3) I or II
Pre: permission. (Alt. yrs.)

434 Lucretius (3) I or II
De Rerum Natura. Pre: permission. (Alt. yrs.)

440 Oratory (3) I or II
Pre: permission. (Alt. yrs.)

490 Seminar (3) I, II
Investigation in depth of a specific author or phase in field of Latin studies with individual research by participants. Pre: permission. May be repeated for credit.

601 Advanced Latin Composition (3) I, II
Study of grammar, syntax and stylistics.

610 Literature of the Republic (3) I, II
Roman literature before Augustus.

611 Augustan Literature (3) I, II
Study of Roman literature in Livy, Vergil, Horace, Ovid, etc.

612 Literature of the Empire (3) I, II
Readings in Lucan, Juvenal, Martial, Nepos, Suetonius, etc.

621 Seminar in Roman Literature (3) I, II
Study of an author, period, genre, or work of Roman literature. May be repeated for credit.

699 Directed Research (arr.) I, II
Pre: consent of chairman.

800 Thesis Research (6)

Portuguese (Port)

101-102 Elementary Portuguese (4-4) Yr.
Reading, conversation, laboratory drill, grammar.

201-202 Intermediate Portuguese (3-3) Yr.
Reading, conversation, writing, laboratory drill. Pre: 102 or the equivalent.

960-961 Introduction to Luso-Brazilian Literature (8-3) Yr.
Brief period of intensive practice in reading Portuguese for students with knowledge of Spanish, followed by discussion and analysis of principal works of Portuguese and Brazilian literature. Pre: 202 or Spanish 304.

Russian (Rus)

For information on the Russian Area Studies Certificate see p. 72.

Note: All courses conducted in Russian except 161-162.

101-102 Elementary Russian (4-4) Yr.
Conversation, lab drill, reading, writing, grammar.
EUROPEAN LANGUAGES—RUSSIAN

161 Russian for Reading Proficiency (3) I
Heien
Cursory study of main points of Russian grammar to prepare students to read Russian in their own fields of study. Pre: primarily for graduate students, but open to undergraduates with consent of chairman of department. Cannot be used to fulfill a language requirement.

162 Russian for Reading Proficiency (3) II
Heien
Reading in selected texts from those fields in which the students in the class are enrolled. Cannot be used to fulfill a language requirement. Pre: 161 or equivalent.

201-202 Intermediate Russian (3-3) Yr.
Heien
Reading, conversation, laboratory drill, grammar, composition. Pre: 102 or equivalent.

207-208 Intermediate Scientific Russian (3-3) Yr.
Heien, Hull
Rapid reading of scientific material. Translation and grammar review. May be taken by majors for credit concurrently with 201-202, but not instead of it. May not be counted toward major. Recommended to students completing language requirement and to graduates. Pre: 102.

209 Russian Phonetics (3)
Gasinski, Heien
Analysis of the Russian phonological system along with practice in speaking and reading to improve the student's oral proficiency. Pre: 102 or equivalent. May be taken concurrently with 201.

303-304 Advanced Oral Practice (3-3) Yr.
Hull
Systematic practice designed to develop students' control of spoken Russian through vocabulary building and stress on fluency of expression in a variety of subjects reinforced with laboratory drill. Pre: 202 or equivalent.

306 Structure and Composition (3) II
Heien
Advanced intensive studying of morphological and syntactic structure of contemporary Russian as analyzed by descriptive linguists along with composition and conversation. Pre: 202 or equivalent. 209 strongly recommended.

311-312 Introduction to Russian Literature and Civilization (3-3) Yr.
Hull
Survey of Russian literature covering major authors and discussion of historical background in order to provide insight into Russian culture. Pre: 304 or 306.

404 Literature of the 18th Century (3) II
Gasinski
Representative reading and discussion of more important writers before Pushkin. Pre: 306 or consent of instructor. (Alternates with 420; offered 1970-71.)

411-412 Literature of the 19th Century (3-3) Yr.
Klimenko
Reading and discussion of representative writers beginning with Pushkin. Pre: 304 or consent of instructor. (Alternates with 413-414.)

413-414 Literature of the 20th Century (3-3) Yr.
Klimenko
Representative writers before the revolution and contemporary Soviet writers. Pre: 304 or consent of instructor. (Alternates with 411-412.)

415 Russian Poetry (3) II
Klimenko
Reading and discussion of classical and contemporary Russian poets. Pre: 304 or consent of instructor. (Alternates with 417.)

417 Russian Drama (3) I
Klimenko
Representative plays of 18th, 19th, and 20th centuries. Pre: 304. (Alternates with 415.)

418 Advanced Composition and Stylistics (3) I
Hull, Klimenko
Study and analysis of representative prose selections which exhibit variations in style. Practice in written composition. Translation into Russian. Pre: 304 or consent of instructor.

420 History of Russian Language & Earl Russian Lit. (2) II
Fairbanks, Gasinski
Study of development of Russian language. Representative readings in Russian literature through 17th century. Pre: 304. (Alternates with 404.)
EUROPEAN LANGUAGES—SPANISH

495 Seminar in Russian Literature (3) I, II
Important literary movements and writers. Pre: consent of instructor. May be repeated for credit.

699 Directed Reading (arr.) I, II
Pre: consent of chairman.

Spanish (Span)

Note: All courses conducted in Spanish except 106 and 405.

101-102 Elementary Spanish (4-4) Yr.
Beginning course, primarily emphasizing oral practice. Laboratory drill.

106 Spanish Translation for Non-Majors (0) I
Practice in reading and translation of varied material, according to student's interests. Pre: 102 or consent of instructor.

110 Accelerated Elementary Spanish (8) I, II
Meets 2 hours daily, Monday through Friday, with daily laboratory drill. In one semester, work of 101-102 covered.

197 Spanish Workshop I (2) I, II
Semi-independent individual or small group study and practice of any aspect of Spanish on the first-year level. May be taken concurrently with or independently of other Spanish courses. May be repeated for credit. Cannot be used toward meeting the foreign language requirement. (See also 297.)

201-202 Intermediate Spanish (3-3) Yr.
Continuation of oral practice and grammar study, with increasing emphasis on reading and written composition. Laboratory drill. Pre: 102 or equivalent for 201; 201 or 207 for 202.

207-208 Conversation and Contemporary Hispanic Culture (3-3) Yr.
Continuation of oral practice with emphasis on developing a practical communication skill. Reading and discussion of aspects of contemporary Hispanic civilization. Completion of 208 satisfies the B.A. language requirement. Pre: 102 or equivalent for 207; 201 or 207 for 208.

210 Accelerated Intermediate Spanish (6) I, II
Meets 1 hour daily, Monday through Saturday, with daily laboratory drill. In one semester, work of 201-202 covered.

297 Spanish Workshop II (2) I, II
Semi-independent individual or small group study and practice of any aspect of Spanish on the second-year level. May be taken concurrently with or independently of other Spanish courses. May be repeated for credit. Cannot be used toward meeting the foreign language requirement. (See also 197.)

303-304 Advanced Grammar and Composition (3-3) Yr.
More detailed study of problem areas of Spanish grammar. Cultivation of accuracy and elegance in written expression. Pre: 202 or equivalent.

390 Phonetics and Pronunciation Practice (2) I, II
Analysis of Spanish phonological system, in contrast with English. Practice designed to perfect student's own pronunciation; laboratory drill. Pre: 202 or equivalent.

351-352 Spanish and Spanish-American Civilization (3-3) Yr.
S. Baciu, M. Montes
Survey of culture and institutions of modern Spain and Spanish America, with some attention to their historical backgrounds. Pre: 202 or equivalent.

365-366 Masterworks of Spanish and Spanish American Literature (4-4) Yr.
Reading and discussion in Spanish of most important works of literature of Spain and Spanish America, from beginning to present. Pre: 202 or equivalent.

403-404 Advanced Oral Practice (3-3) Yr.
Systematic practice designed to continue on advanced-level student's control of spoken Spanish. Attention to further development of vocabulary which will permit ac-
curate and mature expression on variety of topics. Laboratory drill. Pre: 304 or consent of instructor.

405 Spanish-English Translation (3) I
Study of factors involved in art of translation. Practice in translating literary and other material from Spanish to English and the reverse. Pre: 304 or consent of instructor.

431 The Structure of Spanish (3) I or II
Hadlich
Phonological, morphological, and syntactic structure of contemporary Spanish, as analyzed by descriptive linguists. Pre: Ling 102 or equivalent and Span 202 or consent of instructor.

441 History of the Spanish Language (3) I or II
Hadlich, Knowlton
Pre: 202 or equivalent; one semester of college Latin or equivalent.

444 Spanish Dialectology (3) I or II
Hadlich, Holton, Knowlton
Study of principal regional and social variants from cultured standard Castiliano to be encountered in language of Iberian Peninsula, America, Philippines. Pre: 431 or consent of instructor.

465-466 Modern and Contemporary Spanish Literature (3-3) Yr. M. Montes, Y. Montes
Reading and discussion of modern and 20th-century peninsular authors. Studies of recent trends. Pre: 365 or consent of instructor.

470 Social & Political Ideas of 20th-Century Latin America (3) II
S. Baciu
National and international significance of principal currents of Latin American thought as expressed in fundamental works of national authors. Pre: 351-352 or the equivalent.

485-486 Spanish-American Prose (3-3) Yr.
Reading and discussion of important plays, short stories, novels and essays.

490 Hispano-Philippine Literature (2) II
Knowlton
Study of important writers in Spanish from the Philippine Islands. (Alt. yrs.; not offered 1970-71.) Pre: 202 or equivalent.

625-626 Stylistics and Advanced Composition (3-3) Yr.
M. Montes, Roldan
Study and analysis of representative prose selections which exhibit variations in style: colloquial, informal, formal expository, poetic, epistolary and the like. Practice in written composition in various styles analyzed.

658 Seminar in Spanish Linguistics (3) I or II
Hadlich, Knowlton
Study of a problem or problems in Spanish linguistics. Pre: consent of instructor. (May be repeated.)

665 Spanish Literature Prior to the Golden Age (3) I
Knowlton, Y. Montes, Roldan
Major works and trends of periods prior to Golden Age. The epic, poetry, and prose. (Alt. yrs.; offered 1970-71.)

670 Spanish Literature of the Golden Age (3) II
Bacalski, Y. Montes
Representative readings in poetry, drama and prose of the 16th and 17th centuries. (Alt. yrs.; offered 1970-71.)

674 Spanish-American Lyric Poetry (3) II
S. Baciu

681-682 Spanish-American Novel (3-3) Yr.
Development of the novel in Spanish America with emphasis on the 20th century. Pre: consent of instructor.

697 Seminar in Hispanic Literature (3) I, II
S. Baciu, M. Montes, Y. Montes
Study of a period, author, genre or region. Pre: consent of instructor. (May be repeated.)

699 Directed Research (arr.) I, II
Pre: consent of chairman.

800 Thesis Research
Knowlton
GEOGRAPHY

Geography (Geog)

Professors Bowers, J.H. Chang, Fryer, Fuchs, Kornhauser, Manchester, Pitts, Wiens; Associate Professors Armstrong, Bach, S.D. Chang, Clarke, Pirie, Street; Assistant Professors Chapman, Earickson, Fuller, Murton, Schwind, Sommarstrom; Lecturer Piianaia

A 100 level course, or consent of the instructor, is prerequisite to all courses numbered over 299.

INTRODUCTORY COURSES

101 Elements of Physical Geography (3) I, II (2L, 1 Lb) Street
Survey of man's natural environment; distribution and interrelationships of climates, vegetation, soils, landforms. Laboratory problems in map interpretation and environmental analysis.

102 World Regional Geography (5) I, II Bowers, Fuller, Manchester
Geography of world's major cultural regions; emphasis on geographic aspects of contemporary economic, social, political conditions.

151 Geography and Contemporary Society (3) I, II Sommarstrom
Elements of economic geography and resource management, population and urban geography; application to current problems of developed and underdeveloped worlds.

SYSTEMATIC PHYSICAL GEOGRAPHY

300 Introduction to Climatology (3) I J.H. Chang

310 Physical Geography (3) II Street

314 Geography of the Tropics (3) I Murton
Analysis of physical environment and resource potential of tropics; problems of human use and occupancy. (Not offered 1970-71.)

400 Advanced Climatology (3) II J.H. Chang
Discussion of general circulation. Climatic characteristics of each continent. Emphasis on genesis and dynamism of climate. Regional climatic problems. Pre: 300 or equivalent.

405 Water Resources Management (3) II The hydrologic cycle including precipitation, evaporation, transpiration, infiltration, ground water and runoff, methods of collection and analysis of hydrologic data and their use in management and development of the resource system. Pre: 101 or consent of instructor.

406 Applied Climatology (3) I Bach
Introduction to forest, topo-, bio- and air pollution climatology. Emphasis on energy budget approach. Literature, instrumentation, methods of analysis. Pre: 300 or Geosc 101-102 or consent of instructor.

407 Air Pollution Meteorology-Climatology I (3) I Bach
Introduction to general air pollution meteorology and climatology. Literature, agencies, instrumentation. Statistical and graphical methods of analyses. Pre: 300 or Geosc 101-102 or consent of instructor.

408 Air Pollution Meteorology-Climatology II (3) II Bach
Advanced theory and application: diffusion computations, urban diffusion experiments, tracer studies and pollution forecasting, air quality cycles, pollution incidence and surveys, industrial plant site selection, city climate and air pollution. Application to environmental planning. Pre: 407 or consent of instructor.
415 Medical Geography (3) I
Armstrong
Geographic aspects of selected health and disease topics and interrelationships with
elements of physical, biological, cultural environment. Geography of communities
and their habitats as related to health. Emphasis upon theoretical approaches to prob-
lems and research. Pre: 380 or equivalent. Biol 120 or Zool 101 or equivalent, or con-
sent of instructor.

600 Seminar in Climatology (3) II
J.H. Chang
Methods of determining energy budget and water balance and their applications
in agriculture, hydrology, climatic classifications. Theory of climatic changes. Bibliog-
raphy of climatological literature. Pre: 300 or equivalent.

SYSTEMATIC HUMAN GEOGRAPHY

326 Conservation and Resource Management (3) I
Sommarstrom
Man's interaction with the environment. Changes in the concept of conservation.
Ecological, philosophical and political aspects of present environmental dilemmas. Con-
temporary U.S. problems and international issues.

328 Cultural Geography (3) I
Murton
Concepts and methods of cultural geography. Themes of culture area, cultural
ecology, cultural landscape, and culture history. Emphasis upon the theme of cultural
ecology.

330 Population Geography (3) I
Chapman
Spatial view of human populations: distribution, structure and internal dynamics.
Emphasis upon approaches to research and the development of a methodology.

335 Political Geography (3) I
Bowers
Geographic background of international politics and national power. Case studies
of problem areas and boundary problems.

339 Geography of Exploration (3) II
Manchester
Exploration, discovery and development of world map from classical times to pres-
ent. Emphasis on Asia and Pacific. Pre: junior standing and an introductory course in
graphy.

351 Elements of Regional Science (3) I
Earickson
Spatial organization of economic activities. Concepts of location, interaction and
economic change. Basic methods of regional and interregional analysis. Application to
contemporary development problems. Pre: 151 or Econ 120 or consent of instructor.

420 Location Theory and Regional Analysis (3) I
Schwind
Location theories concerned with agricultural, manufacturing and tertiary activ-
ities and with urban systems. Basic methods of locational analysis. Paths towards appli-
cation in regional economic planning. Identical to Econ 490. Pre: 151 or Econ 300-301
or consent of instructor.

421 Urban Geography (3) I
Schwind
Origins, functions, and commercial and residential activity patterns of modern
cities and metropolitan regions. Location and interaction of cities in urban systems.
Problems of urban growth and pathology. Pre: 151 or consent of instructor.

425 Spatial Analysis of Social Behavior (3) I
Earickson
Behavioral aspects of spatial relations, movement and information flow. The struc-
ture of mental maps; group perception of space; measurement and utility of qualitative
environmental variables in spatial investigations. Application to urban structure, human
interaction, and urban planning. Pre: upper division standing in social sciences. Geog
380 or equivalent background in quantitative methods or consent of instructor.

611 Information Systems and Planning (3) II
Earickson
Systems analysis approach to public activity problems; problem identification, in-
formation sources, hypothesis testing, predictive and prescriptive models, and evaluation
of results. Investigation of public issues in Hawaii and elsewhere as related to health,
social, and political prerogatives. Geographic investigation of differences in planning
and information systems. Identical to PH 611. Pre: consent of instructor.
GEOGRAPHY

612  Ecological Concepts and Planning (3)  II  Armstrong
Concepts of human ecology as bases for environmental management planning with emphasis on comprehensive health planning. Identical to PH 612. Pre: consent of instructor.

620  Regional Economic Analysis (3)  I or II
Application to problems of regional economics of input-output analysis, linear programming, econometric analysis. Problems include optimal location of economic functions, population and migration, regional cycle and multiplier analysis. Identical to Econ 690. Pre: 420 or Econ 310, 492 or equivalent.

AREA COURSES

Each of the following courses covers, for the region concerned, the physical environment and resource base; evolution and present patterns of settlement, land utilization and economic activity; geographic aspects of population pressure, resource development and international relations.

340  Geography of the United States and Canada (3)  I  Kornhauser
Emphasis on evolution of present patterns of settlement and economic activity of U.S.

345  Geography of the Soviet Union (3)  II  Fuchs

For information on the Russian Area Studies Certificate, see p. 72.

350  Geography of Asia (3)  I  S.D. Chang
Introduction to geographic analysis of East Asia, Southeast Asia, South Asia: physical setting, resource endowments, patterns of occupancy, problems of economic transformation. Not open to those who have taken 352, 355, or 356.

352  Geography of Japan (3)  I  Manchester
Regional synthesis of physical and cultural features which characterize economic, social, political geography of Japan. Emphasis on origins of these patterns.

353  Geography of China (3)  II  Wiens
Regional geographic exposition of historical, ethnic, political, economic character of China. Analysis of physical and resource base for agriculture and industry.

355  Geography of South Asia (3)  II  Bowers
Geographic factors in history, politics, economics of the area.

356  Geography of Southeast Asia (3)  II  Fryer
Southeast Asia in world economy. Human and physical resources basis and returns achieved by various methods of land utilization. National economies of continental and insular Southeast Asia, problems and prospects of modernization.

361  Geography of Australia and New Zealand (2)  I  Fryer
Australia and New Zealand in the post-war world. Physical environment and rural industries. Demographic movements, industrialization, urbanization.

365  Geography of the Pacific (3)  I or II  Pirie
Physical character of the Pacific and its islands; cultural, political, economic geography of Melanesia, Micronesia, Polynesia (except Hawaii).

368  Geography of Hawaii (3)  II  Piiianaia
Regional, physical, cultural geography. Detailed study of the people and resources.

650  Seminar in Geography of Asia (3)  I, II
(1) Asia, (2) China, (3) Japan, (4) Southeast Asia, (5) South Asia. Pre: consent of instructor. May be repeated.

665  Seminar in Geography of the Pacific (3)  II  Pirie
Investigation of geographic problems of Melanesia, Micronesia, Polynesia. Pre: consent of instructor. May be repeated.
GEOGRAPHY

TECHNIQUES AND METHODOLOGY

370 Airphoto and Image Interpretation (2) I, II (1 L, 1 Lb) S.D. Chang
Quantitative and qualitative interpretation of photographic, infrared, radar imagery. Use of aerial photography, space photography, other remote sensors as tools for research in physical and social sciences. Pre: 101 or Geosc 102 or consent of instructor.

375 Cartography (3) I, II (2 L, 1 Lb) S.D. Chang
Principles of cartography, including map scales, grid systems, map projection, compilation, symbolism, map reproduction. Laboratory practice with cartographic equipment; techniques of quantitative mapping and terrain presentation.

380 Quantitative Methods in Geography (3) I Armstrong
Basic concepts and techniques: data collection, probability theory, tests of hypothesis, sampling methods, analysis of variance and regression, correlation analysis. Application to spatial problems.

680 Advanced Quantitative Methods in Geography (3) II Pitts
Application to geographical research of advanced techniques. Variable topics may include multivariate analysis and regression, factor analysis, graph theory, linear programming. Fourier series and harmonic analysis, Markov chains, game theory. Pre: 380 and adequate math background. May be repeated.

685 Computer Applications in Geography (3) I Pitts
Special purpose spatial computer programs; computer simulation. Students expected to solve individual research problems. Pre: 380 and some introduction to computer language.

READING, RESEARCH, GENERAL

390 Tutorial in Geography (3) II Murton

399 Directed Reading (arr.) I, II
Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in geography.

691 History of Geographic Thought (3) II Manchester
Development of geographic thought from early Greece to present. Emphasis on origins of current trends and relations to contemporary thought in natural and social sciences.

695 Pro-seminar I—Models in Geography (3) I Fuchs and Staff
Concept, theory, models in physical, human and regional geography. Required of entering graduate students.

696 Pro-seminar II—Research Design (2) II Schwind
Research methods in geography. Principles of scientific method and applications to research design. Preparation of individual research proposals. Consent of instructor.

700 Seminar in Geography (3) I or II
Study and discussion of significant topics and problems. May be repeated.

750 Research Seminar (3) I, II
Selected problems in research. (1) Applied urban climatology, (2) biogeography, (3) medical geography, (4) resource management, (5) population geography, (6) economic geography, (7) urban geography, (8) geographic aspects of economic development, (9) cultural geography, (10) conservation.

791 Field Camp (I) II
Field research problems. Camp held between semesters on a neighbor island. Students expected to pay own travel and camp expenses. Pre: 695 or consent of instructor.

799 Directed Research (arr.) I, II
Pre: consent of instructor.

800 Thesis Research (arr.) I, II
101-102 Introduction to Geosciences (4-4) Yr. (3 L, 1 Lb)
Both sections offered both semesters.
Integrated survey ranging from center of earth to limits of solar system, emphasizing unifying physical principles. 101: meteorology, oceanography, earth as a planet (pre: high school algebra, trigonometry, and geometry). 102: geology, solid earth geophysics emphasizing Hawaiian Islands (101 not pre); field trips.

799 Directed Research (arr.) I, II
pre: consent of instructor.

800 Thesis Research (arr.) I, II

GEODESY

457 Introduction to Geodetic Science (3) I
Laurila

481 Potential Theory (4) I
Daugherty
Theory of the potential, force fields, harmonic functions. Field intensity and Newtonian potential of various geometrical bodies. Divergence Theorem, Green's Theorems, and other relations between line, surface, and volume integrals. Boundary value problems of potential theory with applications from geodesy and geophysics. Pre: Math 232 or consent of instructor.

482 Elements of Satellite Geodesy and Celestial Mechanics (3) I
Khan
Differential operators and integral theorems in vector analysis. Introduction to spherical harmonics. Motion of satellite in central force field. Significant perturbations. Elementary treatment to express disturbing potential in terms of Keplerian elements. Pre: 457 and Math 232 or consent of instructor.

680 Seminar in Geodesy (arr.) I, II
Daugherty, Khan, Laurila, Rose
(a) Navigation and precise positioning, includes topics in geodetic astronomy and coordinate conversions. (b) Advanced topics in potential theory and physical geodesy. (c) Gravity measurement and reduction techniques, includes absolute and relative gravity measurements, pendulum and gravimeter methods, and methods of analysis of observational data. (d) Special topics in satellite geodesy. May be repeated for credit. Pre: consent of instructor.

681 Physical Geodesy (4) II
Daugherty
Mathematical theory of classical and modern physical geodesy. Boundary value problem of physical geodesy at the geoid and at the physical surface of the earth. Theory of the normal and anomalous gravity fields. Reduction of gravity observations. Calculation of geodetic parameters dependent upon gravity data. Pre: 481 or consent of instructor.

683 Satellite Geodesy (3) II
Khan
Methods of utilization of artificial satellites for geodetic purposes. Use of orbital perturbations for determination of gravitational field. Use of satellites in geometric geodesy. Pre: 681 or consent of instructor.

684 Advanced Geodesy (3) II
Daugherty, Laurila

685 Adjustment Computation (3) II
Laurila

GEOLOGY

200 Geology of the Hawaiian Islands (2) I or II
Abbott, Macdonald
Survey of Hawaiian volcanism, rock types, development of land forms, ground water, engineering materials; field trip.

300 Rocks and Minerals (5) I (3 L, 2 Lb)
Macdonald, Pankiwskyj
Elements of mineralogy, petrology, and structural geology. Pre: 102. Required for geology major.

301 Mineralogy (3) I (2 L, 1 Lb)
Pankiwskyj
Mineral structure, composition and identification by physical and X-ray techniques; crystal form and symmetry. Pre: Chem 113–117. (Offered 1970–71.)

302 Petrology (3) II (2 L, 1 Lb)
Macdonald
Composition, classification, origin, occurrence of rocks. Pre: 301. (Offered 1970–71.)

303 Structural Geology (2) II (1 L, 1 Lb)
Tectonophysics, structural analysis, interpretation of geologic maps. Pre: 300 or 302, Phys 170. Required for geology major.

305 Geological Field Methods (2) II (8 hrs. Saturday in field)
Abbott
Methods used in geological investigations in the field. Pre: 303, or concurrent registration. Required for geology major.

316 Geomorphology (3) II
Abbott
Study of landforms and their relation to geologic structure. Pre: 300, or consent of instructor. (Not offered 1970–71.)

410 Historical Geology (3) II (2 L, 1 Lb)
Moberly

411 Paleontology (3) I (2 L, 1 Lb)
Resig
Principles of paleozoology. Morphology and identification of fossils. Pre: 410 or Zool 101, or consent of instructor.

412 Micropaleontology (3) II (2 L, 1 Lb)
Resig
Morphology and taxonomy of microfossils and recent microscopic remains capable of fossilization. Ecologic-paleoecologic stratigraphic and sedimentologic significance of microbiota. Pre: consent of instructor.

415 Regional Geology (2) I (1 L, 1 Lb)
Moberly
Geologic framework of the earth, illustrated by North America and the Pacific Ocean Basin. Pre: 410.

424 Advanced Mineralogy (5) I (3 L, 2 Lb)
Pankiwskyj
Crystal symmetry, crystal chemistry, X-ray crystallography, optical mineralogy, use of petrographic microscope. Pre: 300 or 301, or consent of instructor.

425 Geochemistry (2) II
Distribution of chemical elements in earth’s crust and oceans, their relation to rock types and geologic processes. Pre: 300 or 302.

426 Advanced Petrology (3) II (1 L, 2 Lb)
Petrogenic theory, microscopic and related laboratory studies of rocks. (a) Igneous, (b) Sedimentary, (c) Metamorphic. All three parts may be taken for credit. Pre: 424.
430 Geology of Asia (2) I
Stratigraphy, structure and history of major geologic provinces of Asia. Pre: 300 or 302, or consent of instructor. (Alt. yrs.: not offered 1970-71.)

440 Economic Geology (2-3) Yr.
(a) Origin and occurrence of metallic ores and industrial minerals; (b) origin and occurrence of mineral fuels. Both parts may be taken for credit. Pre: 300 or 302 and 303. (Alt. yrs.; offered 1970-71.)

601 Seminar in Volcanology (2) II
Types and mechanisms of volcanic action. Pre: 300 or 302. (Alt. yrs.; not offered 1970-71.)

602 Seminar in Petrology (2) II
Seminars and lectures on origin and occurrence of igneous and metamorphic rocks. (a) Igneous petrology (Pre: 426); (b) phase petrology (Pre: 425); (c) metamorphic petrology (Pre: phase petrology, 426). May be repeated for credit.

607 Seminar in Ore Deposits (2) II
Consideration of physical and chemical processes and structural controls in formation of metalliferous ore deposits. Pre: 300 or 302, 303. (Alt. yrs.; offered 1970-71.)

609 Seminar in Geomorphology (2) II
Consideration of special problems and geologic processes in development of land forms. Pre: 316. (Alt. yrs.; offered 1970-71.)

614 Advanced Field Study (arr.) I, II
Field projects in geological sciences.

619 Sedimentology (3) I
Sources of recent sediments and their environments of deposition, textures, and composition. To be followed by Ocean 612 for an integrated survey of young marine sediments. Pre: consent of instructor.

620 Stratigraphy (3) II
Analysis of stratigraphic rock units. Pre: consent of instructor. (Alt. yrs.; not offered 1970-71.)

623 Marine Geology (3) I
Marine geological processes and forms. For students with strong geological background; others see Ocean 622. Pre: consent of instructor.

625 Seminar in Current Research Topics (arr.) I, II
(a) Paleontology; (b) applied geology; (c) marine geology; (d) regional geology; (e) geochemistry; (f) lunar and planetary geology; (g) ocean floor spreading. May be repeated for credit.

672 Seminar in Geotectonics I (3) I
Evolution of the ocean basins and margins, from regional syntheses of structure, petrology, geophysics, stratigraphy, and physiography. Offered jointly as Ocean 672. (Alt. yrs.; offered 1970-71.)

673 Seminar in Geotectonics II (3) II
Evolution of the shields and mountain systems, from regional syntheses of structure, petrology, geophysics, stratigraphy, and physiography. Pre: consent of instructor. (Alt. yrs.; offered 1970-71.)

HYDROLOGY

306 Work of Water (4) II (3 L, 1 Lb)
Dynamics of streams, waves, currents, ground water. Pre: 101-102.

455 Ground-Water Geology (4) I (3 L, 1 Lb)
Occurrence, characteristics, movement, quality, development of water in earth's crust. Pre: 306 or consent of instructor.

605 Seminar in Engineering and Ground-Water Geology (3) I, II
Geologic controls on occurrence and development of ground water; geologic effects on man-made structures. Pre: consent of instructor. May be repeated for credit.
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<th>Prerequisites</th>
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<tr>
<td>342</td>
<td>Meteorological Instruments and Observations</td>
<td>3</td>
<td>2L, 1Lb</td>
<td>Principles of meteorological instruments and their care; instrumental and visual weather observation; coding. Pre: credit or registration in Math 205. (Alt. yrs.; offered 1970–71.)</td>
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<td>350</td>
<td>Theoretical Meteorology Laboratory I</td>
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<td>1Lb</td>
<td>C. Adams</td>
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<td>Theoretical Meteorology I</td>
<td>3</td>
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<td>C. Adams</td>
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<td>353</td>
<td>Theoretical Meteorology II</td>
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<td>3L</td>
<td>C. Adams</td>
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<td>354</td>
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<td>1Lb</td>
<td>C. Adams</td>
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<tr>
<td>444</td>
<td>Meteorological Satellites</td>
<td>3</td>
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<td>445</td>
<td>Tropical Meteorology</td>
<td>3</td>
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<td>Taylor</td>
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<td>450</td>
<td>Meteorological Analysis Laboratory</td>
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<td>452</td>
<td>Tropical Analysis Laboratory</td>
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<td>Taylor</td>
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<td>639</td>
<td>Meteorology of the Tropical Oceans</td>
<td>2</td>
<td>2L</td>
<td>Ramage, Sadler</td>
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<td>640</td>
<td>Advanced Tropical Meteorological Laboratory</td>
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<td>3Lb</td>
<td>Sadler</td>
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<td>641</td>
<td>Monsoon Meteorology</td>
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<td>3L</td>
<td>Ramage</td>
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<td>643</td>
<td>Cloud Physics</td>
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<td>646</td>
<td>Statistical Meteorology</td>
<td>3</td>
<td>1</td>
<td>R. Jones</td>
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<tr>
<td>650</td>
<td>Advanced Theoretical Meteorology</td>
<td>3</td>
<td>3</td>
<td>Chiu</td>
</tr>
</tbody>
</table>
651 Advanced Theoretical Meteorology II (3) II Chiu
Basic theories of the mechanics of compressible fluids; atmospheric waves and tides; stability problems. Pre: 650.

742 Atmospheric Turbulence (3) II Chiu
Equations of motion for turbulent flow; turbulent diffusion; atmospheric boundary layer processes. Pre: 650 or consent of instructor. (Alt. yrs.; not offered 1970–71.)

745 Numerical Analysis and Weather Prediction I (5) I (3 L, 2 Lb) Murakami
Scale-analysis of equations of motion; quasi-geostrophic system of forecasting; initial value problem; programming exercise to compute energy interaction terms. Pre: 353.

746 Numerical Analysis and Weather Prediction II (5) II (3 L, 2 Lb) Murakami
Instability theory: numerical integration procedures; special problems in numerical analysis; programming exercises of numerical integration. Pre: 745.

752 Special Topics in Meteorology (3) I, II
Concentrated studies on selected atmospheric problems. Pre: 651 or consent of instructor. May be repeated for credit.

765 Seminar in Meteorology (1) I, II Chiu
(a) General. (b) Research results. May be repeated for credit.

SOLID EARTH GEOPHYSICS

351 Seismology (3) I W. Adams

360 Principles of Geophysics (3) I Rose
Physical laws and physical concepts which describe forces and materials of the earth. Pre: 101–102, Phys 272 or consent of instructor.

463 Physical Properties of Earth Matter (3) I Manghnani
Basic concepts of materials behavior, deformation of rocks and minerals, related rheological problems. Physical properties of crystalline solids under high pressure, with emphasis on laboratory study; equations of state. (Not offered 1970–71.)

465–466 Geophysical Exploration (4–4) Yr. (3 L, 1 Lb) W. Adams, Malahoff
Theory and methods of exploration on land and sea by means of gravity, magnetic, seismic and electrical techniques. Pre: Math 206 or consent of instructor.

655 Seismic Source Mechanisms (3) II W. Adams
Theoretical and observational study of source mechanism for explosions and earthquakes in aerial, underwater, or underground environments. Pre: consent of instructor. (Alt. yrs.; not offered 1970–71.)

656 Seismic Propagation Phenomena (3) II W. Adams, Sutton
Propagation of energy through solid media having interfaces, with considerations of effects of heterogeneity and anisotropy. Pre: consent of instructor. (Alt. yrs.; not offered 1970–71.)

657 Analysis and Synthesis of Seismograms (3) I W. Adams, Furumoto
Development of theoretical seismograms for comparison with observed seismograms utilizing analytical and numerical techniques. Pre: consent of instructor. (Alt. yrs.; offered 1970–71.)

658 Seismometry and Seismological Model Study (3) I Sutton
Theoretical and practical investigations of seismological instrumentation; application of seismological model studies to interpretation of field observations. Selected topics from other areas in geophysics. Pre: consent of instructor. (Alt. yrs.; offered 1970–71.)

660 Seminar in Solid Earth Geophysics (arr.) I, II
(a) Tectonics and crustal deformation. (b) Isostasy. (3) Properties of earth matter. (d) Physics of interior of earth. (e) Statistical interpretation. (f) Tsunamis. (g) Geomagnetism. Pre: consent of instructor. May be repeated for credit.
661 Marine Geophysics (3) Malahoff
Geophysical exploration techniques and studies of the ocean basin and margins. Offered jointly as Ocean 644. Pre: consent of instructor. (Alt. yrs.; not offered 1970–71.)

662 Principles of Theoretical Geophysics (3) Furumoto
Continuum mechanics, potential theory, thermodynamics as applied to tectonics and physics of the earth's interior. Pre: Phys 310–311 or consent of instructor.

665 Numerical Methods in Geophysical Data Analysis (3) Loomis
Representation of observation by numbers, numerical filtering, power spectra, automatic data processing. Pre: Math 301, or 403, or 431 or consent of instructor. (Alt. yrs.; not offered 1970–71.)

671 The Magnetic Field of the Earth (3) Furumoto
Discussions on the observed magnetic field and variations, origin of the geomagnetic field; dynamo theory; magnetohydrodynamics. Pre: 481.

674 Rock Magnetism and Paleomagnetism (3) Malahoff
Ferromagnetism of rocks, various forms of remanent magnetism; paleomagnetism, application of paleomagnetic data. Pre: consent of instructor. (Alt. yrs.; offered 1970–71.)

675 Seminar in Geomagnetism (arr.) Furumoto, Larsen, Malahoff
Geomagnetic phenomena in oceanography; advanced topics on paleomagnetism, geomagnetic phenomena in the ionosphere. May be repeated for credit. Pre: consent of instructor.

History (Hist)

Professors Akita, Cowing, D. Johnson, W. Johnson, Kwok, Margulies, Maurer, Melendy, J. Miller, Nunn, Sakai, Shinoda, Stalker, Stein, Van Niel, Vella, J. White; Associate Professors Beechert, Daws, Ernst, Lamley, J. McCutcheon, McKnight, Newby, Rapson, Saville, Sharma, Speidel, Wade; Assistant Professors Bram, Connors, Cubberly, Kang, Ladd, Lind, McGlone, Morris, Stephan, Tao, Winchester; Acting Asst. Professor B. Miller

151–152 World Civilization (3–3) Yr. Connors, Daws, B. Miller
Development of civilization from its prehistoric origins to present. Prerequisite for advanced courses. (Freshmen and sophomores only.)

161–162 World Cultures in Perspective (3–3) Yr. Ernest, Lind, Bram, B. Miller
Problems in world history; development of ideas, institutions. Pre: consent of instructor. (Alternative for 151–152; freshmen only.)

241–242 Civilizations of Asia (3–3) Yr. Sakai, Van Niel, Stein
Historical survey of major civilizations of Asia from earliest times to present, including East Asia, Southeast Asia, and South Asia. (Cross-listed as Asian Studies 241–242.)

281–282 Introduction to American History (3–3) Yr. Cowing
Interpretive survey of U.S. history from earliest settlements to present.

396 History Colloquium (3) J. Miller, Cowing, Stephan
Special problems in history; extensive, such as consequences of industrialism, or intensive, such as the causes of the American Revolution. Pre: consent of instructor. Recommended for honors students. May be repeated.

401–402 History of South Asia (3–3) Yr. Sharma
General historical survey of India, Pakistan, Ceylon, from earliest times to present.

495–406 History of Southeast Asia (3–3) Yr. Van Niel
Historical survey of Southeast Asian civilizations and states, including Burma, Thailand, Laos, Cambodia, Vietnam, Malaysia, Indonesia and Philippines.

407 National and Regional History in Southeast Asia (3) I or II Van Niel, Vella

155
HISTORY

409-410 History of China (3-3) Yr. Kwok
Course of Chinese civilization from earliest times.

411-412 Local History of China (3-3) Yr. Lamley
Analysis of political and social conditions in China during the Ch'ing period and 20th century, with emphasis on the local and regional levels.

413-414 History of Japan (3-3) Yr. Akita, Stephan
Historical survey of Japanese culture, government, economics, institutions.

415-416 Imperial and Feudal Institutions of Traditional Japan (3-3) Yr. Morris
Detailed treatment of political, economic, and social institutions to the 17th century. Pre: 413-414 or equivalent.

417-418 History of Korea (3-3) Yr. Kang
Detailed political, economic and social survey of Korean history.

419 European Expansion (3) I Stein
Historical processes in modern European colonization (16th to 20th century) emphasizing the impact upon non-Europeans in Asia and Africa.

421 Australia and New Zealand (3) II
Major historical developments from colonization to independent nationhood; present problems and policies. (Not offered 1970-71.)

422 History of Oceania (3) I Daws
European impact and native response in major groups, from exploration to exploitation to trusteeship. European or Pacific credit.

424 History of the Hawaiian Islands (3) II D. Johnson
General course, but with some detail. Emphasis on period of monarchy. Interchangeable credit: Asian, Pacific or American.

425 The United States in the Pacific (3) I D. Johnson
Growth of economic and political interests and policies in Pacific area. Interchangeable credit: Asian, Pacific or American.

426 The Ancient Near East (3) I Maurer
Survey of the social, religious, political, and literary history of the peoples of Mesopotamia, Persia, and the eastern Mediterranean from Sumerian to pre-classical Greek times.

427 Ancient Greek History (3) II Speidel
Political and cultural history of ancient Greece. Emphasis on discussion of source materials.

428-429 Roman Civilization (3-3) Yr. Speidel
Political, social, and cultural history of the Roman Republic and the Roman Empire. Emphasis on discussion of source materials.

430 History of Science (3) I Bernatowicz
Man's changing ideas concerning universe reflected against historical setting. Pre: one yr. of natural science. (Cross-listed as Sci 430.)

431-432 Medieval Europe, 300-1300 (3-3) Yr. Ernest
Cultural, social, economic and political changes in development of European community.

435 Renaissance and Reformation, 1300-1600 (3) I Ernest
Ideas and institutions in early period of commercial and national development. (Not offered 1970-71.)

437 Early Modern Europe, 1600-1800 (3) II Cubberly
Thought and culture of Europe in age of expansion.

438 French Revolution, 1789-1815 (3) I Cubberly
Louis XIV and 8th-century ferment. Jacobins and the Convention; Robespierre; Napoleon. Historiography, theories of causation, and nationalism will be stressed.

439 Europe in the 19th Century (3) I Saville, Winchester
Major political, social, economic and intellectual trends in evolution of Europe from Napoleon to end of World War I.
### HISTORY

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
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<td>440</td>
<td>Europe Since Versailles (3) II</td>
<td>Saville, Winchester</td>
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<td>Problems of contemporary Europe and their historical background.</td>
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<tr>
<td>441-442</td>
<td>East Central Europe (3-3) Yr.</td>
<td>Winchester</td>
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<tr>
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<td>General history of Poland, Danubian region and Balkans from Middle Ages to present.</td>
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<td>443-444</td>
<td>History of Germany (3-3) Yr.</td>
<td>Saville</td>
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<td>Major political, social, economic and intellectual trends in evolution of Germany.</td>
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<td>445-446</td>
<td>History of France (3-3) Yr.</td>
<td>Cubberly</td>
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<tr>
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<td>Major political, social, economic and intellectual trends in evolution of France.</td>
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<tr>
<td>447-448</td>
<td>History of England (3-3) Yr.</td>
<td>Lind</td>
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<tr>
<td></td>
<td>Major trends in development of English civilization from origins to contemporary period.</td>
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</tbody>
</table>

For information on the Russian Area Studies Certificate, see p. 72.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
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</thead>
<tbody>
<tr>
<td>449-450</td>
<td>History of Russia (3-3) Yr.</td>
<td>Wade</td>
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<tr>
<td></td>
<td>Survey of development of Russian thought and institutions, and of territorial expansion. Impact of revolutionary changes. Listed as course for Russian Studies Certificate.</td>
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<tr>
<td>451-452</td>
<td>Modern Russian and Soviet Foreign Policy (3-3) Yr.</td>
<td>White</td>
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<tr>
<td></td>
<td>Territorial expansion; frontier and nationality questions: cultural, diplomatic, economic and ideological relations. Listed as course for Russian Studies Certificate.</td>
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<tr>
<td>453-454</td>
<td>Intellectual History of Russia and the Soviet Union (3-3) Yr.</td>
<td>Wade</td>
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<tr>
<td></td>
<td>Religious and secular traditions, intellectual and social developments, political movements. Listed as course for Russian Studies Certificate.</td>
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<tr>
<td>455-456</td>
<td>European Intellectual History (3-3) Yr.</td>
<td>Connors</td>
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<tr>
<td></td>
<td>Undergraduate seminar concentrating on great debates in Western thought from end of Middle Ages to 20th century. Emphasis on discussion of primary source materials and oral reports. Not a lecture course; therefore no auditors permitted.</td>
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<tr>
<td>459</td>
<td>Constitutional History of England (3) I, II</td>
<td>Ernest</td>
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<tr>
<td></td>
<td>Anglo-Saxon institutions; Norman innovations; legal, administrative, parliamentary development under Angevins; rise of cabinet system. (Alt. yrs.; offered 1970-71.)</td>
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<tr>
<td>461</td>
<td>Colonial America to 1790 (3) I</td>
<td>Cowing, Miller</td>
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<tr>
<td></td>
<td>Transit of European culture of North America, independence, Constitution.</td>
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<tr>
<td>462</td>
<td>The Young Republic: U.S. History 1789-1841 (3) II</td>
<td>McGlone</td>
</tr>
<tr>
<td></td>
<td>Federalist decade, rise of Jeffersonianism, War of 1812, Age of Jackson.</td>
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<tr>
<td>463</td>
<td>Crisis of the Union: U.S. History 1841-1877 (3) I</td>
<td>McGlone</td>
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<tr>
<td></td>
<td>National expansion, sectional conflict; Civil War and Reconstruction.</td>
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<tr>
<td>464</td>
<td>The Transformation of America: U.S. History 1877-1920 (3) II</td>
<td>Margulies</td>
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<tr>
<td></td>
<td>Response to industrialism, emergence of U.S. as world power, progressive movement.</td>
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<tr>
<td>465</td>
<td>Troubled Peace: U.S. History 1920-1941 (3) I</td>
<td>W. Johnson</td>
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<tr>
<td></td>
<td>The twenties, depression and New Deal, isolationism and involvement in World War II.</td>
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<tr>
<td>466</td>
<td>America and World Leadership: The U.S. Since 1941 (3) II</td>
<td>W. Johnson</td>
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<tr>
<td></td>
<td>World War II, Cold War and beyond; politics from Roosevelt to Johnson; McCarthyism, civil rights; economic and social development.</td>
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<tr>
<td>471-472</td>
<td>Diplomatic History of the United States (3-3) Yr.</td>
<td>D. Johnson, W. Johnson</td>
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<tr>
<td></td>
<td>History of American foreign policy and diplomacy.</td>
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<tr>
<td>473-474</td>
<td>History of Spain and Portugal</td>
<td>Ladd</td>
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<tr>
<td></td>
<td>Iberian institutions; explorations and colonization experiences in America, Asia and the Pacific; special attention to cultural developments in the second semester.</td>
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<tr>
<td>475</td>
<td>Constitutional History of the United States (3) I</td>
<td>Margulies</td>
</tr>
<tr>
<td></td>
<td>Origins and development of the constitution from colonial times to present. (Alt. yrs.; offered 1970-71.)</td>
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</tbody>
</table>
HISTORY

477–478 Economic History of the United States (3–3) Yr. Beechert
Examination of the problems and process of development in the American economy. Role of the entrepreneur, agriculture, and labor are matters of special interest. Recommended pre: 281–282.

480 History of Black Americans (3) II Newby
Achievements of Black Americans and their protests against racial repression and discrimination. Exploration of the meaning of Afro-American historical experience in the United States.

481–482 American Thought and Culture (3–3) Yr. Rapson
Advanced course in American social customs, institutions, intellectual pursuits.

483 The West in American History (3) I McCutcheon
Western expansion forces in development of economic, cultural, political trends of nation. (Alt. yrs.; offered 1970–71.)

484 The South in American History (3) I Newby
Southern economic, social, intellectual, political development, with special attention to race relations.

485 The City in American History (3) II McCutcheon
Urban growth as factor in shaping social, economic, political, cultural life in U.S. (Alt. yrs.; offered 1970–71.)

486 Representative Americans (3) I Margulies
Series of biographical sketches of leading characters in American history from Revolution to present. (Alt. yrs.; not offered 1970–71.)

487–488 History of Latin America (3–3) Ladd
Political, economic, social development of Latin American republics from colonial times to present.

493–494 Senior Honors Thesis (2–2)
Preparation of research paper under individual faculty supervision. Required for graduation with honors in departmental honors program.

497 Senior Tutorial in History (4)
Analysis of sources and evaluation of methods of historical writing. Research in field of special interest. Required for majors, except those in honors program.

499 Directed Reading (arr.)

All courses 600–800, except 602, require consent of instructor. All courses over 602 may be repeated for credit.

602 Seminar in Historiography (3) I, II Bram
History of history, and historians; philosophies of history.

611 Seminar in European History (3) I, II Saville, Winchester, Ernest, Speidel, Cubberly

618 British Empire and Commonwealth (3) II British Empire in modern times. (Alt. yrs.; not offered 1970–71.)

619 Seminar in Russian History (3) I or II Wade
Research in problems on history of Russia and Soviet Union.

620 Seminar in Russian Foreign Policy (3) I, II White
Research in problems of foreign policy in Russia and Soviet Union.

631 Advanced Problems and Reading in American History (3) I, II Interpretations and literature of important problems of American history.
635 The Colonial Period in American History (3) I
Cowling, Miller
Reading and research in political, social and intellectual history. Pre: 461 or equivalent.

636 Seminar in 19th Century American History (3) I
McGlone
Research in Early National Period, Jacksonian democracy, Civil War and Reconstruction. Pre: 462 or equivalent.

637 The Progressive Period in American History (3) I
Margulies
Research in problems relating to rise, character and decline of Progressive Movement, 1872-1924. Pre: 464 or equivalent.

638 Seminar in Recent American History (3) I
W. Johnson
Research in U.S. history since World War I. Pre: 465 or 466 or equivalent.

640 Seminar in American Social and Intellectual History (3) I
Rapson
Research in history of American thought and culture.

641 Seminar in American Diplomatic History (3) II
D. Johnson
Selected problems in development of U.S. foreign policy and its implementation.

644 Seminar in the History of Mainland Southeast Asia (3) I, II
Vella

645 Seminar in the History of Island Southeast Asia (3) I, II
Van Niel
Studies in histories of peoples and states of Malaysia, Indonesia and Philippines.

646 Seminar in Chinese History (3) I, II
Kwok, Lamley, McKnight, Tao
Problems and reading in political, social, cultural history of China.

647 Seminar in Indian History (3) I, II
Stein, Sharma
Selected problems and readings in history of India and influence of Indian culture in southern Asia, individual reports. (1) Ancient India, (2) South India, (3) Muslim India, (4) Modern South Asia.

648 Seminar in Japanese History (3) I, II
Akita, Sakai, Morris, Stephan
Selected problems in Japanese history; principal sources of bibliographic information. (1) Traditional period to c. 1630. (2) Early modern, 1600-1877. (3) Modern, 1868 to present. (4) 20th century diplomatic.

649 Seminar in Korean History (3) I, II
Kang
Reading and research in selected topics in Korean history.

650 Seminar in Pacific History (3) II
Daws
Selected topics and research papers in history of Oceania, with special emphasis on British colonies.

651 Research Materials and Methods in Asian History (3) II
Nunn
Bibliography and research methods in Asian history. Discussion of the principal Western and Asian published and archival sources.

652 Korean Historical Sources (3) I or II
Kang
Systematic reading of numerous forms of historical literature and documents and training in use of reference materials, all in the original language. Reading knowledge of Korean required; reading knowledge of Chinese and Japanese preferred.

653 Chinese Historical Literature (3-3) Yr.
Tao

654 Chinese Intellectual History (3-3) Yr.
Kwok
Intensive study in selected phases of history of Chinese thought and institutions. Pre: 409-410 or equivalent with consent of instructor. Knowledge of Chinese preferred but not required.

655 China From Classical Antiquity to 750 (3-3) Yr.
Tao
Detailed inquiry into foundations and elaborations of Chinese tradition. Pre: 409-410 or equivalent, with consent of instructor. Open to seniors with consent of instructor.
723–724 China from 750 to 1700 (3–3) Yr. McKnight
Detailed description of China’s political, social and economic history during this period with special emphasis on source materials, interpretive problems and rise of the gentry state.

727–728 Japanese Historical Materials and Sources (3–3) Yr. Sakai
Examination of different forms and styles of historical documents. Problems of terminology and interpretation. Reading knowledge of Japanese required.

730 Japan: The Bakumatsu Period (1830–1873) (3) I or II Sakai
Analysis of structure and substance of feudal power; pressures for change; transition to the nation-state.

731 Seminar in Political History of Modern Japan (3) II Akita
Bibliography, controversies and schools of thought among major Japanese political historians. Selected topics and research papers. Reading knowledge of Japanese required.

733–734 Japanese Intellectual History (3–3) Yr. Shinoda
Intensive study in selected phases of history of Japanese thought and institutions. Pre: 413–414 or consent of instructor. Knowledge of Japanese preferred.

735–736 Seminar on Pre-Modern Japan C. 850–1800 (3–3) Yr. Morris
Bibliography, research tools, special problems. Recent controversies among Japanese scholars. Reading knowledge of Japanese required.

799 Directed Research (arr.)

800 Thesis Research (arr.)

Linguistics (Ling)

Professors Bender, Elbert, Fairbanks, Grace, Li, McKaughan, Thompson; Associate Professors Schütz, Topping, Tsuzaki; Assistant Professors Bailey, Parker, Roberts, Stanton; Acting Assistant Professors Forman, Howard, Josephs, Lyovin, Ward

102 Introduction to the Study of Language (3) I, II
Nature and workings of language; its role in culture and history.

320 General Linguistics (3) I, II
Approaches, concepts, component areas of linguistics; its development as a science.

410 Articulatory Phonetics (3) I, II
Intensive training in recognition, reproduction, recording of speech sounds throughout the world; preparing student for field work, especially with unrecorded languages.

421 Introduction to Phonological Analysis (3) I, II
Introduction to phonemic analysis and phonological theory. Pre: 410, or concurrent registration.

422 Introduction to Grammatical Analysis (3) I, II
Introduction to morphological and syntactic analysis, grammatical theory. Pre: 421, or concurrent registration.

611 Acoustic Phonetics (3) II
Stream of speech analyzed according to acoustic properties and their function within given languages, with attention to articulatory correlates. Use of sound spectrograph in specific problems. Pre: 410.

615 The Nature of Language (3) I
Language as communication system, current theories of grammar, meaning, sociolinguistics, linguistic change and comparison.

621 Phonology (3) I, II
Phonological theory and problems of analysis. Pre: 421 or equivalent.
622 Grammar (3) I, II
Grammatical theory and problems of analysis. Pre: 422 or equivalent.

625 Mathematical Properties of Natural Languages (3) I
The rule-governed nature of natural languages. Construction of logical systems that mirror properties of natural languages. Pre: 621 or background in formal logic.

630 Field Methods (3) I, II
Work with native speakers of lesser-known languages to develop methods and techniques for collection and analysis of linguistic data. Pre: 421, 422. May be repeated.

635 Language Variation (3) I
Critical review of various approaches to language variation, including sociolinguistics, dialectology, and studies of language contact, diglossia, pidgins and creoles, with emphasis on theoretical contributions of each, including recent quantitative and other methods seeking to discover systematic intersections among class, style, regional and other variations in linguistic data of speech communities. Pre: 622.

645 Introduction to Comparative Method (3) I
Fundamentals of comparative and historical method in linguistics with emphasis on Indo-European and attention to non-Indo-European languages having few or no written records. Pre: 421, 422 or consent of instructor.

650-651 Advanced Linguistic Analysis (3-3) Yr.
Advanced problems and discussion of theory, techniques, procedures in linguistics. Pre: 621, 622 and consent of instructor.

660 Historical Linguistics (3) I, II
Survey of research concerning history of particular languages or language families. Pre: 645. May be repeated.

699 Directed Research (arr.) I, II
Pre: graduate standing; consent of instructor.

750 Seminar (3) I, II
Reporting and discussion of current research in linguistics. Pre: consent of instructor. May be repeated.

760 Problems in Comparison and Pre-History (3) I, II
Special problems dealing with areas of language classification, measures of language divergence, dialect geography, other phases of comparative-historical linguistic study. Pre: 645. May be repeated.

770 Areal Linguistics (3) I, II
Seminar dealing with structures of languages of various areas of world, topics depending on both resident and visiting staff specialities. Pre: 622. May be repeated.

780 Ethno-Linguistics (3) I
Seminar for advanced students of both linguistics and anthropology, dealing with methods and their application to research on these fields, with concentration on interrelations between culture and language. Pre: consent of instructor.

800 Thesis Research (arr.)
MATHEMATICS

111 Introduction to Mathematics (3) I, II
   Study of structure and concepts of number systems. (Primarily for Education majors.)

134 Pre-Calculus Mathematics (4) I, II
   Algebraic operations as applied to elementary functions and equations; graphs, trigonometric functions; lines and conics. Pre: two years of high school algebra and one year of plane geometry, or consent of instructor.

201 Finite Mathematics (3) I, II
   Algebra of sets, elementary probability theory, vectors and matrices, linear programming, theory of games. Pre: 134 or equivalent.

205 Calculus I (3) I, II
   Basic concepts; techniques of differentiation; integration of algebraic and trigonometric functions with applications. Pre: C in 134 or equivalent.

206 Calculus II (3) I, II
   Exponential, logarithmic and hyperbolic functions; techniques of integration; elements of three dimensional analytic geometry; multiple integration, infinite series; partial differentiation. Pre: C in 205 or equivalent.

231 Multi-Variable Calculus (3) I, II
   Vector-oriented study of functions of several variables; elements of linear algebra, line and surface integrals, divergence and curl. Pre: C in 206 or equivalent.

232 Ordinary Differential Equations (3) I, II
   First order equations; linear equations with constant coefficients; system of equations, Laplace transforms; applications. Pre: 231.

301 Introduction to Numerical Analysis (3) I
   Iterative methods for algebraic problems, including convergence criteria and error analyses, interpolation and numerical integration. Pre: 231 and 232, 311 recommended.

311 Introduction to Linear Algebra (3) I, II

321 Elementary Topology (3) I
   Sets, topologies, mappings. Continuity and convergence. Illustrations of use of these concepts in analysis. Pre: 311 or consent of instructor.

351 Foundations of Euclidean Geometry (3) I
   Axiomatic Euclidean geometry and introduction to axiomatic method. Pre: 231 or consent of instructor.

352 Non-Euclidean Geometries (3) II
   Study of hyperbolic geometry and other non-Euclidean geometries. Pre: 351 or consent of instructor.

371 Elementary Probability Theory (3) I, II
   Sets, discrete sample spaces, problems in combinatorial probability, conditional probability, random variables, mathematical expectations, moments, variance, study of the classical distributions (binomial, Poisson, normal, etc.), applications. Pre: one semester of calculus or consent of instructor.

372 Combinatorial Mathematics (3) II
   Permutations and combinations, generating functions and difference equations, inclusion-exclusion principle, distribution and occupancy problems, fundamentals of graph theory, matrix representation, applications of graph theory. Pre: one semester of calculus or consent of instructor.

402 Partial Differential Equations (3) I, II

403-404 Methods of Higher Analysis (3-3) Yr.
406 Difference Methods for Differential Equations (3) I
Finite differences, initial value problems for ordinary differential equations, finite difference methods for partial differential equations. Pre: 402 or 404 or equivalent.

412 Introduction to Abstract Algebra (3) I, II
Introduction to basic algebraic structures including groups, rings, fields. Pre: 311.

413 Abstract Algebra (3) I
Continuation of 412 including finite abelian groups, unique factorization domains, and finite fields. Pre: 412 or equivalent.

420 Introduction to the Theory of Numbers (3) I
Congruences, quadratic residues, arithmetic functions, distribution of primes. Pre: 311 or consent of instructor.

431-432 Advanced Calculus (3-3) Yr.
Topology of $\mathbb{R}^n$, theorems on continuous functions, development of Riemann integral, sequences and series, uniform convergence, implicit function theorems, differentials and Jacobians. Pre: 311.

441 Numerical Analysis (3) II
Theory of matrices in numerical analysis, norms and convergence. Pre: 301 and 311, and either 431 or 403.

442 Vector Analysis (3) II

444 Theory of Functions of a Complex Variable (3) II
Analytic functions, complex integration, introduction to conformal mapping. Pre: 431.

449 Topics in Undergraduate Mathematics (3) I or II
Advanced topics from various areas of mathematics including, but not limited to: algebra, number theory, analysis, logic. May be repeated for credit. Pre: consent of instructor.

471 Probability (3) I, II
Probability spaces, random variables, probability distributions, functions of random variables, mathematical expectations, moment-generating functions and characteristic functions, limit theorems. Pre: 231.

472 Statistical Inference (3) II
Sampling and parameter estimation, tests of hypotheses, correlation, regression, analysis of variance, sequential analysis, rank order statistics. Pre: 471.

499 Directed Reading (arr.) I, II
Individual reading in advanced mathematics. Limited to senior math majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in math.

611-612 Modern Algebra (3-3) Yr.
Simplicity of alternating groups, Sylow theorems, Jordan Holder theorem, unique factorization domains, Galois theory, algebraic closures, transcendence bases, modules over principal ideal rings, Dedekind domains. Pre: consent of instructor.

613-614 Group Theory (3-3) Yr.
Sylow theorems, solvable groups, nilpotent groups, extension theory, representation theory, additional topics. Pre: consent of instructor.

617 Linear Algebra (3) I or II
Minimal polynomials, invariant subspaces, canonical forms of matrices; unitary and Hermitian matrices, quadratic forms and linear groups. Pre: consent of instructor.

621-622 Topology (3-3) Yr.
Properties of topological spaces; separation axioms, compactness, connectedness; metrizability; convergence and continuity. Additional topics from general and algebraic topology. Pre: consent of instructor.

631-632 Theory of Functions of a Real Variable (3-3) Yr.
Lebesgue measure and integral, convergence of integrals, functions of bounded
variation, absolute continuity, Lebesgue-Stieltjes integral and more general theory of measure and integration. Pre: consent of instructor.

633–634 Functional Analysis (3–3) Yr.
Linear topological spaces, normed spaces, Hilbert spaces, function spaces, function algebras, operator theory. Pre: consent of instructor.

644–645 Analytic Function Theory (3–3) Yr.
Conformal mapping, residue theory, series and product developments, analytic continuation, special functions. Pre: consent of instructor.

649 Topics in Mathematics (3) I, II
(1) Theory of groups, (2) analytic number theory, (3) Hilbert spaces. Pre: consent of instructor. May be repeated once for credit.

655 Set Theory (3) I or II
Axiomatic development, ordinal and cardinal numbers, recursion theorems, axiom of choice, continuum hypothesis, consistency and independence results. Pre: consent of instructor.

750 Seminar (1) I, II
Pre: consent of instructor.

799 Directed Research (arr.) I, II
Pre: graduate standing in mathematics, consent of instructor.

800 Thesis Research (arr.) I, II
Military Science (MS)

Professor Silver; Associate Professor Kent; Assistant Professors Miyamasu, Valentine, Snyder, Jacks; Instructors DuBroksy, Gerberding

Leadership Laboratory required 1 hour per week

101–102 First-Year Military Science (2-2) I, II
To develop understanding of the ROTC program, US Army organization, missions and functions, and roles of the armed services relative to the national government, strategy, and security. To provide progressive cultivation in leadership, military courtesy and customs.

201–202 Second-Year Military Science (2-2) I, II
Survey of American military history from origins of the American Army; introduction to small unit military operations and tactics, and to develop techniques for reading maps and aerial photographs. Progressively apply functions, duties and responsibilities of junior leaders towards development of leadership potential. Pre: 101, 102, or consent of instructor.

301–302 Third-Year Military Science (3-3) I, II
Principles and techniques of leadership, management and instruction; role of the leader, execution of tasks by small tactical units, to include communications systems; survey of combat arms and services. Progressive application to continued development of leadership potential. Pre: 101, 102, 201, 202; and consent of department chairman.

401–402 Fourth-Year Military Science (3-3) I, II
Advanced instruction in leadership and management skills and their practical application. An understanding of the Army logistical system. Concepts and fundamentals of Army administration, military justice, Army readiness program, orientation on service life for future commissioned officers. Progressive application of responsibilities in leadership development. Pre: 301, 302; and consent of department chairman.

Music (Mus)


Numbers in parentheses in course descriptions refer to the different sections in each course and are used for scheduling purposes.

102 University Chorus (1) I, II Gillett, Uchima
Performance of choral literature from Renaissance to present. Previous choral experience not required.

115–116 First-Level Secondary Piano (1-1) Yr. Shipwright
Study of piano as secondary performance field including application of music theory to problems in improvising, harmonizing, creating accompaniments, transposing and sight-reading at keyboard. For music majors.

117–118 Introduction to Music Theory (1-1) Yr. Uchima
Fundamental concepts in musical structure and notation, including laboratory experience with vocal and instrumental performance at elementary level. Not open to those who have had 119.

119 Accelerated Introduction to Music Theory (2) I, II
Content of 117–118 in one semester. Placement conference required. Pre: consent of instructor. (Not offered 1970–71.)
## MUSIC

### 123–124 Elementary Voice Class (1–1) Yr.
- Basic principles of voice production. Relevant problems in voice literature at elementary level.

### 125–126 Elementary Piano Class (1–1) Yr.
- Basic principles of piano performance. Relevant problems in piano literature at elementary level.

### 127–128 Asian Music Performance Class (1–1) Yr.
- Basic principles of performance of Asian music. Relevant problems in literature at elementary level. (71) koto, (72) shamisen, (78) South Indian singing. $25 fee.

### 151–152 String Methods (2–2) Yr.
- Krantz
- For students preparing to teach instrumental music. Performance techniques, materials and pedagogy for string instruments.

### 153 Woodwind Methods (2) I
- Uchima
- Similar to 151–152.

### 154 Brass Methods (2) II
- Lum
- Similar to 151–152.

### 155 Percussion Methods (2) I
- L. Russell
- Similar to 151–152.

### 160 Introduction to Music Literature (3) I, II
- Elements, styles and forms of music, from listener's point of view. Lab section required.

### 170 Music in World Culture (5) I, II
- Role of music in societies—ancient and modern, sophisticated and non-sophisticated, Western and non-Western, child and adult. Representative styles and regional characteristics.

### 180 Fundamentals of Western Music (3) I, II
- Trubitt
- Fundamental concepts in organization of music as expressive medium in Western culture. Roles of composer, performer and listener. Notation as mode of communication. Discovery and verification of ideas through laboratory experience.

### 181–182 Elementary Music Theory (2–2) Yr.
- McKay
- Materials and organization of music; analysis, writing and keyboard application. Taken concurrently with 185–184. Placement conference required. Pre: consent of instructor.

### 183–184 Aural Training (1–1) Yr.
- McKay
- Systematic study of problems in perception, identification and notation of musical sounds. Emphasizes sight-singing. Taken concurrently with 181–182. Pre: ability to sing simple diatonic melodies at sight.

### 215–216 Second-Level Secondary Piano (1–1) Yr.
- Shipwright
- Continuation of 115–116 with increased emphasis on piano literature up to intermediate level. Pre: 116 or consent of instructor.

### 265 History of Western Music to 1750 (3) I, II
- Development of Western music from its origins to 1750. Styles, schools, composers. Pre: either 160, 170, 180, 181 or consent of instructor.

### 266 History of Western Music after 1750 (3) I, II
- Development of Western music from 1750 to the present. Styles, schools, composers. Pre: either 160, 170, 180, 181, or consent of instructor.

### 281–282 Intermediate Music Theory (2–2) Yr.
- L. Rowell
- Detailed study of theory of music; including writing, analysis, keyboard application. Taken concurrently with 283–284 and 265–266. Pre: 182.

### 283–284 Advanced Aural Training (1–1) Yr.

### 325–326 Conducting (1–2) Yr.
- Lum, Uchima
- Problems in directing instrumental and choral ensembles and organizations. Score reading, rehearsal techniques and basic interpretive problems. Pre: 182.
MUSIC

351-352 Music in the Elementary School (2-2) Yr. Gillett
For majors in elementary school music (vocal-general). Detailed study of music concepts and literature appropriate for elementary schools. Materials and procedures necessary for organization of music in childhood experience. Pre: 118 or 119 or 180 or 181.

353 Survey of Music in the Elementary School (3) I, II Gillett
Study of music concepts and literature appropriate for elementary schools. Basic materials and procedures. Not intended for majors in elementary school music (vocal-general). Pre: 118 or 119 or 180 or 181.

358-359 Piano Methods (2-2) Yr. Kerr
Concepts, materials and procedures for class and individual instruction in piano. Pre: 182 or consent of instructor. (Not offered 1970-71.)

370 Music in Modern America (3) I
Varieties of music, including jazz and other popular forms, in contemporary American society, with relevant antecedents. Pre: freshmen admitted only with permission of instructor. (Cross-listed as American Studies 370.)

399 Directed Study (arr.) I, II
Limited to senior majors with 2.7 grade-point ratio or 3.0 in music.

401 Ensembles (1) I, II

402 University Concert Choir (1) I, II Crabtree
Performance of a cappella literature and major choral works. Pre: previous choral experience and consent of instructor. May be repeated for credit.

404 Opera Workshop (3) I, II
Opera in performance. Styles and characterizations. Performance of scenes and one complete work. May be repeated for credit. Pre: 236(11) or consent of instructor.

405 University Symphony Orchestra (1) I, II Krantz
Performance of orchestra literature, including major works for chorus and orchestra, opera and dance. Pre: audition or consent of instructor. May be repeated for credit.

409 University Concert Band (1) I, II Lum
Performance of band literature, including major works by contemporary composers. Pre: audition or consent of instructor. May be repeated for credit.

420 Music Literature Laboratory (2) I, II
Specific areas of music literature with emphasis on problems of style and interpretation and their implications in performance. Inquiry with laboratory performance. (11) solo voice, (21) piano. Maybe repeated for credit.

451 Advanced String Methods (2)
Advanced performance techniques, materials and pedagogy for string instruments: (31) violin, (32) viola, (33) cello, (34) double bass. Pre: 152. May be repeated for credit. (Not offered 1970-71.)

452 Advanced Woodwind Methods (2) II
Advanced performance techniques, materials and pedagogy for woodwind instruments: (41) flute, (42) oboe, (43) clarinet, (44) bassoon. Pre: 153. May be repeated for credit.

453 Advanced Brass Methods (2)
Advanced performance techniques, materials and pedagogy for brass instruments: (51) trumpet, (52) French horn, (53) trombone, (54) tuba. Pre: 154. May be repeated for credit. (Not offered 1970-71.)
MUSIC

455 Advanced Percussion Methods (2)
Advanced performance techniques, materials and pedagogy for percussion instruments: (61) timpani, (62) mallet instruments, (63) snare drum. Pre: 155. May be repeated for credit. (Not offered 1970-71.)

457 Asian and Pacific Music in Education (2) Gillett
Musical concepts in songs, dances and instrumental music of Asia, Hawaii and other Pacific islands appropriate for elementary school. Pre: 352 or 353; teaching experience or consent of instructor.

458 Voice Methods (2) I Pfieffer
Concepts, materials and procedures for class and individual instruction in voice. Pre: 182 or consent of instructor.

461 Symphonic Music (2)
Historical study of symphony orchestra and its literature from Bach to present. Pre: either 160, 170, 180, 181 or consent of instructor. (Not offered 1970-71.)

462 Choral Music (2)
Historical study of choral literature from Palestrina to present. Pre: either 160, 170, 180, 181, or consent of instructor. (Not offered 1970-71.)

463 Opera (2) I Brown
Historical study of operatic literature from Monteverdi to present. Pre: either 160, 170, 180, 181, or consent of instructor.

464 Twentieth Century Music (2) II
Study of major styles and composers from Debussy to present. Pre: either 160, 170, 180, 181, or consent of instructor.

465 Chamber Music (2) I Vaught
Historical study from Renaissance to present, of music written for one performer to a part. Pre: either 160, 170, 180, 181, or consent of instructor.

466 Music of the United States (2) II Spielman
Historical study of music of U.S. from colonial times. Pre: either 160, 170, 180, 181, or consent of instructor.

469 Keyboard Music (2) II Brown
Study of literature for harpsichord, piano and organ from Renaissance to present, emphasizing development of historical styles. Pre: either 160, 170, 180, 181, or consent of instructor.

470 Art Music of Asia (2) II
Major genres and representative works. Performance practices and compositional principles. Pre: either 160, 170, 180, 181, or consent of instructor.

471 Music of Non-Literate Peoples (3) II
Traditional and acculturated styles, instruments, social context. Pre: either 160, 170, 180, 181, or consent of instructor.

477 Musical Cultures (2) I, II
The musical system of a musico-culture area. (1) Japan, (2) India, (3) Vietnam. Pre: either 160, 170, 180, 181, or consent of instructor. May be repeated for credit.

481-482 Orchestration (2-2) Yr. N. McKay
Basic principles of scoring for orchestra and band, including study of instrumental ranges, timbres, transpositions. 2nd Sem: transcribing or composing for band, orchestra and chorus. Pre: 182, or consent of instructor.

483-484 Counterpoint (2-2) Yr. B. Walz
Techniques of contrapuntal writing from the beginnings of polyphonic to the present. Analysis of contrapuntal examples from music literature. Application in writing and listening. Pre: 282.

485-486 Form and Analysis (2-2) Yr. Rowell
Structural analysis of music literature from various style-periods, including standard form-types. Pre: 282.

487-488 Composition (2-2) Yr.
Creative writing beginning with smaller forms. Pre: 282 or consent of instructor.
489-490 Advanced Composition (2-2)
Creative writing in larger forms. Pre: 488 or equivalent.

491-492 Movement Notation (2-2) Yr.
Analysis and recording of movement through Labanotation; reconstruction of notated exercises and dances.

493-494 Senior Honors Thesis (4) Yr.

519 Music for Elementary Teachers (3)
Music fundamentals: basic music skills and theory with emphasis on reading music. Sight singing, ear training through melodic and rhythmic dictation, creative activities, analysis of simple song forms, study of basic harmony with direct application to classroom instruments. Pre: 118 or 119 or 180 or consent of instructor. (Not offered 1970-71.)

580 Theoretical Aspects of Musical Style (3)
Study of concepts, and practices distinguishing baroque, classical, romantic, contemporary periods. Application in writing and listening. Pre: 182 and 266. (Not offered 1970-71.)

600 Seminar (3) I, II
Selected problems in (1) composition, (2) ethnomusicology, (3) musicology, (4) performance repertory, (5) music education, (6) dance ethnology, (7) theory. Pre: consent of instructor. May be repeated.

601 Advanced Ensemble (1) I, II
Selected projects in study and performance of ensemble literature. Pre: 436 or equivalent. May be repeated.

625-626 Advanced Conducting (2-2) Yr.
Advanced problems in conducting instrumental and choral groups. Pre: 326.

651 Foundations in Music Education (2) I
Shoemaker
Discovery and organization of broad problems in music education. Relating basic concepts of music in elementary and secondary schools to total curriculum.

652 Problems in Music Education (2) II
Study of choral, instrumental, general music at elementary and secondary school levels. Research, reports and conferences. Pre: teaching experience. May be repeated.

660 Studies in Music Literature (3) II
Vaught
Detailed study of music literature approached from various standpoints, i.e., works of specific composers, forms or periods. Pre: 266 or consent of instructor. May be repeated.

661 Bibliography and Research Methods in Music (3) I
Smith
Basic materials and techniques for research in music.

670 Regional Musics (3) I, II
Musical content and historico-social context of principle musical traditions. (1) Asia, (2) Oceania. Pre: consent of instructor. May be repeated.

680 Advanced Problems in Music Theory (2) I, II
(1) Counterpoint, (2) form and analysis, (3) media, (4) pedagogy, (5) transcription of performance practices, (6) movement notation. Pre: graduate standing and 282 or equivalent. May be repeated for credit.

699 Directed Work (arr.) I, II
Reading and research in ethnomusicology, musicology, or music education; reading and practice in theory, composition or performance. Pre: consent of instructor.

783-784 History of Theory (3-3) Yr.
Rowell
Theory of Western music from antiquity to present; readings and discussion of representative treatises; evolution of theories of mode, harmony, rhythm; tunings, temperaments, acoustical bases; parallel developments in the history of ideas.

800 Thesis Research (arr.) I, II

APPLIED MUSIC

Instruction is given in individual lessons either a half-hour once or twice a week or an hour once a week. Lessons are not made up unless the instructor is notified a
reasonable time in advance of the absence. Lessons occurring on holidays are not made up.

Registration for lessons and choice of teachers must be approved by the department chairman.

Assignment to applied music courses is based on tests and auditions given by the department during the advising and registration period.

Information regarding specific requirements in applied music courses may be obtained from the music department.

**Fees Per Semester**

<table>
<thead>
<tr>
<th>Lesson Plan</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>One half-hour lesson per week</td>
<td>$55.00</td>
</tr>
<tr>
<td>Two half-hour lessons or one hour per week</td>
<td>$90.00</td>
</tr>
</tbody>
</table>

**131 Introduction to Applied Music (arr.) I, II**


**195-196 First-Level Applied Music (arr.) I, II**


**231 Intermediate Applied Music (arr.) I, II**

For non-music majors or music majors in secondary performance fields. Individual instruction in solo vocal and instrumental performance at second performance level. Study of works representative of the literature. See 131 for list of sections. Pre: audition. May be repeated.

**235-236 Second-Level Applied Music (arr.) I, II**

For music majors or intended music majors. Individual instruction in solo vocal or instrumental performance at second performance level. Study of works representative of literature. Weekly repertoire laboratory required. See 135 for list of sections. Pre: 136 or consent of instructor.

**335-336 Third-Level Applied Music (arr.) I, II**


**431 Advanced Applied Music (arr.) I, II**

For students not majoring in music performance. Individual instruction in solo vocal or instrumental performance at third and fourth performance levels. Study of works representative of literature. No recital requirement. See 131 for list of sections. Pre: 336 or consent of instructor. May be repeated.

**435-436 Fourth-Level Applied Music (arr.) I, II**


**635 Graduate-Level Applied Music (arr.) I, II**

Individual instruction in solo vocal or instrumental performance at graduate performance level. Study of works representative of literature. (11) Voice, (21) piano,
(22) organ, (31) violin, (32) viola, (33) cello, (34) bass, (41) flute, (42) oboe, (43) clarinet, (44) bassoon, (45) saxophone, (51) trumpet, (52) horn, (53) trombone, (54) tuba, (61) percussion.

636 Graduate Recital (3) I, II
For students accepted for M. M. in performance. Individual instruction in solo vocal or instrumental performance at graduate performance level; full recital required. (11) voice, (21) piano, (22) organ, (31) violin, (32) viola, (33) cello, (34) bass, (41) flute, (42) oboe, (43) clarinet, (44) bassoon, (45) saxophone, (51) trumpet, (52) horn, (53) trombone, (54) tuba, (61) percussion.

Oceanography (Ocean)

Professors Brock, Chave, Groves, Hardy, Murphy, Wyrtki; Associate Professors Caperon, Malahoff, Stroup; Assistant Professors Andrews, Cattell, Clarke, Gallagher, Gordon, Roy, Young; Visiting Professor Montgomery (Spring).

201 Science of the Sea (3) I, II Caperon, Stroup
Introduction to biological, geological, chemical, physical aspects of oceanography. Based on classroom lectures and use of oceanographic equipment and techniques at sea aboard ship and in near-shore zone.

620 Physical Oceanography (3) I Gallagher
Introduction to properties of sea water, oceanographic instruments and methods, heat budget, general ocean circulation, formation of water masses, dynamics of circulation, regional oceanography, waves, tides, sea level. Pre: Math 206.

621 Biological Oceanography (3) II Clarke
Marine organisms, factors governing productivity; distribution, ecology, environmental influences; marine resources, their availability and utilization. Pre: 620 or consent of instructor.

622 Geological Oceanography (3) II Andrews
Marine geological processes and forms, including ocean basin structure and geomorphology, nearshore processes, marine sedimentation and stratigraphy. For students without a strong geological background; others see Geosc 623.

623 Chemical Oceanography (3) I Chave
Study of chemical processes occurring in marine waters with emphasis on why they occur and how they affect the oceanic environment. Pre: consent of instructor.

630 Physical Oceanography Laboratory (1) I Gallagher
Techniques and methods of analysis in physical oceanography. Pre: Math 232 and consent of instructor.

633 Chemical Oceanography Laboratory Methods (1) I (1 3-hr Lb) Chave
Laboratory and field analytical techniques used in chemical oceanography. Pre: consent of instructor.

636 Phytoplankton Ecology (3) II (2 L, 1 3-hr. Lb) Cattell
Phytoplankton-environmental relations and community ecology; phytoplankton-zooplankton interactions; phytoplankton synecology. Pre: 620, and consent of instructor.

640 Advanced Physical Oceanography (3) II Montgomery
Dynamics of ocean currents; equations of motion and continuity; ocean circulation; heat budgets. Pre: 620, Math 402.

642 Sedimentology II (3) II (2L, 1 3-Hr Lb) Roy
Analysis of sedimentary textures, physical properties, and sediment compositions; distribution of recent marine sediments; statistical applications to sedimentology: to be preceded by Geosciences 619 for an integrated survey of young marine sediments. Pre: consent of instructor.

643 Marine Geochemistry (3) II Chave

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OCEANOGRAPHY

644 Marine Geophysics (3) I Malahoff
Geophysical exploration techniques and studies of ocean basins and margins. Offered jointly as Geosc 661. Pre: consent of instructor. (Alt. yrs.; not offered 1970–71.)

646 Zooplankton Ecology (2) Staff
Sampling, distribution patterns, population dynamics, community structure and energy flow in the pelagic environment. Pre: 620, consent of instructor.

647 Zooplankton Ecology Laboratory (2) (2 3-Hr Lb) Staff
Application of sea and laboratory techniques, analysis and interpretation of concepts introduced in 646. Pre: 646 (may be taken concurrently), consent of instructor.

650 Mathematical Techniques for Biologists (3) Caperon
Introduction to differential equations, matrix algebra and stochastic processes. Use of these techniques in solving problems in biology. Pre: Math 205, 206 or equivalent.

660 Ocean Wave Theory (3) Groves
Generation and propagation of waves at sea; tsunamis; internal waves; observation and recording of ocean waves; wave spectra and forecasting. Pre: either 640, Math 432 and consent of instructor.

661 Tides (3) Groves
Mechanics of particles and finite bodies; tide-generating forces; response of ocean and earth; harmonic and non-harmonic methods of analysis and prediction, geophysical implications of the tide. Pre: either 640, Math 432, and consent of instructor.

662 Marine Hydrodynamics (3) I Gallagher
Introduction to classical hydrodynamics and development of Navier-Stokes equations as applied to oceans. Techniques for solution on various scales of oceanic motion, including turbulence, potential theory, dimensional analysis, vertical integration, boundary effects and statistical representations. Pre: Math 432 and consent of instructor.

663 Measurements and Instrumentation (2) II Hardy
Oceanographic measurements, their accuracy and precision. Design principles and operation of selected instruments for physical oceanography. Reduction and evaluation of measured data.

664 Principles of Underwater Acoustics (2) I Hardy
Study of the physical "optics" of underwater sound propagation in the ocean, including effects of diffraction, refraction, scattering and reflection. Pre: consent of instructor and Math 404.

672 Seminar in Geotectonics I (3) I Malahoff
Evolution of the ocean basins and margins, from regional syntheses of structure, petrology, geophysics, stratigraphy, and physiography. Pre: consent of instructor. Offered jointly as Geosc 672. (Alt. yrs.: offered 1970–71.)

673 Continental Shelves (3) I Andrews
Geological structure and mineral resources of continental shelves. Pre: consent of instructor. (Alt. yrs.: not offered 1970–71.)

699 Directed Research (arr.) I, II Staff
Pre: consent of instructor.

701 Nekton Ecology (3) II Clarke
Ecology of larger oceanic animals, patterns of life history, population ecology, and community structure as related to the physical and biological environment. Pre: 620 and 621 or equivalent and consent of instructor.

702 Deep Sea Biology (3) II (2L, 1 3-Hr Lb) Young
Distribution, ecology and adaptations of pelagic and benthic organisms within the deep sea. Pre: consent of instructor.

735 Seminar in Oceanography (2) I, II Staff

750 Topics in Biological Oceanography (2) I, II Murphy
Seminar. Literature and concepts in one of several active fields of biological oceanography considered in detail. Pre: consent of instructor. May be repeated for credit.
OVERSEAS CAREER PROGRAM, PACIFIC URBAN STUDIES

760 Topics in Physical Oceanography (2) I Staff
Review of recent development in theoretical oceanography with emphasis on problems of oceanic circulation. Pre: consent of instructor.

770 Seminar in Chemical Oceanography (1) II Chave

800 Thesis Research (arr.) I, II Staff

Overseas Career Program (OCP)

Associate Director Hackler

631-632 Overseas Career Training Seminar (3-3) I, II Hackler
Interdisciplinary study of problems of Americans living and working in Asia with emphasis on application of regional and individual country studies, and practical aspects of interaction of American and Asian cultures. Consideration of overseas career services, such as U.S. Foreign Service, and study of case histories of positions available to Americans in various Asian countries. Open only to graduate students; required of all candidates for Overseas Career Certificate.

791 Internship in an Asian Country (3) Hackler
Active duty for 6 months (in some cases up to 12) with governmental or private agencies in Asia. Periodic and final reports required. Limited to candidates for Overseas Career Certificate.

See Graduate Division Bulletin for description of Overseas Career Program and requirements for the Overseas Career Certificate.

Pacific Urban Studies and Planning Program (Plan)

Director Dinell, Associate Professor Armstrong; Assistant Professors Earickson, Minerbi, Nitz, Schwind; Lecturer Wiederholt

A program offered by the departments of architecture, economics, geography, political science and sociology, the College of Engineering and the schools of Public Health and Social Work.

Plan 610 Urban Studies and Planning Seminar (6) I, II Staff
Problem-oriented seminar in which insights and tools of disciplines concerned with economic analysis, political decisionmaking, physical planning, policy planning and administration are brought to bear upon a selected urban or regional problem. Students design and execute a cooperative planning endeavor. Open to graduate students; required of all candidates for Certificate in Planning Studies. Pre: consent of instructor.

Plan 630 Internship in Planning (0) I, II Staff
Observation, study and practical work in planning with governmental or private agency for 3 to 12 months. Periodic and final reports required. Limited to candidates for Certificate in Planning Studies. Pre: consent of instructor.

The courses described below and offered by the participating units are part of the program:

Arch 342 Elements of Planning Process (3) I or II Minerbi
Planning as a decision-making process for infra-urban and supra-urban environmental situations. Pre: consent of instructor.

Arch 442 Methods of Urban and Regional Design (4) I or II Minerbi
Methods for descriptive, predictive, prescriptive, implemental and managerial phases of development and design of urban and regional patterns. Pre: consent of instructor.
PHILOSOPHY

Geog 611 Information Systems and Planning (3) II Earickson
PH 611
Systems analysis approach to public activity problems, problem identification, information sources, hypothesis testing, predictive and prescriptive models, and evaluation of results. Investigation of public issues in Hawaii and elsewhere as related to health, social, and political prerogatives. Geographic investigation of differences in planning and information systems. Pre: consent of instructor.

Geog 612 Ecological Concepts and Planning (3) II Armstrong
PH 612
Concepts of human ecology as bases for environmental management planning with emphasis on comprehensive health planning. Pre: consent of instructor.

PH 614 Political Aspects of Policy Planning (3) I Dinell, Nitz Polsc 770 Wiederholt
Includes examination of planning as a conflict-resolution process; the value framework within which decisions are made; problems involved in goal determination, comprehensiveness, individual choice, resource allocation, organization and participation; and utilization of planning processes in effecting change. Pre: consent of instructor.

Philosophy (Phil)

Professors Chang, Copi, Deutsch, McCarthy, Mehta, Nagley; Visiting Professors Maxwell, Robinson; Associate Professors Cheng, Upadhyaya; Assistant Professors Bender, Goodman, Harter, Moore, Stewart, Wargo, Winnie, Yamasaki

One of the following is generally a prerequisite to each advanced course: 100, 200, 201, 210 or the equivalent.

100 Introduction to Philosophy (3) I, II
Problems, methods, fields of philosophy.

200 History of Philosophy I (3) I Harter
Western philosophy from era of great Greek thinkers to Renaissance.

201 History of Philosophy II (3) II Stewart
Western philosophy from Renaissance to present. Desirable preparation: 200.

210 Introduction to Logic (3) I, II
Principles of modern deductive logic.

300 Greek Philosophy (3) I Goodman, Harter
Basic philosophical works of schools and thinkers of Greek philosophy from Pre-Socratics to Neo-Platonism.

302 Medieval Philosophy (3) II McCarthy
Metaphysical, epistemological, ethical problems of medieval philosophy, with particular reference to Augustine, Anselm, Thomas Aquinas, Duns Scotus and William of Ockham.

304 British Empiricism (3) II Winnie, Yamasaki
Analysis of development of empiricism in writings of Locke, Berkeley and Hume. Special attention to concepts of substance, sensation, self, nature, causation, mathematics, morality, religion.

306 Continental Rationalism (3) I Yamasaki
Epistemological, metaphysical, ethical problems in Continental Rationalism. Particular attention to Descartes and Spinoza.

308 Nineteenth Century Philosophy (3) I Nagley
Major philosophical writings of German Idealists from Kant through Hegel and of Marx, Kierkegaard, Nietzsche, Freud.

310 20th-Century Philosophy (3) II Deutsch, Stewart
Survey of recent developments in Western philosophy.

315 Ethical Theory (3) I Goodman, Moore
Comparative analysis of ethical theory in theological, legal, literary, scientific,
PHILOSOPHY

social, as well as philosophical sources indicating relevance of ethical theory to processes of decision making.

400 Political Philosophy (3) II  
Combined systematic and historical approach to major problems of Western political philosophy. Special attention to European political theory.

401 Social Philosophy (3) I  
Traditional problems of justice, freedom, equality and authority and their contemporary analyses.

402 Philosophy of Law (3) I, II  
Study of both historical and contemporary materials in law and legal theory. Principle considerations: legal responsibility, justice, natural law, punishment, insanity, censorship, judicial reasoning.

405 American Philosophy (3) I  
Major trends in development of American philosophy in relation to socio-political background and influence.

410 Philosophy of the Physical Sciences (3) I  

415 Philosophy of the Social Sciences (3) II  
Substantive methodological problems in current analyses of social sciences.

417 Theory of Knowledge (3) II  
Examination of major historical and contemporary approaches to the theory of knowledge. Problems to be considered will include: truth and error, scepticism, the problem of induction, the possibility of a priori knowledge, the analytic-synthetic distinction, meaning and verification, perception, and other minds.

418 Metaphysics (3) I, II  
Consideration given to a number of the most basic problems in metaphysical inquiry including, the nature and function of metaphysics and metaphysical statements, the problem of universals, the one and the many, identity, substance, and determinism as well as an inspection of the realism-idealism controversy.

420 Philosophy of Art (3) I  
Study of art from points of view of creation, appreciation, criticism. Particular attention to painting, sculpture, music, poetry.

422 Philosophy and Psychoanalysis (3) II  
Contributions of psychoanalysis to the philosophical understanding of the nature of man, society, art, religion and morality.

425 Philosophy in Literature (3) I  
Literary expression of philosophical ideas. Consideration of such writers at Beckett, Camus, Hemingway, Kafka, Rilke, Sartre, T. S. Eliot.

427 Kafka (3) II  
Philosophical-literary analysis of the major writings of Franz Kafka: novels, stories, journals, philosophical reflections. Pre: 425 and at least 6 credits of upper division literature.

428 Samuel Beckett (3) II  
Literary-philosophical analysis of the poems, novels, and plays of Samuel Beckett. Pre: 425 and at least 6 credits of upper division literature.

430 Existential Philosophy (3) I  
Survey of main themes of European existential philosophy. Particular attention to Kierkegaard and Heidegger.

435 Philosophy of Religion (3) II  
Problems concerning existence of God, nature of religious experience, faith and reason, immortality, religious language, alternatives to theism.

445 Symbolic Logic I (3) I  
Intermediate level course designed to impart the techniques of symbolic logic, both the propositional calculus and first order predicate calculus. Pre: 210 desirable preparation.
PHILOSOPHY

600 Problems of Philosophy (3) II  
Goodman, McCarthy  
Persistent specific problems of philosophy, primarily those concerning nature, man,  
God. Pre: graduate standing; consent of instructor.

604 Metaphysics of Language (3) I  
Ontological and historical dimensions of language in metaphysical tradition of  
Plato, Aristotle, Buridan, Vico, Humboldt.

605 Philosophy of Language (3) II  
Cheng  
Concepts of meaning, truth, existence, reference, predication, quantification;  
analysis of analyticity and modalities with applications to philosophy, science, art.

611 Symbolic Logic II (3) II  
Copi  
Basic course in the theory of logistic systems covering both the sentential and first  

700 Individual Western Philosophers (3) I, II  
Philosophies of men such as Plato, Aristotle, Thomas, Kant, Hegel, Kierkegaard,  
Schopenhauer. Pre: graduate standing: consent of instructor.

715 Philosophy of Mathematics (3) II  
Cheng  
Philosophical problems concerning mathematics—mathematical truths, axioms,  
proof. Emphasis on contemporary research on foundations of math. Pre: 710 or 12  
credits in math; consent of instructor.

720 Seminar in Ancient-Medieval Philosophy (3) I  
Pre: graduate standing; consent of instructor.

725 Seminar in Modern Classical Philosophy (3) I, II  
Pre: graduate standing; consent of instructor.

730 Seminar in Contemporary Philosophy (3) I, II  
Pre: graduate standing; consent of instructor.

740 Seminar in Philosophy of Science (3) I  
Pre: graduate standing; consent of instructor.

799 Directed Research (arr.) I, II  
(a) Greek philosophy, (b) modern classical philosophy, (c) contemporary philoso­  
phy. Available to advanced graduate students; consent of instructor and chairman  
required. May be repeated.

ASIAN AND COMPARATIVE

450 Indian Philosophy (3) I  
Deutsch  
Philosophical systems and movements: Vedas, Upanishads, six systems of Hinduism,  
Charvaka, Jainism, Buddhism.

460 Buddhist Philosophy (3) II  
Robinson  
Survey of basic schools and tenets of Buddhist philosophy.

470 Chinese Philosophy (3) I  
Chang, Cheng  
Historical survey of important philosophical schools and tendencies in China,  
ancient and modern.

480 Philosophy, East and West (3) I  
Deutsch  
Basic systems and methods of Eastern and Western philosophy, with special attention  
to similarities and contrasts.

485 Modern Japanese Philosophy (3) II  
Wargo  
Systematic survey of the history of development of Japanese philosophy in the  
modern period, from mid-19th century to the present.

650 Individual Asian Philosophers (9) I, II  
Philosophies of men such as Ramanuja, Shankara, Confucius, Chuang Tzu, Nagar­  
juna, Nishida. Pre: 450, 460, or 470; consent of instructor.

655 Vedanta (3) I  
Deutsch, Upadhyaya  
Development and many facets of Vedanta examined in their richness and complex­  
ity. Pre: 450; consent of instructor.
PHYSICS AND ASTRONOMY

656 Indian Social Philosophy (3) II
Basic codes of Indian moral and social philosophy (Dharma-sastras) and their historical developments and practical significance. Pre: 450; consent of instructor.

660 Theravada Buddhist Philosophy (3) I Robinson
Analysis of early Buddhist conceptions of the nature of man. Pre: 460; consent of instructor.

661 Mahayana Buddhist Philosophy (3) II Robinson
Basic principles and major schools. Emphasis upon Indian, Chinese, and later Japanese developments. Pre: 460; consent of instructor.

662 Zen (Ch'an) Philosophy (3) I Chang
Origin and development of Zen; influence on Oriental cultural traditions and contemporary scene. Pre: 460; consent of instructor.

670 Confucianism (3) I Cheng
Doctrinal, ethical, social, institutional problems of Confucius to the present. Pre: 470; consent of instructor.

671 Neo-Confucianism (3) II Chang, Cheng
Examination of logic, theory of knowledge, metaphysics, and ethics of major Chinese Neo-Confucian philosophers in period from 11th to 16th century. Pre: 470; consent of instructor.

672 Taoism (3) II Chang
Study and analysis of philosophical ideas of Lao Tzu, Chuang Tzu, and later Neo-Taoists. Pre: 470; consent of instructor.

750 Seminar in Indian Philosophy (3) I, II Deutsch, Mehta, Upadhyaya
Pre: 450; graduate standing; consent of instructor.

760 Seminar in Buddhist Philosophy (3) I, II Pre: 460; graduate standing; consent of instructor.

770 Seminar in Chinese Philosophy (3) II Pre: 470; graduate standing; consent of instructor.

780 Seminar in Comparative Philosophy (3) II Deutsch, Mehta Pre: graduate standing; consent of instructor.

799 Directed Research (arr.) I, II (d) Indian philosophy, (e) Buddhist philosophy, (f) Chinese philosophy, (g) East-West philosophy. Available to advanced graduate students; consent of instructor and chairman required. May be repeated.

800 Thesis Research

Physics (Phys) and Astronomy (Astr)

Professors Henke, Holmes, Jefferies, Orrall, Peterson, Pong, Sinton, Steiger, Tuan, M. S. Watanabe, J. Zirker; Associate Professors Bonsack, Cence, McAllister, Stenger, Wolstencroft, Yount; Assistant Professors Boesgaard, Dobson, Hayes, Nose, Pakvasa, Peters, Shyu, Crooker

Mathematics 231 and Physics 151–154 or 170–273 are prerequisites to all courses numbered 300 or above.

100 Survey of Physics (3) I, II
Introduction to physics; basic concepts. Not open to those with previous college physics or experience beyond Math 134.

101 Survey of Physics Laboratory (1) I, II (1 3-hr Lb)
Simple experiments in basic concepts of physics. Pre: credit or concurrent enrollment in 100.
102 Elementary Modern Physics (3) II
Survey of selected topics in special relativity, quantum physics, atomic and nuclear structure. Pre: 100 or consent of instructor.

110 Astronomy (3) I
Survey of nature of astronomical universe, with much emphasis on scientific method and development of scientific thought. Pre: high school trigonometry.

111 Astronomy (3) II
Selected topics in astronomy considered in depth. Emphasis on current research problems. Occasional evening observing sessions. Pre: high school trigonometry.

151-152 College Physics (3-3) Yr. (3L)
Fundamental laws, principles, methods. Pre: credit or registration in Math 134. 151 is prerequisite to 152.

153 College Physics Laboratory I (1) I (1 3-hr. Lb)
Pre: credit or registration in 151. Offered only as pass-fail.

154 College Physics Laboratory II (1) II (1 3-hr Lb)
Continuation of 153. Pre: credit or registration in 152. Offered only as pass-fail.

170 General Physics (4) I, II
Mechanics of particles and rigid bodies; kinetic theory and thermodynamics. Pre: credit or registration in Math 206.

171 Experimental Analysis in Mechanics and Thermodynamics (1) I, II (1 3-hr Lb)
Pre: credit or registration in 170.

272 General Physics (3) I, II
Electricity and magnetism; wave motion; optics. Pre: 170, 171.

273 Experimental Analysis in Electricity and Magnetism and Optics (1) I, II (1 3-hr Lb)
Pre: credit or registration in 272.

274 General Physics (3) I, II
Relativity, introduction to quantum mechanics, atomic and nuclear physics, physical optics. Pre: 272, 273 or 169, 161; credit or registration in Math 231.

275 Experimental Analysis in Modern Physics (1) I, II (1 3-hr Lb)
Pre: credit or registration in 274.

305-306 Modern Physics Lab (1-2) I, II
Selected important experiments in modern physics. Measurements of nuclear magnetic resonance, Mössbauer effect, electron spin resonance, lasers, electron diffraction, other phenomena. Pre: 272, credit or registration in 480, or consent of instructor.

310 Theoretical Mechanics I (3) I
Particle dynamics, rigid body dynamics, planetary motion. Pre: credit or registration in Math 292.

311 Theoretical Mechanics II (3) II
Rigid body mechanics continued, fluid dynamics, wave motion. Pre: 310.

350 Electricity and Magnetism (3) I
Experimental laws, field theory, mathematical application to special problems. Pre: credit or registration in Math 292.

399 Individual Work in Advanced Physics (arr.) I, II
Limited to physics majors with 2.7 grade-point ratio or 3.0 in physics.

400 Applications of Mathematics to the Physical Sciences (3) I
Mathematical methods and techniques and their application to problems in the physical sciences. Pre: Math 232.

421 Astrophysics I (3) I
Methods of observation, physical theory, and interpretation of radiation from single stars, stellar spectra. Discussion of the accuracy of the data and the limitations of the physical theory. Pre: 274 and Math 232.

422 Astrophysics II (3) II
Methods of observation, physical theory, and interpretation of radiation from
groups of stars and the interstellar gas. A special topic of current interest in astronomical research will be discussed during the last 3–4 weeks to exemplify concepts learned in 421–422. Examples of such topics are: star formation, close binary systems, solar and stellar coronae. Pre: 421.

430 Thermodynamics and Statistical Mechanics (3) II

440 Solid-State Physics (3) I, II
Physics of electronic processes in solids. Pre: 274, credit or registration in 350 or equivalent.

450 Electromagnetic Waves (3) I
Field equations, plane and spherical waves, guided waves. Pre: 350.

460 Physical Optics (3) II
Geometrical and physical optics. Pre: 274.

480 Atomic and Nuclear Physics I (3) I

481 Atomic and Nuclear Physics II (3) II
Continuation of 480; nuclear physics. Pre: 480.

490 Quantum Electronics (3)
Interaction of radiation with gases and solids. Pre: 440 and Math 403 or 402.

600 Methods of Theoretical Physics I (3) II
Study of the mathematical tools of theoretical physics. Intended as a continuation of Physics 400, but with an independent selection of topics. Pre: 400 or consent of instructor.

601 Methods of Theoretical Physics II (3) I
Selected advanced topics in the mathematical tools of the theoretical physicist. Pre: 600 or consent of instructor.

605–606 Modern Physics Laboratory (1 or 2) I, II
Selected important experiments in modern physics. Measurements of nuclear magnetic resonance, Mossbauer effect, electron spin resonance, lasers, electron diffraction, and other phenomena. Pre: 275, credit or registration in 480, or consent of instructor.

610 Analytical Mechanics I (3) I
Dynamics of particles, systems of particles, and rigid bodies; Lagrangian and Hamiltonian equations; special theory of relativity. Pre: Math 403–404 or credit or registration in 400 or 600.

611 Analytical Mechanics II (3) III
Invariants, Hamilton-Jacobi equation, Huygen's principle, small oscillations, mechanics of elastic media. Pre: 610.

620 Physics of Upper Atmosphere (3) II
Basic parameters, experimental methods, absorption and recombination processes, intrusion of extra-terrestrial particles and fields. Pre: 310, 350, or consent of instructor. (Alt. yrs.)

621 Stellar Atmospheres I (3) I
Excitation, ionization, dissociation, and radiative transfer in stellar atmospheres. Model atmospheres. Elements of continuum and line formation. Interpretation of stellar spectra. Pre: 480, Math 403–404 or credit or registration in 400 or 600.

622 Stellar Atmospheres II (3) II
Detailed theory of formation of spectrum lines and continuum. Pre: 621.

623 Stellar Interiors and Evolution (3) II
Equilibrium structure of stars and their evolution in time. Interpretation of observed color-luminosity and mass-luminosity relations. Nuclear reactions, radiative opacity, convection and model star calculations. Pre: Math 403–404 or credit or registration in 400 or 600.
627 Galactic Structure I (3) II
Stellar statistics, stellar populations, and structure of galaxy. Pre: consent of instructor.

628 Galactic Structure II (3) I
Dynamics of star clusters, galaxies, and systems of galaxies. Dynamics of interstellar medium. Pre: 627.

629 Astronomical Techniques (3) II
Experiments in photoelectric and photographic photometry, spectroscopy, optics, infra-red techniques, stellar classifications, and positional astronomy. Practical observing experience. Pre: consent of instructor.

650 Electrodynamics I (3) II
Potential theory, Maxwell's equations, electromagnetic waves, boundary value problems. Pre: 450; Math 403–404 or credit or registration in 400 or 600.

651 Electrodynamics II (3) I
Relativistic electrodynamics, radiation by charged particles. Pre: 650.

660 Advanced Optics (3) I
Wave motion, interference, diffraction, fundamentals of spectroscopy, optics from viewpoint of electromagnetic theory, lasers. Pre: 460.

690 Seminar (1) I, II
Discussions and reports on physical theory and recent development. Pre: graduate standing or consent of instructor.

695 Seminar on Atomic and Solid-State Physics (1)
Discussions and reports on recent development of atomic and solid state physics. Pre: graduate standing or consent of instructor. May be repeated.

700 Seminar on Elementary Particle Physics (1) I, II
Report and discussion of recent developments in the field of elementary particle physics. Pre: consent of instructor. May be repeated for credit; maximum 4 semesters.

711 Advanced Topics in Theoretical Physics (3) I, II
Course content varies from term to term to cover topics of interest in current theoretical research. Topics may include, but are not limited to: quantum field theory (generally offered in alternate years), invariance principles in particle physics, S-matrix theory, many-body theory, superconductivity. Pre: consent of instructor. May be repeated.

724 Solar Physics (3) I
Chromospheres and coronal physics, solar activity and its manifestations, photospheric structure, analysis of solar observations. Pre: 621.

725 Planetary Physics (3) I
Physical processes and the composition of planetary interiors, surfaces, atmospheres, and environment. Pre: consent of instructor.

730 Statistical Mechanics (3) I
Probability and statistics, classical and quantum-mechanical statistical mechanics, relation to thermo-dynamical variables, applications. Pre: 430, 610, 770. (Alt. yrs)

732 Astrophysical Spectra (3) II
Description and interpretation of spectra of such objects as: stars with extended atmospheres, planetary and gaseous nebulae, H II regions, novae. Pre: 480.

733 Special Topics in Astronomy (3) I, II
Course content reflects special interest of staff and visiting faculty, but includes detailed discussion of planetary astronomy, stellar pulsation, cosmology, interstellar medium, variable stars. Pre: consent of instructor.

770-771 Quantum Mechanics (3–3) Yr.

772 Relativistic Quantum Mechanics (3) I
777 Nuclear Physics I (3) I
Properties and structure of nuclei, reactions, and nuclear models. Pre: 481, 770.

778 Nuclear Physics II (3) II
Elementary particles, nuclear forces, meson theory. Pre: 777 and consent of instructor.

780 Atomic and Molecular Spectra (3) II
Study of atomic and molecular structure by quantum mechanical interpretation of line, band, continuous spectra. Pre: 770.

785 Solid-State Theory (3) I
Quantum theory of crystalline solids. Pre: 440, 770. (Alt. yrs.)

799 Directed Research (arr.) I, II
Pre: consent of instructor.

800 Thesis Research (arr.) I, II

**Political Science (PolSc)**

*Professors* Friedman, Jacob, Kariel, Levi, Meller, Miwa, Paige, Riggs, Rummel, Stauffer;
*Associate Professors* Becker, Cahill, Chadwick, Dator, Goldstein, Haas, Kent, Kuroda, Neff, Neubauer; *Assistant Professors* Alschuler, Bwy, Lee, Nitz, Rohter, Shapiro, Tabb, Wilson; *Acting Asst. Professor* Povey; *Instructor* Smith

110 is a prerequisite for all other courses, except when waived by the department.

110 Introduction to Political Science (3) I, II
Bwy, Kariel
Introduction to political problems, systems, ideologies, processes.

300-301 Political Thought (3-3) I, II
Nitz, Kariel, Wilson
Consideration of major elements of political theory.

305 Topics in Political Thought (3)
Nitz, Kariel, Wilson
To be pre-announced each semester. Recent topics include: Political Ideology, Revolutionary Movements and Theory, Political Extremism, Utopias.

320-321 International Relations (3-3) I, II
Chadwick, Haas, Jacob, Levi, Neff, Kent, Lee, Rummel
Integrated introduction to international relations and organization. (320 prerequisite for 321 unless waived by department)

325 Topics in International Relations (3) I, II
Chadwick, Haas, Jacob, Levi, Kent, Lee, Neff, Rummel
To be pre-announced each semester. Recent topics include: International Organization, South and Southeast Asian International Politics, U.S. Policy in Vietnam, American Foreign Policy, International Politics in East Asia, Coalition Formation and Alliance.

330-331 Policy Formation (3-3) I, II
Neubauer, Nitz, Tabb
Genesis, organization, expression, efficacy of political demands.

333 American Government (3) I, II
Miwa
Organization and functioning of American political system.

335 Topics in Policy Formation (3) I, II
Neubauer, Nitz, Tabb
To be pre-announced. Recent topics include: Public Opinion and Politics, Democratic Theory, Politics of Poverty, Personality and Politics, Community Politics.

340-341 Comparative Government and Politics (3-3) I, II
Alschuler, Bwy, Dator, Jacob, Kuroda, Paige, Stauffer
Integrated introduction to comparative political institutions and patterns.

345 Topics in Comparative Government and Politics (3) I, II
Alschuler, Bwy, Dator, Jacob, Kuroda, Paige, Stauffer
To be pre-announced each semester. Recent topics include: Political Leadership,
**POLITICAL SCIENCE**

Comparative Political Analysis, Japanese Politics, Latin American Politics, Political Modernization, China, Soviet Union, Comparative Communist Systems.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
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</thead>
<tbody>
<tr>
<td>350-351</td>
<td>Public Administration (3-3) I, II</td>
<td>Friedman, Meller</td>
</tr>
<tr>
<td></td>
<td>Integrated introduction to public organization and management theory, administrative institutions and processes. (350 prerequisite for 351.)</td>
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<tr>
<td>355</td>
<td>Topics in Public Administration (3) I, II</td>
<td>Friedman, Meller</td>
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<tr>
<td></td>
<td>To be pre-announced each semester. Recent topics include: University Administration in Developing Countries, Bureaucracy, Organizational and Management Theory.</td>
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<tr>
<td>360-361</td>
<td>Public Law and Politics (3-3) I, II</td>
<td>Becker</td>
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<tr>
<td></td>
<td>Integrated introduction to interrelationship between judicial process and political system. (360 prerequisite for 361.)</td>
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<tr>
<td>365</td>
<td>Topics in Public Law and Politics (3) I, II</td>
<td>Becker</td>
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<tr>
<td></td>
<td>To be pre-announced each semester. Recent topics include: Freedom and Authority, Judicial Policy-Making, Constitutional Rights.</td>
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<tr>
<td>390, 391</td>
<td>Colloquium in Political Science (3) I, II</td>
<td>Staff</td>
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<tr>
<td></td>
<td>Seminar dealing with specialized subjects in subfields of political science. (Admission by consent of instructor only.)</td>
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<tr>
<td>394-395</td>
<td>Senior Honors Thesis (4) I, II</td>
<td>Staff</td>
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<tr>
<td></td>
<td>First semester, selection of topic; second semester, completion of thesis, under direction of selected adviser.</td>
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<tr>
<td>600</td>
<td>Scope and Methods of Political Science (3) I, II</td>
<td>Staff</td>
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<tr>
<td></td>
<td>Main concepts delineating boundaries of discipline; approaches to knowledge employed by political scientists, including philosophical, legal, historical, comparative, behavioral. Anatomy of empirical and normative theory; problems in theory-building; validity and reliability in research design; role of deduction. (Required for all degree students.)</td>
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<tr>
<td>601</td>
<td>Political Analysis, Theory Building and Techniques (3) I, II</td>
<td>Staff</td>
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<tr>
<td></td>
<td>Research techniques in current use by department members, including content analysis, survey and interviewing, experimentation, etc. Students will assist in a relevant research project.</td>
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<tr>
<td>602</td>
<td>Research Practicum (3) I, II</td>
<td>Staff</td>
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<tr>
<td></td>
<td>Introduction to statistical analysis from simple bivariate through multivariate analysis.</td>
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<tr>
<td>610</td>
<td>Political Thought (3) I, II</td>
<td>Kariel, Neubauer, Wilson</td>
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<tr>
<td></td>
<td>Each semester a topical or chronological section on normative Western political thought; in addition, sections with geographical delimitation (as America, Asian, etc.) offered as staff conditions permit.</td>
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<tr>
<td>620</td>
<td>American Government (3) I, II</td>
<td>Miwa, Tabb</td>
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<tr>
<td></td>
<td>At least one section a semester, with focus of sections varying among national, state, local governments, and special topics.</td>
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<tr>
<td>630</td>
<td>International Relations (3) I, II</td>
<td>Chadwick, Haas, Jacob, Levi, Neff, Kent, Lee, Rummel</td>
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<tr>
<td></td>
<td>At least one section a semester, with focus of sections varying among foreign policy, international law, theoretical problems in international relations, global or regional organization.</td>
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<tr>
<td>631</td>
<td>International Relations of Asia (3) I, II</td>
<td>Chadwick, Lee, Levi, Jacob</td>
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<tr>
<td></td>
<td>At least one section a semester on international relations of all or parts of Asia.</td>
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<tr>
<td>640</td>
<td>Comparative Government and Politics (3) I, II</td>
<td>Alschuler, Bwy, Dator, Jacob, Kuroda, Stauffer</td>
</tr>
<tr>
<td></td>
<td>At least one section a semester, with focus of sections varying among East Asia, Southeast Asia, South Asia, Europe, and development politics. (Frequent offerings of Asian sections scheduled.)</td>
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</tr>
<tr>
<td>650</td>
<td>Public Administration Theory (3) I, II</td>
<td>Friedman, Meller, Riggs</td>
</tr>
<tr>
<td></td>
<td>One section each semester, with focus of sections varying among theoretical approaches to study of administration, comparative, development administration.</td>
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</tbody>
</table>
651 Functional Aspects of Public Administration (3) Friedman, Meller, Povey, Riggs
Sections on functional aspects of American administration (personnel and financial administration, planning, etc.).

660 Public Law and Judicial Systems (3) Becker
At least one section a year surveying literature on interaction of judiciaries and political systems.

670 Politics (3) Cahill, Nitz, Smith, Tabb
At least one section a year surveying literature on study of politics and political interaction.

699 Directed Reading and Research (arr.) I, II
Pre: consent of instructor.

710* Seminar: Political Thought (3) Kariel, Tabb, Neubauer, Nitz, Wilson
Pre-announced topics; at least one section a year.

720* Seminar: American Government (3) Miwa, Tabb
Pre-announced topics; at least one section a year.

730* Seminar: International Relations (3) Chadwick, Haas, Jacob, Levi, Kent, Lee, Neff, Rummel
Pre-announced problems of both international organization and politics; at least one section a semester.

740* Seminar: Comparative Government and Politics (3) Alschuler, Bwy, Dator, Jacob, Kuroda, Stauffer
Pre-announced topics; at least one section a semester.

750* Seminar: Public Administration (3) Friedman, Meller, Riggs
Administrative theory, comparative and development administration, and functional aspects, as pre-announced; at least one section a semester.

760* Seminar: Judicial Systems (3) Becker
Research projects emphasizing American system or comparative analysis, as pre-announced; at least one section a year.

770* Seminar: Politics (3) Cahill, Nitz, Tabb
Pre-announced topics; at least one section a year.

800* Thesis I, II
Pre: consent of instructor. Seminars may be repeated for credit.

** Population Studies (Pop) **

*Professors* Chapman, Cho, Demeny, Fuller, Haines, Overbeek, Palmore, Pirie

650 Introduction to Demography (3) I
Comparative analysis in terms of quantitative and qualitative aspects of population; factors affecting size, distribution, and composition of the population; impact of population size and composition on society.

691 Methods of Demographic Analysis (3) I
Methods of standardization of population; evaluating and correcting census returns and selected vital data; measurement of mortality and fertility; life tables; measuring internal migration; estimating population size and characteristics.

750 Interdisciplinary Seminar in Population Studies (3) II
Major theoretical developments and research problems in the field of population studies as seen from the vantage point of the various behavioral sciences and the related applied disciplines.
# Psychology (Psy)

**Professors** Arkoff, Bitner, Crowell, A. L. Diamond, Digman, Herman, Staats, Tharp, Weaver; **Associate Professors** Blanchard, Dubanoski, Gallimore, Groth, Mansoll, Wahler, Watson; **Assistant Professors** Ames, Carlson, M. Diamond, Evans, Marsella, Minke, Murray, Shapiro, Tanabe

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Survey of Psychology (3) I, II</td>
<td>Principles of human behavior, individual differences, motivation, emotion, perception, learning.</td>
</tr>
<tr>
<td>112</td>
<td>Introductory Laboratory in Psychology (3) I, II</td>
<td>Introduction to the experimental method in psychology. Supervised experiments in human and animal learning and performance, with emphasis on laboratory control, data analysis, and communication of findings. Pre: 100.</td>
</tr>
<tr>
<td>113</td>
<td>Statistical Techniques (3) I, II</td>
<td>Frequency distributions; graphic methods, central tendency; variability; correlation; reliability; tests of significance. Pre: two years of high school algebra or equivalent.</td>
</tr>
<tr>
<td>214</td>
<td>Learning and Motivation (3) II</td>
<td>Major conditions influencing learning and forgetting; the role of practice, reward, motivation, drive and emotion; theoretical interpretations of learning and motivation. Pre: 112.</td>
</tr>
<tr>
<td>215</td>
<td>Sensory Processes (3) II</td>
<td>Psychophysics; vision, audition, taste, smell. Pre: 100, 112.</td>
</tr>
<tr>
<td>216</td>
<td>Individual Differences and Measurement (3) I, II</td>
<td>Individual differences in personality, aptitude, intelligence; construction, validation, administration of tests; interpretation of scores. Pre: 113.</td>
</tr>
<tr>
<td>317</td>
<td>Physiological Psychology (3) I</td>
<td>Psychological basis of vision, audition, motivation, emotion, learning.</td>
</tr>
<tr>
<td>318</td>
<td>Animal Psychology (3) I</td>
<td>Animal studies in learning, perception, motivation, physiological mechanisms. Pre: 100, 112.</td>
</tr>
<tr>
<td>319</td>
<td>Experimental Psychology (3) II</td>
<td>Original experiments with emphasis upon laboratory techniques. Control of variables, apparatus design, statistics in research. Pre: 100, 112, 113.</td>
</tr>
<tr>
<td>320</td>
<td>Developmental Psychology (3) I, II</td>
<td>Emotional, mental, physical, social development from infancy to adulthood; interests and abilities at different age levels. Pre: 100.</td>
</tr>
<tr>
<td>321</td>
<td>Psychology of Personality (3) I, II</td>
<td>Scientific study of personality, its meaning, assessment, development, relation to cultural-social determinants. Pre: 100.</td>
</tr>
<tr>
<td>322</td>
<td>Social Psychology (3) I, II</td>
<td>Interpersonal relations; social attitudes; group dynamics; intergroup relations; class and cultural influences. Pre: 100.</td>
</tr>
<tr>
<td>401</td>
<td>Experimental Analysis of Behavior (3) I</td>
<td>Theory, methods, data, and implications of the systematic laboratory study of the behavior of individual organisms. Pre: 100, 112.</td>
</tr>
<tr>
<td>423</td>
<td>History of Psychology (3) II</td>
<td>Background of modern psychology. Origin and development of contemporary points of view. Pre: 100.</td>
</tr>
<tr>
<td>424</td>
<td>Abnormal Psychology (3) I, II</td>
<td>Nature and causes of phychoneuroses and psychoses; abnormalities of intelligence; psychotherapy. Pre: 100.</td>
</tr>
</tbody>
</table>
425 Psychological Testing (3) I
Rationale of test construction, validation, and administration; fundamentals of statistical test theory. Pre: 216.

426 Industrial Psychology (3) I

427 The Exceptional Child (3) II
Evaluation of physical, emotional, and intellectual deviations and their effects upon growth and development of children. Pre: 320. (Odd numbered years.)

428 Social Development of Children (3) II
Survey of the socialization process and acquisition of social behavior. Pre: 320. (Even numbered years.)

429 Advanced Undergraduate Seminar (3) I, II
Coverage in depth of some area of research and theory. Pre: consent of instructor. May be repeated.

430 Complex Human Learning (3) I
Extension of principles of learning (theory and research) to significant functional human behavior. Principles and methods of experimental psychology of learning, and findings of behavioral sciences, used to constitute a general conception of human behavior basic to various areas of study. Pre: 100.

431 Verbal Learning and Memory (3) II
Theories, models, and mechanisms of verbal learning and memory, basic variables, research procedures, design, and methodology. Pre: 100 or consent of instructor.

491 Teaching Psychology (V) I, II
Supervised experience in teaching psychology. Pre: consent of instructor.

499 Directed Reading or Research (arr.) I, II
Pre: consent of instructor and department chairman.

601 Introduction to Quantitative Methods (3) I
Introduction to quantitative methods in psychology. Review of algebraic operations. Essentials of calculus, matrix operations, set theory, computer programming.

602 Statistical Analysis (3) II
Data reduction, correlation and regression, sampling theory, simple experimental designs and their analyses. Pre: 601 or equivalent.

603 Design and Analysis of Psychological Experiments (3) I
Analysis of variance and other modes of assessing results of experiments. Relation of analysis to design. Pre: 602 or equivalent.

604 Scaling Methods (3) II
Theory and construction of major types of scales with examples from education, psychology, sociology. Pre: 602 or equivalent. (Identical with Ed EP 729.)

605 Problems of Measurement and Evaluation (3) II
Theory of measurement and evaluation; statistical and psychological analysis of tests and scales. Pre: 425 or equivalent, 601, 602. (Identical with Ed EP 709.)

606 Multivariate Methods (3) I
Advanced regression analysis, factor analysis, canonical analysis, grouping methods. Pre: 602. (Alt. yrs.)

607 Introduction to Mathematical Models (3) II
The logic and structure of mathematical models; their application to various areas of psychological theory. Pre: 602. (Alt. yrs.)

630 Experimental Method (3) I
Research methodology in experimental psychology.

631 Experimental Methods in Social Psychology (3) I
Laboratory methods in social psychology for investigation of attitude change, social perception, group performance; representative experiments. Pre: 322 or equivalent.
633 Comparative Psychology (3) II
Comparative study of natural behavior, learned behavior, sensory processes, social
behavior in animals.

634 Physiological Psychology (3) I
Relationship of central and peripheral nervous systems to behavior.

635 Sensory Processes and Psychophysics (3) II
Basic research and theories describing the sensory systems.

636-637 Learning and Motivation (3-3)
Consideration of principal findings and major theories in learning and motivation.

638 Perception (3) II
Historical review of major theories and research in perception.

640 Verbal Learning (3) I
Basic variables, processes, and theories in field of verbal learning and memory.

641 Skill Learning (3) II (alternate years)
Human learning, with special reference to information processing, attention,
memory, motor involvement in performance of skilled acts.

643 Cognitive Processes (3) II
Theory and basic experimentation in concept formation, problem solving, logical
reasoning, creative thinking.

644 Mathematical Models (3) II (alternate years)
Application of mathematical models to specific area in experimental psychology.
Pre: 607.

649 Instrumentation (3) I
Basic concepts of electricity and electronics and their application to instrumenta-
tion of psychological experiments.

653 Infant Development and Behavior (3) I
Theory and research in early development.

654 Cognitive Development (3) II
Development of cognitive processes from infancy to adolescence; acquisition of
complex concepts and symbolic processes.

655 Learning, Language, and Intellectual Functioning (3) II
Theory, research, and method in study of language acquisition; function of
language in intellectual activities; application to cognitive behavior modification. Pre:
430. (Identical with Ed FP 655.)

656 Social Learning and Personality (3) I
Development and modification of social behavior in children.

660 Personality: Theory and Research (3) I
Methods of measurement, antecedents, structure, dynamics, situational deter-
miminants of individual reactions. Evaluation of theories and related research. Pre: 321
or equivalent.

661 Personality and Social Interaction (3) II
Theory and research on the relationship of the social situation to individual dif-
fences in such situations. Pre: 321 or equivalent.

662 Social Psychology (3) I
Theories and research in social cognition and social behavior. Pre: 322 or
equivalent.

663 Behavior in Groups (3) I
Social motivation of groups, conformity and power, cooperation and competition,
group structure, leadership, intergroup processes. Pre: 322 or equivalent.

664 Attitude Development and Change (3) II
Attitude measurement, attitude development, persuasion, group support of atti-
tudes, applications. Pre: 322 or equivalent.
665 Cross-Cultural Psychology (3) I
Theories of psychology and their application to cross-cultural phenomena; assessment of cross-cultural processes and social motivation; culture and personality; evaluation and design of cross-cultural research.

666 Psychology and Social Issues (3) I (alternate years)
Conflict, dissent, community issues, problems; social change and its relation to mental disorder.

670 Applied Social Psychology (3) II
Survey of basic problems in use of social psychological principles and techniques in fields of human relations, business and industry, communication.

675-676 Behavior Assessment (2–2) Yr.
Principles and methods of assessing behavior, such as direct observation, interviewing, psychological examination. Pre: consent of instructor.

677-678 Behavior Assessment Laboratory (1–1) Yr.
Practicum experience in behavior assessment methods; must be taken concurrently with 675-676.

681 Childhood Behavior Disorders and Intervention (3) I
Disturbances in the development of child behavior, and techniques for amelioration. Pre: 675, 676.

682 Adult Behavior Disorders and Intervention (3) II
Disturbances in adult behavior, and techniques for amelioration. Pre: 675, 676.

683 Social Behavior Disorders and Intervention (3) I
Development of social problems such as crime and delinquency, substance abuse, cultural deprivation, etc., and techniques for amelioration. Pre: 675, 676.

685 Child Learning Laboratory (3) I, II
Application of learning theory and procedures to individual and group work with children in controlled studies; basic to behavior modification procedures in clinical and educational psychology. (Identical with Ed EP 685.)

687 Practicum in Behavior Change: Community Issues (3) I
Supervised experience in educational, mental health, correctional, consulting, or community action agencies. Pre: consent of instructor.

688 Practicum in Behavior Change in Children (3) I
Supervised experience in analyzing and developing methods for therapeutic change in children. Pre: consent of instructor.

689 Practicum in Behavior Change in Adults (3) II
Supervised experience in analyzing and developing methods for therapeutic change in adults. Pre: consent of instructor.

690 Practicum in Clinical Psychology (arr.) I, II
Pre: consent of instructor.

699 Directed Reading or Research (arr.) I, II
Pre: consent of instructor and department chairman.

700 Seminar (3) I, II

710 Practicum in College Teaching (3) I, II
Supervised college teaching experience; seminar discussion of college teaching problems. Pre: consent of instructor.

714 Survey Research Methods (3) I, II
Field methods in social psychology; sampling, field observation, interviewing, coding methods; study of intact groups and organizations in their natural setting. Pre: 322 or equivalent. (Identical with Soc 714.)

730 Research in Experimental Psychology (3) I, II
Supervised reading, discussion, research projects in areas of special interest. Open only to second-year graduate students. May be repeated.
RELIGION

750 Research in Developmental Psychology (3) I, II
Supervised reading, discussion, research projects in areas of special interest. Open only to second-year graduate students. May be repeated.

760 Research in Personality (3) I, II
Supervised reading, discussion, research projects in areas of special interest. Open only to second-year graduate students. May be repeated.

762 Research in Social Psychology (3) I, II
Supervised reading, discussion, research projects in areas of special interest. Open only to second-year graduate students. May be repeated.

790 Research in Clinical Psychology (3) I, II
Supervised reading, discussion, research projects in areas of special interest. Open only to second-year graduate students. May be repeated.

795 Internship in Clinical Psychology (0) I, II
Pre: consent of instructor and department chairman.

800 Thesis or Dissertation Research (arr.) I, II

Religion (Rel)

Professors Aoki, Fackre; Associate Professors Bloom, Bobilin, Seifert; Assistant Professors Crawford, Wilden

150 Introduction to the World's Major Religions (3) I, II
Introduction to the world's major religions—Hinduism, Buddhism, Shinto, Confucianism, Taoism, Judaism, Christianity, Islam.

151 Religion and the Meaning of Existence (3) I, II
Introduction to basic ideas and issues of contemporary religious thought as related to the question "What is the meaning of existence?"

200 Understanding the Old Testament (3) I
Seifert
Study of developing beliefs and practices of Hebrew religion as set forth in the Old Testament. Emphasis on meaning of its faith for the modern world. (Not offered 1970–71.)

201 Understanding the New Testament (3) II
Seifert

309 The Life and Teachings of Jesus (3) II
Seifert
Critical study of life and teachings of Jesus. Interpretation of meaning of Jesus Christ for Christian faith. (Not offered 1970–71.)

361 The Nature and Destiny of Man (3) I
Wilden
Religious views of human nature in their bearing on man's activities in politics, education, law, economics, literature.

480 Russian Religion (3) I
Klimenko
Historical background of Orthodox Christianity in Russia from the beginnings of the 9th century and following up to the 19th century and its impact on people and culture.

481 Russian Religion (3) II
Klimenko
Russian State Church, rational and mystical sects from the 19th century through the Communist Revolution up to the present. Marxism and religion.

482–483 The History of Living Religions (3–3) Yr.
Bobilin
482: Basic beliefs and practices of Hinduism, Confucianism, Taoism, Buddhism, Shinto. 483: Judaism, Roman Catholicism, Protestantism, their history, beliefs, contributions. Semesters independent.

484 Religion and Social Change in Asia (3) II
Study of interrelationship of society and religion in Asia. Emphasis on roles of traditional elites, heterodox religious movements, effects of modernization and
secularization on religious organization, socio-religious movements in developing countries. (Not offered 1970-71.)

485 Ethics in Asian Religions (3) II Crawford
Comparative analysis of ethical thought and practice in cultures and of persons shaped by the major religions of Asia.

486 Christian Ethics and Social Programs (3) I Crawford
Basic systems and application of Christian ethics. Emphasis on differing thought on major social issues, analysis of significant factors affecting differing thinkers and indication of relevance of Christian thought to contemporary social problems.

487 Religion in the Thought of Weber and Mannheim (3) II Bobilin
Study of religion and its significance for social thought and research in the writings of Max Weber and Karl Mannheim. Pre: upper-division standing or consent of instructor.

488 Theology of Peace (3) I Fackre
Study of the nature of peace, revolution, and war, violence and non-violence, as revealed especially in contemporary history, from a theological perspective.

630 History and Theory of the Study of Religion (3) I Bobilin
Focus on significant events, phenomena and ideas in the history and practices of religions. Insights and methodologies of scholars from anthropology, history, philosophy, political science, psychology, and sociology will be related to the history and practice of religions.

651 Selected Problems of Theology (3) I, II Staff
Pre: graduate standing, consent of instructor. May be repeated for credit.

685 Studies in Japanese Religion (3) I Bloom
Advanced study of one of the religions of Japan.

Science, General (Sci)

Professors Bernatowicz, Kay; Associate Professor Newhouse; Assistant Professors Fellows, Lipparelli; Instructors Chase, Hubbard, Klim, Tanaka, Wilson

121-122 Introduction to Science (4-4) Yr. (3 L, 1 Lb) Bernatowicz, Newhouse
Characteristics of science and interaction of society with science, illustrated by topics from biological science (121) and physical science (122).

124 Technology, Ecology, and Man (4) II Newhouse
Man’s ecology in past, present, and future as seen by analysis of the interrelationships between science and technology, the means these provide for manipulation of environment, and the effects of this manipulation on environment and on human populations. Pre: 121.

320 The Atoll (3) II Newhouse
Formation, structure, distribution and biotas of atolls. Emphasis on the atoll as an ecosystem and as one of man’s environments. Pre: one year of introductory science. (Alt. yrs.; not offered 1970-71.)

330 Man and Science in the Pacific (3) II Newhouse
Anatomy, history and activity of science in the Pacific area; discussion of selected topics. Pre: one year of introductory science. (Alt. yrs.)

420 Case Histories in Science (3) II (2L-Lb) Bernatowicz
Emphasis on relations between facts, laws and theories, on innovations in methods and attitudes, on historical importance. Pre: 2 semesters of biological science, 2 semesters of physical science.

430 History of Science (3) I Bernatowicz
Man’s changing ideas concerning the universe reflected against historical setting. Pre: one year of natural science. Cross-listed as History 430.
551-552 Seminar in Science for Secondary School Teachers (3-3) Yr.  
Selected topics in botany, entomology, geochemistry, geology, mathematics, meteorology, microbiology, physics, zoology, and philosophy of science. Occasional laboratory sessions and field trips.

620 Natural Science as a Human Activity (3) I, II  
Seminar. The scientist; productivity in science; comparisons of several fields; anatomy of science; science and society. May be repeated.

Sociology (Soc)

Professors Ball, Bloombaum, C. K. Cheng, Freeman, Glick, Hormann, Kassebaum, Wittermans, Yamamura; Associate Professors Ackerman, Barringer, Cho, Palmore, Sakamoto, Won; Assistant Professors Babbie, Chandler, R. Cheng, Endo, Kinloch, Steinhoff, Swift, Weinstein, Yamamoto

151 and 201 are equivalent introductory courses. 201 is specifically set up for juniors, seniors, or graduate students. Either course is a prerequisite to all advanced courses.

151 Introduction to the Study of Society (3) I, II  
Chandler, Endo, Kinloch, Swift  
Basic social relationships, norms, social structures, processes affecting social change. Not open to juniors or seniors.

201 Principles of Sociology (3) I, II  
R. Cheng, Steinhoff, Swift  
Principles underlying organization of social groups, communities, institutions, ecological structures; basic processes of socialization, collective behavior, social change. Equivalent to 151; open only to juniors, seniors, graduates.

305 Human Ecology (3) I  
Yamamura  
Basic concepts, principles, and techniques. Factors affecting distribution of population, utilities, social institutions.

310 Community Forces in Hawaii (3) I, II  
Hormann  
Basic factors and forces in contemporary society as exemplified in Hawaii.

320 Race Relations (3) I, II  
Glick, Kinloch  
Race relations in world perspective; typical situations; conflict and accommodation; caste; race prejudice; miscegenation; effects upon personality.

325 Social Institutions (3) II  
Barringer, Wittermans  
Culture as conceptual tool. Origin, structure, function, growth of institutions. Interrelation and integration.

340 Social Control (3) I, II  
Wittermans  
Analysis of processes by which individuals become amenable to social and mass definitions of conduct and behavior.

350 Social Disorganization (3) II  
Hormann, Kassebaum  
Factors in community, institution, group disorganization; behavioral deviancy and social pathology. Integrated approach to social problems.

355 Criminology (3) I, II  
Cheng, Kassebaum  
Crimes and criminals; causative theories of criminality; institutional problems of apprehension, prosecution, incarceration, correction, rehabilitation.

360 Personality and Culture (3) I, II  
Bloombaum  
Origin and development of personality as subjective aspect of culture; function of communication; human nature and the mores; personal life organization.

370 Social Change (3) I, II  
Wittermans  
Structural-functional organization. Impact of technology on institutions, value orientation, power structures, systems of roles and stratification.

399 Directed Reading (arr.) I, II  
Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in sociology.
410 Populotion and Society (3) II
Society analyzed in terms of quantitative and qualitative aspects of population. Sociological aspects of birth and death rates, natural increase, mobility.

415 The Agrarian Community (3) I
Community types as affected by transition from subsistence to commercial and industrial agriculture.

416 The Urban Community (3) II
Sociological principles as applied to modern city. Structure, growth, social and personal life organization.

425 People and Institutions of China (3) I, II
Analysis of social philosophies, their influence on basic institutions and traits of people. Impact of Western civilization and communism. Social change under People's Democratic Dictatorship.

426 People and Institutions of Japan (3) I, II
Social structure and social change in contemporary Japan. Special attention to family, stratification, mobility.

427 People and Institutions of Korea (3) I, II
Social institutions and change processes in contemporary Korea. The family, education, polity, economy, religion. Comparison of North and South Korea.

430 Race Relations in the Pacific (3) I, II
Dominant conceptions of race and race relations, and factors affecting them; race and culture contacts in Hawaii and other Pacific areas.

441 The Family (3) I, II
Culturally distinctive family types as background for analysis and interpretation of the American family.

443 Sociology of Religion (3) I
Structure, function, dynamics of religion in various types of society.

445 Sociology of Education (3) I, II
Institutionalization of socialization and allocation processes. Transmission of cultural styles and values; social organization of classrooms, schools, school systems and their interaction with other social institutions; careers of students and teachers.

447 Industrial Sociology (3) I, II

449 Social Stratification (3) II
Analysis of social class; local and national stratification patterns; social mobility in industrial and non-industrial societies.

455 Juvenile Delinquency (3) I, II
Nature and extent of juvenile delinquency; theories and research; sociology of correction.

465 Sociology of Small Groups (3) I
Practical application of theories and research findings involving face-to-face relations; leadership, prestige, group morale.

470 Collective Behavior and Social Movements (3) I, II
Elementary forms of collective behavior; crowds, publics, mass behavior; social movements, their development and relation to social change.

471 Sociology of Revolutions (3) I, II
Historical-comparative analysis of society in total transformation. Sociological analysis of important conditions of revolutions: limitations of preconditions; aggravation of contradictions in society; mobilization of reactionary, reform, and revolutionary ideologies, organizations, and social controls. Formulation of systematic theory of revolutions.

481 Methods of Social Research (3) I, II
Values and limitations of methods of research for various types of studies. Pre: 9 credits in sociology or consent of instructor.
485 Social Statistics (3) I, II
Freeman, Sakumoto, Yamamura
Introduction to statistical methods and resources as applied to social research data.

491 Sociological Theory (3) II
Ball, Sakumoto
History of sociology as reflected in writings from early Greek thought to modern authors such as Durkheim, Pareto, Simmel, Parsons, Merton.

493-494 Honors Thesis (2-2) Yr.

610 Methods and Statistics I (3) I
Logic of social research; principles of conceptualization, formal design, observation. Pre: 485 or equivalent.

611 Methods and Statistics II (3) II
Logic of social research; statistical treatment of social data. Pre: 610.

612 Classics of Sociological Theory (3) I
Study in depth of selected works by early sociologists such as Emile Durkheim and Max Weber. Influence of such works upon modern sociology. Pre: consent of instructor.

613 Concepts and Propositions in Sociology (3) II
Survey of major propositions in modern sociology. Sociological concepts such as primary group, social role, social class related to these propositions; their place in sociological theory and research. Pre: consent of instructor.

714 Seminar in Methods of Research (3) I, II
Individual or group projects providing training in (1) the design of social research, (2) field techniques, (3) survey research design, (4) survey data analysis (5) problems in comparative research. Pre: consent of instructor.

715 Seminar in Social Statistics (3) I, II
Advanced statistical procedures; may include individual projects. (1) Measurement of social variables, (2) data analysis. Pre: consent of instructor.

716 Seminar in Theory Construction (3) II
Application to sociology of logical or mathematical deductive systems. Nature of such systems and their application to sociology. (1) Logical models, (2) mathematical models. Pre: consent of instructor.

720 Seminar in Social Organization (3) I, II
Structural elements of human group life. (1) Industrial sociology, (2) social stratification, (3) social control. Pre: consent of instructor.

721 Seminar in Social Institutions (3) I, II
Structure, function, growth of social institutions. (1) Sociology of law, (2) sociology of religion, (3) the family, (4) political sociology, (5) Chinese society, (6) Japanese society, (7) sociology of education, (8) comparative social institutions. Pre: consent of instructor.

722 Seminar in Group Relations (3) I, II
Major theoretical developments and research problems in fields of race relations and minority relations. (1) Race relations, (2) minority relations. Pre: consent of instructor.

730 Seminar in Social Disorganization (3) I, II
Theory and research in social disorganization; institutionalization of criminals and juvenile delinquents. (1) Deviant behavior, (2) juvenile delinquency and criminal behavior, (3) penology. Pre: consent of instructor.

731 Seminar in Social Change (3) I, II
Principles, processes, problems of social change. Emphasis on non-Western societies undergoing industrialization. (1) Social change in developing areas, (2) social movements, (3) community development. Pre: consent of instructor.

740 Seminar in Social Psychology (3) I, II
Individual behavior in social contexts; may include individual projects. (1) Social interaction, (2) socialization, (3) social conflict. Pre: consent of instructor.

741 Seminar in Culture and Communication (3) I
Theories of communication; interaction between oral traditions, the press and audio-visual mass media in cultural context. Pre: consent of instructor.
SPEECH-COMMUNICATION

750 Seminar in Demography and Human Ecology (3) I, II
   Principles and techniques in population analysis; factors affecting distribution of
   population, public utilities, social institutions. (1) Demography, (2) human ecology, (3)
   population dynamics. Pre: consent of instructor.

751 Seminar in Urban and Rural Sociology (3) I, II
   Structure and dynamics of major types of human communities; effects on social and
   personal life organization. (1) Urban, (2) rural. Pre: consent of instructor.

799 Directed Research (arr.) I, II
   Pre: graduate standing; consent of instructor.

800 Thesis Research (arr.) I, II

Speech-Communication (Sp)

Professors Bilsborrow, Dykstra, Ellingsworth, Heinberg, Klopf, Rider; Associate Professors Breneman, Byers, Harms, Welden, Wong; Assistant Professors Ekroth, Larson, Meeske, Nishiyama, Ogawa, Owen, Oxford, Sitaram, Steinberg; Instructors Dame, Ferguson, Kunimoto, Yamada

145 Interpersonal Speech-Communication (3) I, II
   Introduction to speech-communication theory through participation in interpersonal
   communication activities. Weekly lectures. Concurrent Speech Communication
   Center clearance.

200 Introduction to Speech-Communication Theory (3) I, II
   Introduction to theory of speech-communication through models of the process.
   Examination of major variables of source, message, medium, receiver, and how their
   interaction affects speech-communication. Pre: 145 or equivalent.

201 Message Development (3) I, II
   Theory and practice in development of speech-communication messages and the
   selection and use of appropriate media. Pre: 200 or equivalent.

211 General Phonology (3) I, II
   Dynamic phonology of American English. Systematic goal-oriented study of dialects
   in use. Modification of speech for particular purposes including pedagogy.

221 Speech-Communication in the Management of Learning (3) I, II
   Overview of principles of speech-communication management: message composition,
   media utilization and evaluation of speech-communication events, with special reference
to problems of teaching-learning. Part of pre-service or in-service preparation of teachers;
not intended for majors in speech-communication. Pre: 145 or 200.

231 Reading Aloud (3) I, II
   Principles of interpretative reading. Practice in textual analysis and in transmitting
   intellectual and aesthetic content of literature. Pre: 145 or 200.

251 Public Speaking (3) I, II
   Adaptation of rhetorical theory to particular speakers, audiences, occasions. Extensive
   practice in planning and delivering speeches. Pre: 145 or 200.

253 Argumentation and Debate (3) I
   Adapting ideas about communication theory to structuring of argumentative

261 Broadcasting (3) I
   Analysis and survey of radio and television as communications media and as industries.

262 Radio-TV Speech-Communication (3) I, II
   Preparation and performance of radio-television program material. Emphasis on
   microphone and camera techniques. Suitable for the non-specialist.

263 Broadcast Laboratory (3) I
   Intensive introduction to equipment and operation of radio and television studios,
   and the roles of members of the production team. Basic production techniques.

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SPEECH-COMMUNICATION

304 Speech-Communication Characteristics of the Source (3) I, II
Acoustical, anatomical, physiological and psychological relationships involved in processes of communication between source-receivers. Pre: 145 or 200.

305 Language in Speech-Communication Behavior (3) I, II
Effects on communication process attributable to language forms and meanings. Pre: 201 or concurrent registration.

333 Storytelling (3) I, II
Esthetic communication through storytelling for entertainment and education. Oral tradition; analysis of story types; techniques of preparation and presentation; performance.

352 Group Speech-Communication (3) II
Study of discussion within context of small group. Effects of variables such as group organization, leadership, membership, goals on how group attempts to achieve its purpose. Pre: 145 or 200.

364 Broadcast Production (3) II
The theory in practice of planning, producing, and directing programs for radio and television. Pre: 263.

365 Development and Writing of Broadcast Messages (3) I
Theory and practice in the design and writing of broadcast messages. Emphasis is placed on the purpose of the message, available alternatives, and the form and style. (Alt. yrs.) Pre: 263.

366 Strategies and Methods in Broadcast News (3) II
Comparative study of print and the broadcast media as purveyors of news; the strategies and techniques available to the broadcaster in the selection, editing, and presentation of news.

367 Strategies in Management of Broadcast Stations (3) I
Detailed study of the functions, duties, and problems of the management team of broadcast stations and the strategies available to them in solving problems.

384 Intercultural Communication (3) I, II
Analysis of major variables affecting interpersonal communication between persons of differing cultural backgrounds. Pre: none. Social science background desirable.

406 Evaluation of Speech-Communication (3) I, II
Development of skill in evaluation of appropriate variety of speech-communication activities. Pre: 200, 201, 304, 305, or consent of instructor.

412 Phonetics and Phonemics of American English (3) I, II

434 Advanced Interpretative Reading (3) I, II
Problems in selected literary forms; development and arrangement of programs; introduction to group interpretation; individual and group reports and performances. Pre: 231, Eng 252, or consent of instructor.

454 Strategies of Extended Speech-Communication (3) I
Investigation of the public speaker's role in planning and carrying out programs of social action. Pre: 145 or consent of instructor.

468 Broadcasting and the Public (3) I
Relationship and interaction between broadcasting agent, government regulatory agencies, and public. Development of bases for critical evaluation of educational, cultural, and economic significance and impact of broadcasting.

469 World Broadcasting (3) II
Comparative analysis of broadcasting systems in the world and radio and television communication between countries and cultures.

491 Semantics (3) I, II
Understanding language; verbal meaning and implication; roles of perception and assumption (inference and judgment) in human relationships.
SPEECH-COMMUNICATION

499 Special Problems (arr.) I, II
(I) Speech-communication behavior; (2) teacher preparation; (3) oral interpretation; (4) public address; (5) broadcasting; (6) microsystems; (7) macrosystems. Pre: consent of instructor or department chairman.

521 Process in Modification of Speech-Communication Behavior (3) I, II
Course designed for in-service teachers. Provides a theoretical background and practical applications; designed to enable teachers to become planners and managers of learning systems in the area of speech-communication development. Pre: none.

601 History of Theory and Trends in Speech-Communication Research (3) I
Examination of major theories and hypotheses about speech-communication which have accompanied trends in research. Study of current research methods and their application to contemporary problems. Pre: 406 or consent of instructor.

602 Methods of Scientific Research in Speech-Communication Systems (3) II
Study of methods of scientific research. Development of competence in fundamental skills necessary for completion of a thesis. Pre: 601 and one of the following—671, 672, 681, or 682.

613 Experimentation in Language Acquisition and Modification (3) I, II
Problems in language acquisition and modification. Use of equipment designed to aid language acquisition. Creation of language-learning materials. Innovation of special techniques for different language-learning situations. Pre: 305, 406, or 602 or equivalents.

631 Seminar in Interpretation (3) I
Current literature in interpretation; reports; lecture-recitals. Pre: consent of instructor.

651 Seminar in Rhetoric and Public Address (3) II
Review of rhetoric and public address. Pre: consent of instructor.

671 Speech-Communication in Control of Cognition (3) I
Research and research techniques in the facilitation via speech-communication of the learning and accessing of various types of meaningful verbal information. Pre: 305, 406 or equivalents.

672 Speech-Communication in the Control of Behavior (3) II
Research and research techniques in the use of speech-communication to shape psychomotor skills and relevant attitudes. Pre: 671.

681 Speech-Communication Process Analysis (3) II
Description of the problems involved in analyzing various aspects of the speech communication process. Theoretical frameworks of analysis. Pre: permission of instructor.

682 Speech-Communication: Theories of Source-Receiver Behavior (3) II
Description and analysis of some major behavioral science theories which describe and predict the behaviors of sources and receivers in communicating. Pre: permission of instructor.

696 General Seminar (3) I, II
Seminar on selected topics in speech-communication. May be repeated with permission of department chairman. Pre: consent of instructor and department chairman.

784 Seminar in Intercultural Speech-Communication (3) I
Focus on the major variables of speech-communication in an intercultural context. Linguistic and non-verbal factors. Possibilities for training in intercultural, face-to-face communication roles. Pre: 584 or at least one course in cultural anthropology, or permission of instructor.

785 Seminar in Speech-Communication in Innovation (3) II
Role of speech and other forms of communication in facilitating the adoption of new ideas and practices. Analysis of client systems and their relation to the agent of change. Development of criteria for measuring change. Pre: permission of instructor.

799 Research (arr.) I, II
See instructions under 499.

800 Thesis (arr.) I, II
THE COLLEGE OF BUSINESS ADMINISTRATION was founded in 1949 and accredited by the American Association of College Schools of Business in 1967. The function of the College is to prepare students for business leadership in Hawaii and the Pacific area. Students are provided with a solid foundation, both theoretical and practical, in the structures, functions and objectives of business enterprise. The four-year program leads to the Bachelor of Business Administration degree.

As part of the Business Administration program, the student will complete a broad foundation of courses in liberal arts, humanities, and physical and social sciences which serves as a base for an economics minor, a core of basic business subjects, and a specialized field of business activity selected by the individual student.

Juniors and seniors in the College of Business Administration will complete additional general requirements. Each student will select one of the following specializations: accounting, finance, business economics and statistics, foreign trade, management, marketing, personnel and industrial relations, and real estate. The School of Travel Industry Management offers a special program; students entering the University as freshmen should indicate their wish to enter this program.

Academic advising and career counseling in business are available in the College to all students interested in these services. This includes students presently enrolled in the College and students in other colleges. All faculty members are available for career counseling during office hours or by appointment. Academic advising and career counseling are available in the office of the assistant dean of the College except for students in the School of Travel Industry Management, who receive these services in the office of the associate dean of the School of TIM.

Admission and Degree Requirements

Students may enter the College of Business Administration as freshmen in accordance with the University of Hawaii requirements or may transfer into the College of Business Administration at any time in their college career from another college in the University of Hawaii, or as transfer students from another institution if they have a 2.0 grade-point average.
General Education Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
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<tbody>
<tr>
<td>Communications</td>
<td>6</td>
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<tr>
<td>Quantitative Reasoning (Math 134 or Math 205)</td>
<td>4</td>
</tr>
<tr>
<td>World Civilizations</td>
<td>6</td>
</tr>
<tr>
<td>Humanities (including one course in literature)</td>
<td>9</td>
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<tr>
<td>Natural Sciences</td>
<td>9-12</td>
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<tr>
<td>Social Sciences (Econ 150 is required)</td>
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Pre-Business Requirements

<table>
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<tr>
<th>Requirement</th>
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<tr>
<td>Economics 150 (see above)</td>
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<tr>
<td>Accounting 201, 202 (sophomore standing)</td>
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<tr>
<td>BAS 111 (Math 205 may substitute for both Math 134 and BAS 111)</td>
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Additional Requirements for Pre-Business Students

<table>
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<th>Requirement</th>
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<tr>
<td>TIM 101</td>
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<tr>
<td>FSA 181</td>
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<td>TIM 100-200</td>
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</tbody>
</table>

In order to qualify for a degree a student must:
1. Meet all pre-admission requirements to the College;
2. complete one of the ten curricula of the College;
3. complete the University curricular requirements (see pp. 58–61);
4. earn an aggregate of at least 124 semester hours of credit;
5. earn a minimum of a 2.0 grade-point average for (a) all registered credits, (b) all required upper-division CBA courses (including the major field), and (c) the major field (see “Degree Programs”).

Curricula

All students must complete the following:*

Group I. Economics (9 credit hours): Business Economics 303, 341, 342.

Group II. Business Core (24 credit hours): Business Analysis and Statistics 301–302; Finance 300; Law 300; Management 301, 302, 345; Marketing 300.

Group III. A major of 15 credit hours (18 for Accounting). See below.

*Travel Industry Management is an exception; see requirements listed under majors.
COLLEGE OF BUSINESS ADMINISTRATION

Group IV. English 309, and 15 credit hours of upper division courses, at least 9 of which must be outside of the College of Business Administration. It is suggested that students take BAS 301-302 and BEc 341 early in their program.

**Majors**


**FOREIGN TRADE.** Required: BEc 361, 362; Mkt 315, 381. Elective: one upper-division business administration course.


**MARKETING.** Required: Mkt 315, 321, 391. Electives: two of Mkt 331, 341, 361, 381.


**REAL ESTATE.** Required: RE 300, 310, 330, 341. Elective: one of Acc 325, RE 321, 350.

**SCHOOL OF TRAVEL INDUSTRY MANAGEMENT**

Created in 1967, the School of Travel Industry Management in the College of Business Administration of the University of Hawaii is unique throughout the entire world. Administratively, the specific requirements for a student who wishes to graduate from the School of Travel Industry Management are: (a) Internship—direct paid-work experience each year for four years (200 hours each, or a total of 800 hours) to orient the student to a succession of increasingly sophisticated exposures that will make the more theoretical approaches of the classroom take on greater relevance; (b) the general University requirements plus the lower-division business requirements; (c) the College of Business core requirements—Group I, Group II; (d) Group III courses are the special major requirements for TIM—a student may elect Emphasis A (Tourism) or Emphasis B (Hotel & Restaurant Management) as his field of concentration; (e)
upper-division courses in Group IV—English 309 plus 9 hours of courses which must be outside the College of Business Administration.

The School of Travel Industry Management curriculum offering an emphasis in Tourism or Hotel and Restaurant Management is constructed in such a manner that students selecting either option will have some exposure to the other. The nature of the world-wide travel industry is such that some knowledge of all areas is mandatory, although the TIM programs provide opportunities for special attention to each field as consistent with the student’s professional interests.

### EMPHASIS A—TOURISM ADMINISTRATION

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>TIM 321</td>
<td>Tourism Prin I</td>
<td>3</td>
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<tr>
<td>TIM 322</td>
<td>Tourism Prin II</td>
<td>3</td>
</tr>
<tr>
<td>TIM 323</td>
<td>Travel Agency Management</td>
<td>3</td>
</tr>
<tr>
<td>TRANS 351</td>
<td>Economics of Transportation</td>
<td>3</td>
</tr>
<tr>
<td>TRANS 352</td>
<td>Passenger Transportation</td>
<td>3</td>
</tr>
<tr>
<td>TIM 361</td>
<td>Law &amp; Regulation of Trav. Ind.</td>
<td>3</td>
</tr>
<tr>
<td>RE 351</td>
<td>Resort Area Development</td>
<td>3</td>
</tr>
<tr>
<td>TIM 300, 400</td>
<td>Internship</td>
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### EMPHASIS B—HOTEL & RESTAURANT MANAGEMENT

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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>TIM 314</td>
<td>Institutional Purchasing</td>
<td>3</td>
</tr>
<tr>
<td>TIM 331</td>
<td>Hotel Design, Eng., Maint.</td>
<td>3</td>
</tr>
<tr>
<td>TIM 334</td>
<td>Hospitality Merch. &amp; Club Mgmt.</td>
<td>3</td>
</tr>
<tr>
<td>TIM 351</td>
<td>Hotel Internal Controls</td>
<td>3</td>
</tr>
<tr>
<td>TIM 361</td>
<td>Law &amp; Regulation of Travel Ind.</td>
<td>3</td>
</tr>
<tr>
<td>TIM 321 or TIM 323, or TRANS 351</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>RE 351</td>
<td>Resort Area Development</td>
<td>3</td>
</tr>
<tr>
<td>TIM 300, 400</td>
<td>Internship</td>
<td>2</td>
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<td></td>
<td><strong>Total</strong></td>
<td><strong>23</strong></td>
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BUSINESS ADMINISTRATION COURSES

See pp. 4-5 for a discussion of course descriptions.

Professors Adler, Ascher, Bailey, Baird, Barnet, Buchele, Corbin, Crampon, Ferguson, Gee, Gilson, Grayson, Hook, Ige, Jacobsen, Lowe, Miccio, Omps, Pendleton, Richman, Spencer, Whitehill; Associate Professors Chung, Corbin, Faison, Freitas, Hopkins, Jacobs, Kim, Kramer, Lee, Lundberg, Reeser, Seo; Assistant Professors Bell, Bess, Bonybright, Bury, Congdon, Cox, Edge, El-Ramly, Feisthamel, Greenwood, Harding, Jonish, Kelley, Kirkpatrick, Marsh, Metelka, Norem, Peterson, Pickett, Stellmacher, Trine, Vlachos, Williams, Worthley; Instructor Averbook; Lecturers Amioka, Gadient, Helber, Hill, Leong, Mednick, Nagy, Reid, Savio, Witwer; Asst. Professor Ellis

DEPARTMENT OF ACCOUNTING AND FINANCE

Accounting (Acc)

201–202 Elementary Accounting (3–3) Yr.
Theory and practice of income determination and asset valuation. Preparation and analysis of statements; uses for decision making. Pre: sophomore standing.

305 Cost Accounting (3)
Cost determination and analysis as a tool of management in such areas as pricing and make, rent or buy decisions. Includes job order, process, direct and standard costs.
Pre: 202, BAS 111.

307 Income Tax Problems (3)
Study of accounting problems related to income taxation, with emphasis on income, exclusions from income, deductions, and credits in the determination of income tax liability and the preparation of income tax returns.
Pre: 202.

321 Financial Accounting I (3)
The accounting process, and the application of generally accepted accounting principles to accounting for cash, receivables, inventories, plant and equipment and current liabilities.
Pre: 202.

323 Financial Accounting II (3)
Accounting for corporate equities, long-term debt, investments, funds flow, analysis of financial statements, and partnerships.
Pre: 321.

325 Financial Accounting III (3)
Venture accounting, consignments, installment sales, insurance, branch accounting, consolidated statements, estates and trusts, statement of affairs, and foreign exchange.
Pre: 323.

331 Auditing (3)
Principles of conduct of a business audit. Practical aspects of auditing emphasized by problems.
Pre: 305, and 323 or 365.

335 Governmental Accounting (3)
Accounting classification, budgetary procedure, fund accounting, revenues, operating costs.
Pre: 202.

341 Accounting Systems and Procedures Analysis (3)
Examination of accounting subsystems and the role of computers in the accounting process.
Pre: 202, BAS 315 recommended.

361 Accounting for Managerial Planning (3)
Profit planning, budgeting, programming budgetary systems, projecting flows of funds, strategic and long-range planning.
Pre: 305.
Enterprise Analysis and Reporting (3)
Analysis and interpretation of alternative valuation, income determination, and financial reporting policies in various industries and under varying economic conditions. Pre: 202. Not open to students who have taken 521–523.

Advanced Tax Problems (3)
Emphasis on advanced aspects of accounting and tax problems as related to individuals, partnerships, estates, trusts, and corporations; a study of estate and gift taxation also included. Pre: 307.

Advanced Cost Accounting (3)
Application of costs and other control techniques to complex managerial costs and problems dealing with performance evaluation, intra-company transfer pricing, return on invested capital, internal profit measurement. Pre: 305.

Advanced Auditing (3)
Advanced studies of auditing standards, internal control, professional ethics and audit reports, including those required by the S.E.C., and professional examinations. Pre: Acc 331.

Computers and Accounting in Business Systems (3)
The theories of organizations, communications, measurement, information, file organization, and system design, and their applications in the business environment with emphasis on simulation, feedback, control, definition of total systems and evaluation of systems design.

Advanced Accounting Problems (3)
Complex accounting problems with emphasis on assets, liabilities, owners' equity, partnerships, corporations, cost consolidations, funds flow, and other advanced problems. Pre: Acc 323.

Accounting History and Theory

Accounting for Management Planning and Control (3)
Profit planning, budgeting, programming budgetary systems, projecting flows of funds, strategic and long-range planning.

Seminar in Advanced Accounting (3)
Special problems in professional accounting: systems, auditing, cost accounting, fund accounting, consolidations, governmental accounting, taxes, budgeting and control.

Finance (Fin)

Business Finance (3)
Introduction to functions, techniques, and problems of business finance; investing in assets, financing strategies, planning and control. Pre: Acc 202 and BAS 111.

Problems in Business Financial Management (3)
Topics include working capital management, evaluation of capital expenditures, financial control and capital structure. Emphasis on widely used business practices along with critical evaluation. Case problems will be used. Pre: 300.

Quantitative Financial Decision Making (3)
Topics include programming investment expenditures under capital constraints, credit selection via discriminant analysis, statistical models for planning optimum dividend-retention policy. Emphasis on both the conceptual and the operational. Pre: BAS 302 or permission of instructor and Fin 300.

Investments (3)
Mechanics of investment banking and markets, corporate and government securities, selection and security analysis, risk programming and establishment of investment policy for individuals and institutions. Pre: 300.
315 Security Analysis and Portfolio Management (3)
Familiarizes the student with recent advances in econometric security valuation models, portfolio selection and techniques, methods of appraising portfolio performance. Discussion will concentrate on both theory and application. Pre: BAS 301-302 or permission of instructor and Fin 300.

321 International Business Finance (3)
Financial management of foreign and international business operations: the regulatory environment of international finance, financing international transactions, international capital markets, taxation. Emphasis will be on financial decision-making in the firm. Pre: 300.

390 Seminar in Finance (3)
Advanced topics both of a theoretical and an empirical nature in the areas of finance, investments, and the capital markets. Topics will vary from semester to semester. Course is designed to prepare the student for independent research. Pre: permission of instructor.

733 Problems in Business Finance (3)
Application of financial principles and analytical techniques to current financial problems and developments from view point of business firm.

734 Investment Analysis and Management (3)
Techniques of securities, theory of investment and investment decisions, applications to portfolio planning for institutional and individual investors.

735 The Financial System (3)
Major financial institutions of U. S. economy; their inter-relationships; their importance in facilitating economic activity.

Insurance (Ins)

300 Principles of Insurance (3) I, II
What insurance buyers should know about protecting income against illness or premature death; protection of home and business against property losses; third-party liability.

311 Property and Casualty Insurance (3) I
Protection against loss of personal and business property and income occasioned by fire and allied perils, crime, and transportation risks. Emphasis also upon third party liability coverages, general liability, automobile insurance, and workmen’s compensation.

331 Life Insurance (3) II
Policy forms; calculation of premiums, reserves, non-forfeiture values; underwriting; regulation of policy provision; related coverages.

Law (Law)

300 Principles of Business Law I (3) I, II
A brief survey of our system of jurisprudence, the essentials of the law of contracts, agency and employment, and the elements of property and government regulation.

311 Principles of Business Law II (3) I, II
Law of business organizations, with emphasis on partnerships and corporations and law of sales, commercial paper, and principles of administrative law. Pre: 300.

786 Legal Environment of Business (3)
Analysis of contemporary American business and contractual law with critical examination of contracts, agencies, corporations, trusts, partnerships, Uniform Commercial Code and anti-trust legislation.
REAL ESTATE, BUSINESS ANALYSIS

Real Estate (RE)

300 Real Estate Fundamentals (3) I
Principles of real estate for customer, home owner, business; real estate law, brokerage, management, appraisal, finance.

310 Real Estate Law (3) II
Application of property law to real estate business. Pre: 300.

321 Real Estate Finance and Investment (3) I
Capital needs and investment opportunities in creating, transferring and holding real property; comparison of functions and techniques of financing organizations. Pre: 300, Fin 300.

330 Property Valuation (3) II
Economic, social, legal, physical factors influencing property values; emphasis on local residential market. Pre: 300.

341 Land Economics (3) I
Economic principles and social institutions influencing use and ownership of lands for urban and rural purposes. Pre: Econ 150.

350 Land Development and Planning (3) II
Planning and developing lands in process of changing use. Economic concepts, market forces and institutional factors that influence dynamics of urban growth. Pre: 300.

351 Resort Area Development (3) I, II
Economic, legal and physical factors in use, transfer, development and administration of lands for purposes of tourism.

773 Advanced Real Estate (3)
Application of business principles to real property resources: finance and investment, legal environment, concepts of value.

774 Land Resource Development (3)
Analysis of the techniques of planning, developing and marketing of land resources.

DEPARTMENT OF BUSINESS ECONOMICS AND QUANTITATIVE METHODS

Business Analysis and Statistics (BAS)

111 Applied Mathematics (3) I, II
Application of mathematical operations to problems in business and economics; linear equations; progressions; theory of sets and functions; elementary matrix notation; differential and integral calculus (including partial differentiation, maxima and minima, Lagrange multiplier techniques). Pre: Math 134.

301-302 Business Statistics (3-3) Yr.
Principles of statistical inference, including frequency distribution, averages, variation, testing hypotheses, estimation of population mean, index numbers, time series, correlation, probability, sampling, chi square and F distribution, analysis of variance. Utilization of statistical data as aid to managerial decisions. 301 is a prerequisite for 302.

311 Sampling Methods (3) I, II
Design and use of random systematic, stratified and sequential samples for estimation of universe characteristics. Pre: 302.
313 Experimental Business Statistics (3)  
Uses of experimental data in judging alternative courses of action; planning an experiment, design for collection of data, analysis of variance and components, interpretation of results. Pre: 302.

321 Introduction to Quantitative Analysis (3) I, II  
Tools and techniques for elementary operations research studies; introductory analysis of matrices, determinants and vector analysis for input-output, linear programming and theory of games. Pre: 302 or concurrently.

322 Decision Theory (3)  
Introduction to decision theory as applied to business problems. Topics include Bayesian decision rules, probabilistic models, and selected topics in mathematical programming. Pre: 321.

351 Computer Applications for Business (3) I, II  
Introduction to computer programming with emphasis on business applications. Programming in machine language. Actual practice in solving problems on a computer using a problem-oriented language such as Fortran, Cobol, PL/1, etc.

352 Electronic Data Processing and Information Systems (3) I, II  
Concepts of mechanized data processing. Organization and maintenance of computer processable files. Role of information systems in organizations. Design of information systems. Pre: IS 301 or BAS 351.

396 Methods of Scientific Research Applied to Business and Economic Problems (3) II  
Study of fundamentals of research methodology, including planning, organizing and executing a research project; techniques of gathering data; use of library facilities and other sources of information; analysis and interpretation of data; art and strategy of presenting findings. Pre: 302 or concurrently.

397 Business Statistics (3)  
Experimental course to be taken in lieu of 301 and 302. Pre: 111 with a grade of B or better.

713 Statistical Decision Theory (3)  
Modern statistical decision theory as applied to business decision-making. Topics include probability theory, statistical decision problems, including Bayes decision rules.

714 Operations Research  
Methods of operations research from executive or managerial viewpoint, with emphasis on application of mathematical and statistical techniques to management decision-making; linear and non-linear programming, game theory, queueing theory, replacement theory, etc.

715 Quantitative Methods of Business and Economic Forecasting (3)  
Projection and forecasting of Hawaii and U.S. economies with time series and cross-section data, using modern statistical and econometric techniques with some reference to needs of long-range planning.

783 Data Management Systems (3)  
Principles and techniques for the handling and utilization of data flow in order to provide feedback, adjustment, and information regarding the operation of an activity or a system. Structuring the generation, transmission, and purposes of data for computer installations. Intended for persons who will be involved in middle-level management or in the implementation of data processing procedures.

784 Management Information Systems  
Development and operation of information systems for the management of large-scale projects and organizations. Problem identification for higher-level decision making and information feedback to top management on progress toward achieving major objectives. Includes utilization of information channels for planning, programming, budgeting, documentation and information retrieval. Application of computer sciences to information control and simulation of operational models.
BUSINESS ECONOMICS

785 Systems Analysis—A Computer Approach to Decision Models (3)
Appraisal, design, and maintenance of interlinked organizational activities and functions. Control and coordination of the interaction of human and machine operations for the most efficient achievement of a recognized goal. Pre: 351 or IS 301, or consent of instructor.

Business Economics (BEc)

Economics 150 is prerequisite to all other courses.

303 Money, Credit and the Capital Market (3) I, II
Nature and functions of money, debt and credit, liquidity; financial institutions and money market analysis; fund flow analysis.

341 Managerial Economics I (3) I, II
Demand analysis; production analysis relating to factors and products; various forms of imperfect competition; demand creation and selling costs; multiproduct output; technological change; problems of uncertainty. Pre: Math 134, BAS 111.

342 Managerial Economics II (3) I, II
Working concepts and case studies relating to demand analysis and production analysis; problems of demand creation, multifactors and multiproducts, technological change; cases involving working capital, financing and capital budgeting; input-output analysis and programming techniques. Pre: 341.

351 Business Conditions Analysis
Study of the interrelationships of macroeconomic events and developments to microeconomic units. Special attention will be given to the role that GNP, national and regional growth rates, price and employment levels, and monetary and fiscal policies should play in the strategic decision making of the firm. Pre: 341.

352 Business Enterprise and Business Fluctuations (3) II
Characteristics and causes of business fluctuations; means of coping with recession and inflation by business firms and government; business forecasting.

355 Analytical Methods of Banking (3)
Application of macro-micro and quantitative approaches to the management of banks. Orientation toward the solution of banking problems through the use of optimization and heuristic methods for normative solution in areas such as flow of funds, risk criteria, bank portfolio, and long-range planning related to monetary and fiscal policy. Pre: 303, 341, BAS 301.

361 Foreign Trade and American Industry (3) I
Introduction to world trade, its development and current status; study of foreign trade principles, including international commercial problems and policies, tariff policies, and exchange controls that affect exporting and importing industries. Pre: 303, 341.

362 Foreign Trade Policy and Finance (3) II
Study of means and ends of international trade; international commodity agreements and commercial treaties, international banking facilities, foreign credits, foreign exchange, foreign investments. Pre: 361.

375 Business Enterprise and Public Policies (3) I, II
Study of interrelations between business and government. Special attention to analysis of public policies affecting business management: regulation monopoly and competition; business affected with public interest; use of subsidies to promote public purposes; use of government financing to regulate business. Pre: 341.

723 Operations Economics (3)
An application of economic and operations research techniques to business and economic problem solving with emphasis on case methods. Pre: Bus 611 and 621.
724 Current Economic Problems (3)
Study of modern issues and problems in business economics. Topics may vary from term to term.

725 Capital Markets and International Finance (3)
Supply and demand for capital in national and international markets. Nature of capital movements and role of capital in industrialization of regions and nations.

DEPARTMENT OF MANAGEMENT, MARKETING
INDUSTRIAL EDUCATION (IE)

Management (Mgt)

Bus 300 The World of Business and the World of Man (3)
Study of basic economic, social, and political concepts of business and industry in the world of societies of today and tomorrow. Pre: junior standing, non-business majors only.

301 Management and Organizational Behavior (3)
Analysis of the management process with particular emphasis on human resources.

302 Operations Management I (3)
Management of the production and operations functions of an enterprise. Pre: BAS 302.

321 Facilities and Productivity Management (3)
Facilities design, the management of production systems, and productivity analysis with emphasis on quantitative applications. Pre: Mgt 302.
322 Operations Management Control (3)
Inventory and production planning and control, manufacturing processes, inspection and quality control, equipment selection and replacement analysis. Pre: Mgt 302.

341 Human Relations in the Organization (3)
Contributions made by sociology, psychology and related behavioral sciences which assist in the resolution of interpersonal organizational problems. Pre: Mgt 301.

344 Seminar in Management (3)
In-depth analysis of selected current practices and trends in administration. Pre: 300, 341; senior standing; consent of instructor.

345 Business Policy (3)
Case studies in assessing alternative risks in solving policy problems; an interdisciplinary approach applying and integrating many subjects in college curriculum. Pre: 2nd semester senior standing.

Mgt 743 Selected Topics in Organization Theory and Practice (3)
Evolution of organization theory and practice, with major emphasis on contemporary organizational problems, issues, and developments.

Mgt 744 Comparative Management (3)
Cross-cultural analysis of the values and environmental constraints which shape management patterns and policies. Emphasis will be upon Pacific Area Nations.

Mgt 746 Production and Operations Management (3)
Critical review of the development of production and operations management. Planning, decision-making and control of office and manufacturing operations.

Marketing (Mkt)

300 Principles of Marketing (3)
Fundamental concepts and problems of marketing within present economic, legal and social environments; consumer analysis, functional analysis, marketing institutions. Prerequisite to all other marketing courses.

315 Marketing Management (3)
Analysis and solution of problems involving pricing, distribution, product strategy, promotion and marketing research from management viewpoint. Economic and social responsibilities of marketing function emphasized. Pre: BEc 341.

321 Marketing Information Analysis (3)
Research aids to marketing management; nature of the research process; planning research including problems of sampling and measurement; experimental and non-experimental methods and techniques; analysis of data. Pre: BAS 302 or consent of instructor.

331 Advertising Management (3)
Advertising decision making, advertising's role in marketing mix, primary demand stimulation, selective demand stimulation, building complete programs, advertising agency relationships.

341 Retailing Management (3)
Principles, functions and analysis of problems in retailing: location and layout; merchandise planning, buying and selling; organization; expense analysis and control; coordination of store activities.

361 Seminar in Marketing (3)
Study and discussion of significant topics and problems in the field of marketing. Pre: consent of instructor and usually senior standing.

381 Multi-National Marketing (3)
Methods and organization peculiar to international marketing, with emphasis on practical and technical aspects.

391 Marketing Strategies (3)
Decision-making by the marketing executive; an integration of all elements of the
marketing program based on actual business situations. Pre: 315, 321 and one other marketing course above the 300 (Principles) level or consent of instructor.

**397 Consumer Behavior (3)**  
Analysis of consumer behavior and motivation, principles of learning, personality, perception, and group influence with emphasis upon mass communication effects.

**753 International Marketing Management (3)**  
Comparative and cosmopolitan approach to marketing management with emphasis on profit and growth opportunities and problems in world markets.

**754 Marketing Communication and Promotional Strategy (3)**  
The variables that affect or control the communication process; theoretical considerations are stressed in presenting hypotheses, techniques, and research studies. Within this framework advertising, personal selling, and promotion are viewed analytically.

**755 Marketing Research Methodology (3)**  
Research aids to marketing management: problem specification, hypothesis formulation, sample design, questionnaire construction, data collection, analysis, and policy recommendations.

### Personnel and Industrial Relations (PIR)

**200 Career Placement (1)**  
Preparation for effective career placement; personal inventory, selecting field of interest, job market, preparation of resumes, employment interviews, employment decisions, initial career experience, progress. Primarily for juniors and seniors.

**351 Personnel Selection and Training (3)**  
Policies and procedures essential to staffing, developing and maintaining proper relationships at all organizational levels.

**353 (352) Personnel Compensation (3)**  
Wage and salary systems, payments and incentives; fringe benefits, evaluation of jobs at all levels.

**361 Labor Problems and Trade Unionism (3)**  
Problems and economics of labor; history, structure, government, activities of trade unions; social and labor legislation.

**363 (362) Collective Bargaining and Dispute Settlement (3)**  
Principles and concepts of collective bargaining; methods of settling disputes over rights and interests.

**365 Labor and Social Legislation (3)**  
Evolution, interpretation and application of labor and social welfare legislation with special emphasis on impact on labor-management relations.

**367 Labor-Management Relations in the Public Service (3)**  
Review and analysis of the basic factors which distinguish private from public employment relations, and examination of the development of recent legislation and programs on the federal, state and municipal levels. Specific consideration will be given to current problems on the mainland and Hawaii. Pre: 361 or permission of instructor.

**763 Personnel Administration (3)**  
Analysis and critical evaluation of those issues, policies, and trends in personnel administration.

**764 Advanced Personnel Administration (3)**  
Intensive analysis of a limited number of specific subjects in the field of personnel administration.

**765 Labor Relations (3)**  
A review of labor history, labor legislation and labor problems including collective bargaining for public employees.
TRANSPORTATION, TIM

766 Problems of Collective Bargaining (3)
Policies and practices of labor contract administration; fundamentals of grievance handling; fact-finding, mediation and arbitration as methods of reducing industrial conflict.

SCHOOL OF TRAVEL INDUSTRY MANAGEMENT

Transportation (Trans)

351 Economics of Transportation (3) I
Development of major transportation systems and their marketing function in American economy as integral part of process of physical distribution. Prerequisite: Econ 151 or BEc 341.

352 Passenger Transportation (3) II
Analysis of models of passenger transportation, including rates and services in urban, local, intrastate, interstate and international operation, with particular emphasis on Pacific areas. Impact on areas served. Regulations of carrier operation and passenger travel. Prerequisite: Econ 151 or BEc 341.

Travel Industry Management (TIM)

101 Introduction to Travel Industry Management (3) I, II
General principles of hotel management and tourism, particularly from standpoint of close link between the two and rapid developments taking place in these fields. Lectures by leaders of hotel and travel industries.

100, 200, 300, 400 Internship (0–0–1–1) (arr.)
200 hours of paid employment in hotel or tourist industry for each course. Employment obtained by student with help and approval of School.

301 Hotel Management Principles (3) I, II

314 Institutional Purchasing
Introduction to and analysis of the procurement responsibilities in travel industry management. Special emphasis is given to the organized institutions supplying hotels, restaurants, airlines, etc. and the legislation which controls the standards of industrial supplies and goods. Prerequisite: FSA 181.

321 Tourism Principles I (3) I
Study and application of basic components of tourism. Includes philosophy and promotion of tourism, travel counseling, use and evaluation of publicity media, development of tourism at regional, national, international levels.

322 Tourism Principles II (3) II
Travel research and statistics; tourism and its economic significance; preparation and control of tourism budgets; immigration and customs procedures; factors determining priorities in tourist development. Prerequisite: 321.

323 Travel Agency Management (3)
Management principles covering agency organization and operation. Development of individual and group movements; convention proposals. Human relations; IATA and ATC regulations; tariffs and schedules; finances. Linkage with principal travel service businesses.
Graduate Courses in Business Administration

The CBA has two programs leading to the MBA degree—one a thesis and one a non-thesis program. Students in either program without an undergraduate business degree or equivalent must take the Group I courses. The MBA Plan A (thesis) requires the students to take six of the seven Group II courses, 6 credits of thesis and 9 credits of electives from Group III. The MBA Plan B (non-thesis) requires all courses in Groups II and IV and three electives from Group III.

GROUP I—Foundation Courses for students lacking full undergraduate preparation in business. 15 credit hours*

Bus 501 Accounting (3)
Basic concepts and procedures with emphasis upon cost accumulation and the preparation, analysis and uses of financial statements.

*Students will receive 3 credit hours for passing each of these courses, but these credits will not be included in the 33-hour requirement for the graduate degree.
GRADUATE COURSES IN BUSINESS

Bus 502 Economic Analysis (3)
Economic analysis and background of business firms; economic decisions and economic environment of business.

Bus 503 Introduction to Quantitative Methods (3)
An elementary survey of basic tools for quantitative analysis for business.

Bus 504 The Management Process (3)
Concepts involved in the management of an organization.

Bus 505 Marketing and Operations Management (3)
Producing and marketing in today's business environment.

M.B.A. COURSES

GROUP II—Advanced Disciplines and Functions (Graduate Core)

Bus 601 Managerial Accounting (3)†
The evaluation and utilization of cost and other quantitative data with emphasis upon its contribution to managerial planning, control and decision making.

Bus 611 Statistical Methods of Business Analysis (3)
Mathematical methods and techniques of statistical inference used in business.

Bus 621 Managerial Economics (3)
Applications of economic analysis to wide variety of problems in business. Topics include management decision theory, profit, demands, production, cost, pricing, competition, capital budgeting.

Bus 631 Finance (3)
Analysis of fundamental financial problems. Financial planning and management, capital budgeting, securities and other financial instruments, financial markets, principal financial intermediaries.

Bus 641 Management: A Systems Analysis (3)
Introduction to the systems concept of management; provides a framework for conceptualizing the interrelationships among all factors relevant to the management process as an integrated whole.

Bus 651 Marketing (3)
Analysis of the fundamental problems in marketing management and modern methods of attacking them. Emphasis is upon strategy, decision-making, and the relationship of the firm to its customers.

GROUP IV—Integrative

Bus 796 Business Policy (3)
Analysis of comprehensive business problems to provide an integration of learning through the resolution of policy issues and through practice in administrative decision-making.

†Undergraduate accounting majors will not be allowed to take this course.
College of Education

The College of Education was established as the Teachers College of the University of Hawaii in September 1931, by Act of the 1931 Legislature of the Territory of Hawaii. The Act merged the Territorial Normal School, then preparing elementary school teachers, with the School of Education in the University, then charged with preparing secondary school teachers, into a single teachers college.

Today the College of Education is an upper-division college and graduate professional school. The major role of the College is the pre-service preparation of teachers. Upon completion of two years of study as pre-education majors in the College of Arts and Sciences, qualified candidates are admitted as either elementary education or secondary education majors to pursue a minimum of two more years of planned coursework and student teaching to meet the requirements of the B.Ed. and a minimum of one more year to meet the requirements of the Professional Diploma. The Bachelor of Education (B. Ed.) is conferred at the end of four years of work and the state Department of Education (DOE) grants the Basic Teacher's Certificate (Class II). Upon the completion of the Professional Diploma or Master of Education degree programs, the state DOE grants the Professional Teacher's Certificate (Class III). This post-baccalaureate work may be pursued in full-time study or part-time in conjunction with teaching.

Undergraduate work leading to a Bachelor of Science degree in recreation is also offered in the College, and substantive service courses are provided in the areas of health, physical education, and industrial arts.

The College currently offers Master of Education degrees in educational administration, educational communications, educational foundations, elementary education, secondary education, and the M.Ed. and Ph.D. in educational psychology. Information concerning these programs can be obtained from the Graduate Division of the University and from the departments offering the various programs.

Research and development and community service are two other very important aspects of the College’s functions. The College provides professional leadership and service to projects in the Pacific islands and Southeast Asia. As the only state-supported teacher education institution in Hawaii, the College, particularly its research and development centers, has responsibility for leading the advance of education in the state through research studies on the learning process and curriculum development of new materials and methods for teaching.
COLLEGE OF EDUCATION

Preservice Teacher Education Program

The current program for all preservice teacher candidates approved by the College and the University Council on Teacher Education includes a strong liberal arts core, professional education courses, and student teaching. In addition, secondary majors complete at least one major in a teaching field of the secondary school, and elementary education majors complete an academic major and a distributive major in courses related to the curriculum in the elementary schools. Requirements are listed in the sections following:

General Education

The general education core requirements of the College of Arts and Sciences constitute most of the non-major courses in the liberal arts and sciences for prospective elementary and secondary teachers. However, requirements for certain teaching majors such as science and mathematics commence in the freshman year, so pre-education freshmen and sophomores should check with the College’s division of student services to obtain listings of specific curricula in all teaching fields.

Program of Studies for Elementary Education Majors

Elementary education majors have two options, referred to as elementary generalist and elementary specialist, in preparing for teaching in the elementary school. These options are described in the following sections:

Elementary Generalist Program

1. B.Ed. requirements: minimum of 126 credits
   a. Follow requirements for pre-education majors in the College of Arts and Sciences: 57 credits in liberal arts and science courses.
   b. Professional education core: 9 credits in social, psychological, and curriculum foundations, and 10 credits in methods courses in the principal subject areas taught in the elementary school.
   c. Student teaching: 12 credits, full time for one semester.
   d. Academic major: a minimum of ¾ of the credits for the major as specified.*
   e. Distributive major: a minimum of ½ of the credits in courses specifically related to the elementary school curriculum.*

2. Professional Diploma requirements: minimum of 156 credits, including work completed for the B.Ed. and the following:
   a. Professional education: 6 additional credits in education courses numbered at the 600 level.

*Specific requirements are available in the College of Education, Division of Student Services.
b. Academic major: the balance of credits required for the major as specified.*

c. Distributive major: the balance of credits required in the distributive major as specified.*

**Elementary Specialist Program**

1. B.Ed. requirements: a minimum of 126 credits
   a. Follow requirements for pre-education majors in the College of Arts and Sciences: 57 credits in liberal arts and science courses.
   b. Professional education core: 9 credits in social, psychological, and curriculum foundations; 4 credits in language arts and reading methods courses; and a methods course appropriate to the major field.
   c. Academic major: a minimum of 39 credits in one discipline and other courses as specified.*
   d. Student teaching: 12 credits.

2. Professional Diploma requirements: a minimum of 156 credits, including work completed for the B.Ed. and the following:
   a. Professional education: 6 additional credits in education courses numbered at the 600 level.
   b. Academic major: the balance of credits required for the major and other courses as specified.*

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**Program of Studies for Secondary Education Majors**

1. B.Ed. requirements: a minimum of 126 credits
   a. Follow requirements for pre-education majors in the College of Arts and Sciences: 57 credits in liberal arts courses.
   b. Professional education core: 9 credits in social, psychological, and curriculum foundations; 3–4 credits in appropriate methods course to the major.
   c. Teaching field major: credits in the teaching field major and other courses as specified.*
   d. Student teaching: 12 credits, full time for one semester.

2. Professional Diploma requirements: a minimum of 156 credits, including work for the B.Ed. and the following:
   a. Professional education: 6 additional credits in education courses numbered at the 600 level.
   b. Teaching field major: additional credits in the major and/or other courses as specified.*

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**Teaching Field Majors—Secondary Education**

(For B.Ed. and Professional Diploma)

Total number of credits are approximations.*

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*Specific requirements are available in the College of Education, Division of Student Services.
Agriculture: 60 credits in agriculture and agricultural technology courses and Ed CI 333.

Arts: 60 credits in art, including: 18 credits in art history or related studies (aesthetics, music, etc.) including Art 270 and 280; 42 credits in studio courses, including Art 101, Studios A, B, C, D; and Ed CI 336.

Biology: 32 credits in biology; general physics; organic chemistry; introductory geoscience; history/philosophy of science; introductory calculus; Ed CI 333.

Business Education: 36 credits in business, including a minimum of 21 credits in economics, and skills courses in typewriting, shorthand, business and secretarial machines and accounting, and Ed CI 348, 349.

Chemistry: 32 credits in chemistry; general and modern physics; introductory biology and geoscience; history/philosophy of science; integral calculus; Ed CI 333.

Distributive Education: 36 credits in business, including a minimum of 21 credits in economics, marketing and management; and Ed CI 349, 460.

English: 60 credits in English and related subjects; and Ed CI 330, 331, 345.

Foreign Languages: 60 credits in a foreign language (Chinese, Japanese, French, German, or Spanish) and related subjects; and Ed CI 335.

Geosciences: 32 credits in geosciences; general and modern physics; inorganic chemistry; introductory biology; history/philosophy of science; integral calculus; Ed CI 333.

Health and Physical Education: 60 credits in health and physical education; and Ed CI 343.

Home Economics Education: 65 credits in home economics including management and family economics, housing and equipment, clothing and textiles, food and nutrition, human development, and sciences (minimum of 20 credits); and Ed CI 371.

Industrial Arts Education: 60 credits in industrial and technological education; and Ed CI 346, 347.

Mathematics: Junior High—30 credits in mathematics; Senior High—42 credits in mathematics; and Ed CI 334.

Music, Instrumental: 74 credits in instrumental music and related subjects; and Ed CI 337.

Music, Vocal: 70 credits in music theory and voice and related subjects; and Ed CI 337.

Physics: 32 credits in physics; inorganic, qualitative and physical chemistry; introductory biology and geoscience; history/philosophy of science; differential equations; Ed CI 333.

Social Studies: 60 credits in social sciences (anthropology, economics, geography, history, political science, psychology, sociology, or inter-disciplinary courses in the social sciences) to include a major from one of the disciplines, the remainder to be in related social sciences; and Ed CI 332.
SPEECH: 60 credits in speech and related subjects; and Ed CI 339, 331, 345.

Program for Special Education Majors

The special education program is located within the department of educational psychology in the College of Education. Prospective students complete the Arts and Sciences general education core during the freshman and sophomore years; the professional education core, academic and distributive majors in the junior and senior years. Students may specialize in the teaching of educable and/or trainable mentally retarded children, or children with learning and behavior disorders, completing their program of study for the bachelor's degree. Both a professional diploma program and a master's degree program are also available. There is a limited number of junior-year traineeships available to prospective candidates.

Program for Vocational Agriculture Education Majors

Prospective vocational agriculture education majors have the options of enrolling in the College of Arts and Sciences for the freshmen and sophomore years, followed by transfer to the College of Education for the junior, senior, and fifth years, or in the College of Tropical Agriculture for the bachelor's degree, followed by transfer to the College of Education for the fifth year. To be admitted for work in the College of Education, vocational education majors must meet the general entrance requirements of the College.

Program for Business Education and Distribution Education Majors

Prospective business education and distributive education majors may enroll in the University of Hawaii Community College System's transfer programs for their pre-education (liberal arts and science core) and selected office and business education skill courses such as typewriting, shorthand, business machines, as partial fulfillment for the Bachelor of Education requirements. Candidates transfer to the College of Education at the end of the sophomore year to complete professional education and teaching field major work during the junior, senior, and fifth years. Students planning to transfer to the College of Education should consult with the pre-education adviser and/or the business education adviser in the division of student services.

Program for Vocational Home Economics Education Majors

Prospective vocational home economics education majors may enroll in the College of Tropical Agriculture's division of human resources development for their general education during the freshman and sophomore years. They transfer to the College of Education at the end of the sopho-
more year to complete their program of studies for the bachelor's degree and Professional Diploma. Their major teaching field work is completed through courses taken in the departments of human development, fashion design, textiles and merchandising, food and nutritional science, and home economics.

**Program for Industrial Arts, Technical and Industrial Vocational Education Majors**

To prepare competent teachers for expanding industrial arts education and technical-industrial vocational education positions in the junior-senior high schools and community colleges, a coordinated program of preparation has been established between the College of Education and the Honolulu Community College. Prospective teachers enroll in the Honolulu Community College for their first and second years of the program, taking courses in technology and general education. Candidates transfer to the College of Education at the end of their sophomore year to complete professional education and teaching field major work during the junior, senior, and fifth years.

**Program for Community College Teaching**

The University of Hawaii in cooperation with the Hawaii community college system is currently operating a program for the preparation of community college faculty. Fellowship support is available for graduate students in this area. Those who are interested should confer with the chairman of the department of curriculum and instruction.

**Program for Recreation Leadership Majors**

The department of health and physical education offers a program of study leading to a B.S. degree in Recreation Leadership. This four-year program is centered in training leaders in community recreation and related fields of recreation. Interested persons should contact the chairman of the department.

**Admission and Graduation Requirements**

The College of Education admits students who have junior standing or higher. Applicants pursuing all programs except those leading to the M.Ed. and the Ph.D. degrees, must arrange a personal interview with the staff of the College of Education, division of student services. (Personal recommendations are accepted in lieu of interview for out-of-state applicants.) Additional interviews for applicants for the B.S. degree in recreation leadership are arranged with the department of health and physical education.
In addition to the University requirements listed on pages 43–48 students entering the College are required:

1. To be competent in written English and have adequate speech patterns;
2. to have an absence of emotional or adjustment problems;
3. to provide letters of recommendation giving evidence of being able to adjust to the demands of teaching and to cope with the problems of working with students;
4. to have no physical limitations which would interfere with teaching effectiveness;
5. to present transcripts of all college records showing a cumulative grade-point average according to the following classification:
   a) for entering juniors, seniors, and Professional Diploma candidates, a cumulative GPA of at least 2.0
   b) for all students majoring in secondary education, a minimum GPA in their teaching field of at least 2.3
6. to submit an application form and all transcripts of previous collegiate work to the division of student services, College of Education, by July 1 for the fall semester, and by November 1 for the spring semester.

The B.Ed. Degree. The College awards a Bachelor of Education degree upon the completion of four years of work at the University. To be eligible for the B.Ed. degree, the student must:

1. Fulfill all University requirements;
2. complete the College of Education undergraduate curriculum in elementary or secondary education;
3. acquire a minimum aggregate of 114 semester hours of credit in addition to student teaching;
4. have a cumulative GPA not less than that required for admission to the College;
5. file for graduation and pay $5 fee at least one semester prior to intended graduation date.

The Professional Diploma. In recognition of successful completion of a post-baccalaureate teacher education program for teaching at the elementary or secondary school level, the College awards the Professional Diploma. To be eligible for the Professional Diploma, the student must:

1. Meet all admission requirements of the College of Education;
2. have been awarded a bachelor’s degree from an accredited institution;
3. have completed student teaching with a grade of no less than C;
4. have completed all course requirements for the Professional Diploma;
5. have acquired a minimum of 156 semester hours;
6. have a final cumulative GPA not less than that required for admission to the College;
7. have filed for graduation and paid a $2.50 fee not later than the semester prior to intended graduation date.

Student Teaching

The division of field services of the College of Education plans for, arranges, and coordinates the student teaching experiences in the elementary and secondary public and non-public schools of Hawaii. In spite of the hundreds of requests for student teaching during the year, selection of assignments will consider as many personal preferences as possible. Semester preferences will be considered to the extent they allow a balance of teachers in the field during the fall and spring.

Prior to registering for student teaching (Ed CI 390), a student is required:

1. To be enrolled in the College of Education as a classified student;
2. to complete a 30-hour field experience with children of the age group requested in student teaching;
3. to have a cumulative GPA not less than that required for admission to the College, and a GPA in the teaching field (secondary level only) not less than 2.3;
4. to be cleared for student teaching by the division of student services;
5. to be accepted for student teaching by the division of field services upon the recommendations of the instructor(s) of the appropriate methods course(s);
6. to request student teaching of the division of field services no later than October 15 or March 15 for teaching during the subsequent semester. (There is no student teaching during the summer session.)

Certification Programs

Administrative Intern Program. The administrative intern program is sponsored by the College and the state Department of Education. To be admitted to the program, the candidate must have two years of teaching experience, hold the professional certificate and successfully pass the annual examinations administered by the state Department of Education. Interested candidates should confer with the chairman of the department of educational administration. Successful completion of the administrative intern program is a requirement for the Professional School Administrator’s Certificate.
Certification in School Psychology. There are two levels in the school psychology program—the certificate level and the doctoral level. The certificate program is a 48–60 semester credit program of professional and academic courses. The M.Ed. degree in psychology is included as part of the certification requirement. Students who complete the certificate program will be recommended for school psychology credentials in Hawaii and other states. The doctoral level program is designed to prepare supervisors, college instructors and researchers in the field. Program advisements are available for qualified graduate students in the department of educational psychology.

School Counseling Certificate Program. The counseling and guidance program is designed for students who wish to develop competency in counseling and guidance in the schools, and to meet certification requirements in Hawaii or other states. The master of education degree may be completed as part of the requirements for the professional level certificate. Individuals who complete the counseling and guidance program satisfactorily are recommended for the counselor certification. Those interested should confer with the counselor-educator in the department of educational psychology.

Teaching the Mentally Retarded Certificate Program. The College offers a one-year graduate program leading to recommendation for certification as a teacher of the mentally retarded. Graduates with a degree in an area other than education may also receive recommendation for certification to teach mentally retarded children upon completion of a one-year program. Courses taken for certification may be counted toward a master's degree in educational psychology with emphasis in special education. Interested students should confer with the instructors in special education in the department of educational psychology.

Fellowship support is available for students in the area of mental retardation.

Teaching the Emotionally Disturbed Certificate Program. The University in cooperation with the state Department of Education is currently developing certification requirements in the area of the emotionally disturbed. See course offerings in this area.

Fellowship support is available for students in the area of the emotionally disturbed.

Teaching the Culturally Disadvantaged Certificate Program. The University of Hawaii in cooperation with the state Department of Education is currently developing certification requirements in the area of the culturally disadvantaged. The Hawaii Teacher Corps, a federally financed two-year graduate program, prepares teachers to teach the disadvantaged children and youth. For further information concerning this program, contact the director of Hawaii Teacher Corps.
EDUCATION COURSES

See pp. 4-5 for a discussion of course descriptions.

Curriculum and Instruction (Ed Cl)

Professors R. Alm, Austin, Carr, Ihara, In, Lang, Martin, Nelson, Noda, Pickens, Poyzer; Associate Professors Braun, Campbell, Fultz, Hayes, Inn, Jenkins, Morris, Pang, Picard, Reddin, Tull, Whitman; Assistant Professors Bilous, Brown, Fujita, Thompson, Uehara; Acting Assistant Professor Whitesell

Courses numbered from 312 through 999 have as prerequisite enrollment in the College of Education as a classified student.

312 Foundations in Curriculum and Instruction (3) I, II
Braun, Brown, Fultz, Inn, Jenkins, Martin, Reddin, Whitesell
Study of objectives and organization of school's curriculum; discussion of principles and practices; roles of teacher in school. Sections: early childhood education, elementary education, secondary education.

319 Children's Literature (2) I, II
Jenkins, Reddin
Acquaintance with wide range of children's books; criteria for judging literature on basis of needs and interests. Pre: 312 or concurrent registration.

320 Language Arts, Elementary (2) I, II
Jenkins, Reddin
Modern approach to teaching of language arts—reading, oral, written expression. Pre: 312 or concurrent registration.

321 Reading, Elementary (2) I, II
Braun, Uehara
Survey of reading process: development of reading readiness, word recognition, comprehension, reading rate, vocabulary, reading interests, reading in content areas. Selection and use of reading materials, evaluation and appraisal of reading progress. Pre: 312 or concurrent registration.

322 Social Studies, Elementary (2) I, II
Inn, Lang
Major purposes: to point out special contributions of social studies to elementary curriculum; to aid students in developing sound instructional programs and procedures in elementary social studies. Pre: 312 or concurrent registration.

323 Science, Elementary (2) I, II
Campbell, Carr
Science education in elementary school; methods and materials; laboratory activities selected from new science curricula. Pre: 312 or concurrent registration.

324 Mathematics, Elementary (2) I, II
Pang, Picard
Purposes, procedures, scope, organization in developing underlying concepts of elementary mathematics; analysis of new elementary mathematics programs; techniques, relative merits, roles of inductive and deductive approaches to new ideas. Pre: 312 or concurrent registration; Math 111.

325 Trends in the Teaching of Elementary Mathematics (2) I, II
Staff
Mathematical content necessary for effective use of newer approaches; nature of number systems; introduction to theory of numbers; basic concepts of algebra; foundations in geometry. Open for credit to students who took elementary mathematics methods prior to September 1962.

326 Creative Art, Elementary (2) I, II
Pickens
Understanding scope and importance of art in elementary school curriculum, creative use of art media through laboratory experiences. Pre: 312 or concurrent registration.

329 Creative Expression in Elementary Education (3) I
Hayes
Development of communication skills through creative dramatics, rhythmic movement, related arts. Pre: 312 or concurrent registration, or consent of instructor.

330 Language Arts, Secondary (3) I, II
Whitesell
Teaching of speaking, reading, writing, listening in secondary school; literature, grammar, usage, spelling. Pre: 312 or concurrent registration.
331 Teaching of Reading in Intermediate and High School (2) I  
R. Alm
Techniques and materials for teaching reading and improving reading skills in intermediate and high school. Pre: 312 or concurrent registration.

332 Social Studies, Secondary (3) I, II  
Fultz
Scope and organization of social studies in secondary school; development of social knowledge and understanding. Pre: 312 or concurrent registration.

333 Science, Secondary (3) I, II  
Campbell
Purposes and procedures; development of scientific attitude; review of major generalizations of biological and physical sciences. Pre: 312 or concurrent registration; basic courses in physics, chemistry, biology.

334 Mathematics, Secondary (3) I  
Whitman
Purposes and procedures; development of basic mathematical concepts. Pre: 312 or concurrent registration; Math 311, 351.

335 Foreign Languages, Secondary (3)  
Staff
1. European Languages I, II  
2. Asian Languages II
Techniques and materials; aims, motivation, tests; infusion of cultures; use of instructional aids. Pre: 312 or concurrent registration.

336 Art, Secondary (3) I  
Pickens
Purposes and procedures; the arts in relation to all school subjects. Pre: 312 or concurrent registration; consent of instructor.

337 School Music, Secondary (3) II  
Staff
Objectives, materials, procedures of general, instrumental, choral music in secondary school. Pre: 312 or concurrent registration.

339 Speech-Communication, Secondary (3) I, II  
Byers
Objectives, materials, procedures for teaching speech-communication: speech modification and development; selected speech activities. Pre: 312 or concurrent registration.

343 Physical Education, Secondary (3) I, II  
Thompson
Methods and materials in conduct of physical activities program; techniques in leadership; selection of activities and program evaluation. Pre: 312 or concurrent registration.

345 Literature for Adolescents (2) II  
J. Alm
Literature for secondary school level: helping students appreciate significance and meaning of literature; materials suitable for varying levels of ability and interests. Pre: 312 or concurrent registration.

346 Methods of Instruction, Industrial Education (3) I  
Poyzer
Techniques of individual and group instruction in laboratory and related classes; evaluation of various methods. Pre: 312 or concurrent registration.

347 Organization and Management of Industrial Education (2) II  
Poyzer
Organization of instruction; handling supplies; maintaining equipment and tools; purchasing materials; keeping records; making inventories. Pre: 312 or concurrent registration.

348 Methods of Teaching Shorthand and Bookkeeping (2) I  
Morris
Theory and methods of teaching shorthand and bookkeeping. Pre: 312 or concurrent registration; Acc 201-202; shorthand; office machines.

349 Methods of Teaching Typewriting and General Business (2) II  
Morris
Theory and methods of teaching typewriting and general business in the business education curriculum. Pre: 312 or concurrent registration; typewriting.

371 Home Economics Education (3) I, II  
Tull
Curriculum design. Current educational philosophies and practices in home economics education. Teaching materials and techniques.

390 Student Teaching (10) I, II  
Staff
Supervised experience in public schools. Sections: (1) elementary education, (2)
secondary education. Course taken on mandatory pass-fail basis. Pre: requirements for registration listed under "Student Teaching."

391 Seminar for Student Teachers (2) I, II
Seminar relating current educational theories with experiences in student teaching. To be taken concurrently with 390. Pre: requirements for registration listed under "Student Teaching."

399 Directed Reading (arr.) I, II
Staff
Individual reading or research. Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in education. Pre: consent of instructor and department chairman.

437 Curriculum Development, Industrial Education (2) II
Poyzer
Development of contemporary curricula and programs spanning the industrial education continuum. Pre: I.E. major or instructor in I.E.

439 Business Education Curriculum (3) I, II
Morris
Study of philosophy, principles, development of business education in secondary schools. Pre: 348 or 349 or consent of instructor.

460 Distributive Education (3) I
Morris
Principles, materials and methods of teaching distributive education subjects.

471 Special Problems in Home Economics Education (2) I, II
Tull
Individual and group problems selected according to interests and needs of fourth- and fifth-year students in home economics education. Development of teaching materials.

493-494 Senior Honors Thesis (2-2) Yr.
Staff
For seniors in Honors Program.

497 Seminar in Interdisciplinary Science Curriculum (3) II
Campbell
Fundamental science concepts from the viewpoints of physical, biological and earth sciences; integrative processes and conceptual schemes relevant for science curriculum development; significance of ideas and models for contemporary and futuristic problem solving. Pre: basic courses in biology, chemistry and physics. (Identical with IS 497)

520 Supervision of Student Teaching (3) I
Staff
Principles and methods; role of supervisor; human relations in supervision of student teaching. Pre: teaching experience; consent of instructor.

540 Practicum in Curriculum Development (arr.) I, II
Staff

590 Internship (arr.) I, II
Zane
Practicum under faculty supervision. The application of previously studied theory in practice situations. Pre: consent of instructor.

591 Seminar for Interns (2) I, II
Zane
Problems arising from experience of internship. To be taken concurrently with 590. Pre: consent of instructor.

619 Children's Literature in the Elementary Curriculum (3) I, II
Jenkins, Reddin
Examination in depth of traditional and modern literature for children, with emphasis upon genre, historical development, research, curriculum development. Pre: 319.

620 Teaching Reading in the Elementary School (3) I, II
Uehara

621 Modern Language Arts Program, Elementary (3) II
Jenkins, Reddin
Critical examination of educational procedures in teaching of language arts; current research including that related to language deprivation and linguistic science. Pre: 320 and teaching experience.
<table>
<thead>
<tr>
<th>Course ID</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>622</td>
<td>Elementary School Curriculum (3) I, II</td>
<td>Braun, Inn, Jenkins, Lang</td>
<td>Theoretical foundations of curriculum development; curriculum research; critical examination of current practices in curriculum development for elementary school. Pre: 312 or equivalent; teaching experience.</td>
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<tr>
<td>624</td>
<td>Elementary Mathematics Curriculum (3) II</td>
<td>Picard</td>
<td>Analysis of research relating to teaching and learning arithmetic, apply research findings to classroom procedures. Appraisal of recent curricular trends and critical examination of assumptions underlying proposed changes. Pre: 324 and teaching experience.</td>
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<tr>
<td>625</td>
<td>Elementary Social Studies Curriculum (3) II</td>
<td>Inn</td>
<td>Examination and evaluation of social science content, societal values and research findings as basis for development and revision of social studies materials, texts, curriculum guides, methodology. Pre: 322 and teaching experience.</td>
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</tr>
<tr>
<td>626</td>
<td>Art in Elementary Education (3) I</td>
<td>Pickens</td>
<td>Principles of and problems in teaching art in elementary school; curriculum development and current approaches in art education; laboratory experiences in art media. Pre: 326.</td>
<td></td>
</tr>
<tr>
<td>629</td>
<td>Curriculum Development in Creative Expression (3) I</td>
<td>Hayes</td>
<td>Leadership training for teachers of creative dramatics, rhythmic movement, related arts. Pre: 329 or consent of instructor.</td>
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<tr>
<td>634</td>
<td>Extraclass Activities in Secondary Schools (2) I</td>
<td>Staff</td>
<td>Exploring potential contribution and utilization of extraclass activities: homeroom, student council, athletics, intramurals, clubs, dramatics, publications, speech activities, assemblies, etc.</td>
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<tr>
<td>635</td>
<td>Junior High School Curriculum (3) I</td>
<td>Fultz, Martin</td>
<td>Programs for intermediate school; relationship of teachers, administrators, parents; curriculum problems; evaluation. Pre: teaching experience.</td>
<td></td>
</tr>
<tr>
<td>637</td>
<td>Art in Secondary Education (3) I</td>
<td>Pickens</td>
<td>Principles of and problems in teaching art in secondary school; current approaches in teaching art. Pre: 336 and consent of instructor.</td>
<td></td>
</tr>
<tr>
<td>640</td>
<td>Seminar in Teaching Fields (3) I, II</td>
<td>Staff</td>
<td>Study in trends, research, and problems of implementation in special areas of teaching: (1) business, (2) English, (3) foreign language, (4) health and physical, (5) home economics, (6) industrial, (7) mathematics, (8) reading, (9) science, (10) social studies, (11) speech, (12) interdisciplinary, (13) art, (14) creative expression. Pre: undergraduate special methods course in appropriate teaching field; teaching experience; consent of instructor. Field of study must be designated at registration.</td>
<td></td>
</tr>
<tr>
<td>643</td>
<td>Public School Curriculum for Physical Education (3) I, II</td>
<td>Little</td>
<td>Detailed examination of contents of adequate curriculum for physical education in public schools, K-12. Pre: 343, 636, HPE 203, or consent of instructor. (Identical with HPE 643.)</td>
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</tr>
<tr>
<td>646</td>
<td>Reading Difficulties (3) I, II</td>
<td>Staff</td>
<td>Causes, prevention, and correction. Evaluation and remedial practices useful to classroom teacher. Pre: course in teaching of reading.</td>
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<tr>
<td>647</td>
<td>Clinical Procedures in Reading (3) I, II</td>
<td>Austin</td>
<td>Diagnosis; methods and materials for improvement of an individual's reading ability. Pre: 646; consent of instructor. May be repeated once for credit.</td>
<td></td>
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</tbody>
</table>
INDUSTRIAL EDUCATION

657  Community College (3) II  Staff
Development of two-year comprehensive community college in U. S.; its emerging role in higher education. Functions, organization, curricular structure, achievement in relation to objectives, and crucial issues examined. Pre: consent of instructor. (Identical with Ed EF 657.)

667  Curriculum Trends in Early Childhood Education (3) I  Reddin
Study of current issues in nursery, kindergarten, early elementary education, with emphasis on research and theory basic to curriculum development and program planning. Pre: 312 or equivalent; teaching experience.

699  Directed Reading and/or Research (arr.) I, II  Staff
Individual reading and/or research. Pre: consent of instructor and department chairman.

722  Seminar in Elementary Curriculum Foundations (3) II  Inn, Jenkins
Advanced study in development and improvement of curriculum of elementary schools. Required for Plan B M.Ed. candidates in their final semester or summer session. Pre: 622: consent of instructor. May be repeated once for credit.

733  Seminar in Curriculum, Secondary (3) I, II  Inn, Martin
Advanced study in development and improvement of curriculum of secondary schools. Required for Plan B M.Ed. candidates in their final semester or summer session. Pre: 636: consent of instructor. May be repeated once for credit.

737  Foundations in Art Education (3) II  Pickens
Advanced study in development and growth of art in secondary education. Pre: 336; consent of instructor; Phil 500 desirable.

800  Thesis Research (arr.) I, II  Gorter

INDUSTRIAL EDUCATION (IE)

300  Industrial Crafts—Jewelry and Lapidary Processes (2) I
Design, processes and materials of jewelry making; lapidary processes and materials for polishing semi-precious gemstones; black coral polishing and mounting.

301  Industrial Crafts—Leather (2) II
Design and fabrication of leather products. Materials and processes taught through creative projects and problems.

302  Industrial Crafts—Plastics and Wood Sculpture (3) II
Design and fabrication of plastic projects; materials and processes of metal enameling; other industrial crafts native to Hawaii.

303  Advanced Wood Fabrication and Technology (3) I
Nomenclature, setup and operation of power equipment. Design, patterns, jigs, templates; production procedures.

304  Advanced Metal Fabrication and Technology (3) II
Organization, layout, equipment, management, uses of instructional materials. Selected projects in benchmetal, forging, heat-treating, machine shop, oxyacetylene welding, cutting.

307  Advanced Drafting and Design (3) II
Drafting and design principles in fabrication of industrial products; problems of wood, metal, other materials; architectural drafting. Application to instruction.

309  Graphic Arts (3) I
Survey course for industrial education majors and others desiring experiences in printing and allied industrial processes. Job press, multilithography, photography as applied to printing, related technical and production processes.

348  Industrial Arts for Elementary Teachers (2) II
Hand and simple machine tool instruction taught through selected elementary education projects and units.
### Educational Administration (Ed EA)

*Professors Crossley, Dunwell, Everly, Ingils, Jackson*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
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<tbody>
<tr>
<td>600</td>
<td>Theory of Administration (3) I, II</td>
<td>Crossley</td>
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<tr>
<td>610</td>
<td>School-Community Relations (3) I</td>
<td>Crossley</td>
</tr>
<tr>
<td>620</td>
<td>School Finance (3) II</td>
<td>Staff</td>
</tr>
<tr>
<td>623</td>
<td>Administrative Problems in Physical Education (3) I, II</td>
<td>Chui</td>
</tr>
<tr>
<td>630</td>
<td>School Law (3) I</td>
<td>Crossley</td>
</tr>
<tr>
<td>640</td>
<td>Systems Analysis in Educational Administration (3) II</td>
<td>Dunwell</td>
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<tr>
<td>650</td>
<td>School Personnel Practices (3) I, II</td>
<td>Crossley</td>
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<tr>
<td>660</td>
<td>School Plant (3) I</td>
<td>Ingils</td>
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<tr>
<td>670</td>
<td>School Supervision (3) I</td>
<td>Ingils</td>
</tr>
<tr>
<td>680</td>
<td>School Organization (3) I, II</td>
<td>Dunwell</td>
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<tr>
<td>685</td>
<td>Educational Administration: Theory and Principles (3) I, II</td>
<td>Dunwell</td>
</tr>
</tbody>
</table>

**Course Descriptions:**

- **600 Theory of Administration (3) I, II**: Critical review of key current and classic writings in theory and practice of administration; development of comprehensive, integrated understanding of nature of administration. Pre: consent of instructor. (Same as Interdisciplinary Studies 600.)

- **610 School-Community Relations (3) I**: Application of principles, techniques, policies, organization of school-community information program. Pre: consent of instructor.

- **620 School Finance (3) II**: School revenues, apportionments, budgetary procedures, costs, business management. Pre: consent of instructor.

- **623 Administrative Problems in Physical Education (3) I, II**: Current problems and recent trends in conduct of physical education programs in educational settings. For administrators, teachers, graduate students in physical education and related fields. Pre: HPE 428 or equivalent and consent of instructor. (Identical with HPE 623.)

- **630 School Law (3) I**: Functions, relationships, responsibilities of school districts and school personnel with interpretations of legal status as shown by constitutions, statutes, court decisions. Pre: consent of instructor.

- **640 Systems Analysis in Educational Administration (3) II**: Designed for management personnel who wish to pursue modern ideas of system analysis and project management and the approaches which lead to effective planning, programming, and budgeting. Pre: college algebra, rudiments of management theory; consent of instructor. (Lab included; fee $2.50)

- **650 School Personnel Practices (3) I, II**: Recent theory and practices with emphasis on philosophy and democratic aims, principles, models and research in human relations, leadership, group processes taken from anthropology, psychology, sociology, educational administration.

- **660 School Plant (3) I**: Problems and techniques in school plant planning, operation, maintenance; working with other agencies and with classified personnel. Pre: consent of instructor.

- **670 School Supervision (3) I**: Principles of supervision and development of supervisory programs. Pre: consent of instructor.

- **680 School Organization (3) I, II**: Function of teacher in school administration; state organization of public education; Hawaii school law and state Department of Education regulations. Pre: teaching experience (may include student teaching) or consent of instructor.

EDUCATIONAL COMMUNICATIONS

699 Directed Reading and/or Research (arr.) I, II
   Individual reading and/or research. Pre: consent of instructor and department chairman.

700 Research Seminar in Educational Administration (3) I, II
   Dunwell
   Basic concepts of research in educational administration. Study and discussion of significant topics and problems; preparation and reporting of scholarly paper. Required of Plan B M.Ed. candidates. Pre: consent of instructor.

720 Seminar and Internship in Administrative Leadership (arr.) I, II
   Staff
   School administrator as curriculum and personnel leader in school organization; techniques of administrative control; strategies in leadership functions. Intern experience in schools. Pre: admission to state Department of Education Administrative Intern Program, or admission to East-West Center program, or consent of instructor.

770 Seminar in School Supervision (3) II
   Crossley
   Application of methods and tools of supervision; faculty meetings; classroom observation; conferences; evaluation. Pre: 670, teaching experience, or consent of instructor. May be repeated.

780 Seminar in Educational Administration (3) I, II
   Staff
   Analysis of selected problems in school administration. (1) Elementary, (2) intermediate, (3) secondary, (4) adult, (5) technical and vocational, (6) community college, (7) higher education. Pre: 670, 680, 685, or consent of instructor. May be repeated.

800 Thesis Research (arr.) I, II
   Gorter

Educational Communications (Ed EC)

Professor Wittich; Associate Professors Kucera, Sanderson; Assistant Professors Butler, Lum, Mendelson

599, its equivalent, or consent of department chairman is prerequisite to all 600 and 700 level courses; additional prerequisites as noted.

314 Audio-Visual Techniques (2) I, II
   Lum, Staff
   Nature and use of educational media as they relate to pupil needs in classroom learning situations. Identification, use and evaluation of audio-visual instructional materials; application of known principles in educational media in classroom communications.

399 Directed Reading (arr.) I, II
   Staff
   Individual reading or research. Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in education. Pre: consent of instructor and department chairman.

404 Survey of Educational Communications Media (3) I, II
   Lum, Staff
   Overview of research which supports selected media channels, survey of selected communication channels characteristics and development of understanding and practices related to media systems structures as applied to a chosen learning problem.

599 Workshop in Educational Media (1) I, II
   Staff
   Concentrated study and practical experience in utilization of educational media through 8 hours of lecture-demonstrations and 8 laboratory hours for each 1-credit sequence. May be repeated through workshops covering different media up to maximum of 3 credits.

614 Audio-Visual Media Systems (3) I, II
   Butler, Wittich
   Study of educational communications principles and their practical relationship to new educational media; techniques for design and utilization of combinations of media, both projected and non-projected, audio and visual, leading toward achievement of instructional goals; investigation of new teaching strategies: systems analysis, self-instructional, interrelated techniques.
620  Production of Instructional Materials (3) I, II  
Butler, Mendelson  
Preparation of two- and three-dimensional instructional materials, charts, graphs, learning displays, television graphics, overhead transparencies, audio recordings, and use of Ektographic visual maker.

623  Survey and Production of Asian Study Materials (3) II  
Butler  
Selection, evaluation and use of instructional materials available to teachers of secondary school Asian studies subjects. Adapting existing materials or creating new materials; maps and models, audio recordings, flat pictures, slide sets, projectuals, film-strips, realia and films.

625  Educational Still Photography (3) I, II  
Mendelson  
Theory and practice involved in planning and producing educational film strips, slides, prints. Emphasis on meeting curriculum goals through systematic development of strip film as learning material for presentations. Pre: basic knowledge of photography and consent of instructor.

626  Motion Picture Production for Educational Communications (3) I, II  
Mendelson  
Planning and producing educational motion pictures; emphasis on communication and aesthetic factors as related to planning and production of motion pictures to meet curriculum goals through a systematic development. Pre: 625 or consent of instructor.

630  Television in Education (3) I, II  
Kucera  
Research backgrounds; development and utilization of television in education including fundamentals of television production and teaching with emphasis on utilization of television in school.

635  Advanced Educational Television (3) II  
Kucera  
Research and study of educational development and utilization of instructional television with emphasis on ETV and systems approach to multi-media instruction in specific learning situations. Pre: 630, its equivalent, or consent of instructor.

639  Mass Communication and Education (3) I, II  
Kucera  
Investigation of educational role of radio, TV and film as social forces of times; seeking out of perspectives on technological revolution of educational communications. Mass media and the future of education. Pre: consent of instructor.

640  Programmed Learning (3) I, II  
Butler  

650  Media Service Administration (3) I, II  
Butler  
Developing theory of administration for media service and production involved in planning, initiating, operating, developing, and evaluating a curriculum support program in a single school or school complex setting. Pre: 314 or 404.
EDUCATIONAL FOUNDATIONS

699 Directed Reading and/or Research (arr.) I, II  
Staff  
Individual reading and/or research. Pre: consent of instructor and department chairman.

700 Seminar in Educational Media Research (3) I, II  
Staff  
Review of general and current audio-visual research. Applications of same to problems in improvement of instruction. Pre: 614 or concurrent registration.

710 Seminar in Organization and Administration of Media Programs (3) I, II  
Staff  
Current principles and practices in organization and administration of programs utilizing new learning media: audio-visual, automated learning, educational television, facilities for such purposes. Pre: 700.

800 Thesis Research (arr.) I, II  
Gorter

Educational Foundations (Ed EF)

Professors Amioka, Anderson, Boyer, Potter; Associate Professors Frazier, Jacckel, Keppel, Kobayashi, Stueber; Assistant Professor Fruehling; Acting Assistant Professor Beauchamp; Instructor Chang

Students enrolled in colleges other than the College of Education are asked to confer with the department chairman before enrolling in 310.

310 Foundations of American Education (3) I, II  
Staff  
Contemporary educational theory and practice as related to major historical, philosophical and social factors in American culture.

399 Directed Reading (arr.) I, II  
Staff  
Individual reading or research. Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in education. Pre: consent of instructor and department chairman.

409 Culturally and Economically Disadvantaged Pupil (3) I, II  
Chang, Fruehling  
Survey of social and psychological factors related to the culturally and economically disadvantaged pupil and his education. Review of local resources and facilities to assist these pupils. (Identical with Ed EP 409.)

445 Educational Sociology (3) I, II  
Staff  
Examination of development of theoretical and practical aspects of social structure and their relationship to education. Pre: 310 or 3 hrs. of sociology; consent of instructor.

480 Anthropological Applications (3) II  
Staff  
Education as means of transmitting culture. Socialization in non-literate societies; universal aspects of process. Cross-cultural education. (Identical with Anth 480.)

485 Education for a World Without War (3) I, II  
Boyer  
Study of theories and strategies for reducing the probabilities of war as a basis for developing educational programs.

493–494 Senior Honors Thesis (2–2) Yr.  
Staff  
For seniors in Honors Program.

650 Historical Foundations of Western Education (3) I, II  
Jaeckel, Keppel, Steuher  
History of European thought and practice as basis for study of modern education.

651 History of American Education (3) I, II  
Jaeckel, Keppel, Steuher  
Introduction to history of American educational thought from 17th century to present.

652 History of Education in Hawaii (3) I, II  
Stueber  
From Cook’s discovery to the present. Social and intellectual influences on development of Islands’ culture; emphasis upon the role of public and private schools in developing a common language community. Pre: 310 or its equivalent.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>657</td>
<td>Community College (3) II</td>
<td>Staff</td>
<td>Development of two-year comprehensive community college in U.S.; its emerging role in higher education. Functions, organization, curricular structure, achievement in relation to objectives, crucial issues. Pre: consent of instructor. (Identical with Ed CI 657.)</td>
</tr>
<tr>
<td>665</td>
<td>Comparative Ideologies and Education (3) I</td>
<td>Boyer</td>
<td>Critical analyses of contemporary ideologies with particular reference to implications for educational policies and practices.</td>
</tr>
<tr>
<td>669</td>
<td>Foundations of Comparative Education (3) I, II</td>
<td>Kobayashi</td>
<td>Introduction to the comparative analysis of educational processes in different societies.</td>
</tr>
<tr>
<td>670</td>
<td>Comparative Education: Europe and America (3)</td>
<td></td>
<td>Comparison of ways in which contemporary Western societies undertake to meet their educational problems.</td>
</tr>
<tr>
<td>671</td>
<td>Comparative Education: Asia (3) I</td>
<td>Anderson, Kobayashi</td>
<td>Educational institutions, practices and problems in Asian countries, viewed against backdrop of their traditional cultures.</td>
</tr>
<tr>
<td>681</td>
<td>The Church and the School (2)</td>
<td>Staff</td>
<td>Church, state and school relationships in U.S., Canada, Latin America and Europe. Pre: 660.</td>
</tr>
<tr>
<td>683</td>
<td>Social Foundations of Education (3) I, II</td>
<td>Boyer, Keppel, Frazier</td>
<td>Impact on education of major social trends and forces operating in American society; social change and education.</td>
</tr>
<tr>
<td>685</td>
<td>Education in America (3) I</td>
<td>Kobayashi</td>
<td>Overview of American educational scene from nursery schools to graduate and professional schools, public and private; problems of support, organization, curriculum, methods, teacher preparation. Open to Asian students only.</td>
</tr>
<tr>
<td>689</td>
<td>Directed Reading and/or Research (arr.) I, II</td>
<td>Staff</td>
<td>Individual reading and/or research. Pre: consent of instructor and department chairman.</td>
</tr>
<tr>
<td>757</td>
<td>Educational Utopias (2) I</td>
<td>Staff</td>
<td>Intensive study of English translations of major contributions to Western educational thought from Plato to Dewey. Pre: 650 and consent of instructor.</td>
</tr>
<tr>
<td>761</td>
<td>History of American Higher Education (3) I, II</td>
<td>Jaeckel, Keppel</td>
<td>Genesis and evolution of college and university from colonial America to present. Pre: 651 or 6 hrs. in U.S. history; consent of instructor.</td>
</tr>
<tr>
<td>763</td>
<td>Seminar in Educational Theory (2) I, II</td>
<td>Staff</td>
<td>Focus selected from among the following: (1) educational issues; (2) John Dewey; (3) contemporary educational philosophers; (4) Japanese educational philosophy; (5) history of education. Pre: 660 and consent of instructor. May be repeated.</td>
</tr>
<tr>
<td>768</td>
<td>Seminar in Problems in Education (2) II</td>
<td>Staff</td>
<td>Study and discussion of significant topics and problems. For Plan B M.Ed. candidates in final semester or summer session. Pre: consent of department chairman.</td>
</tr>
<tr>
<td>770</td>
<td>Seminar in Comparative Education (2) II</td>
<td>Anderson, Kobayashi, Rust</td>
<td>Focus selected from among the following: (1) East Asia; (2) South Asia; (3) Southeast Asia; (4) Latin America; (5) Africa; (6) USSR and Eastern Europe; (7) Western Europe; (8) British Commonwealth. Pre: 670 or 671. May be repeated.</td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research (arr.) I, II</td>
<td>Gorter</td>
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EDUCATIONAL PSYCHOLOGY

Educational Psychology (Ed EP)

Professors Adkins, Beyers, Collins, Dunn, Dupont, Fullmer, Leton, Ryan, Ryans, Staats; Associate Professors Chang, Dunn-Rankin, Fujita, Gust, Haehnlen, Nunokawa, Reid; Assistant Professors Ayabe, Kozuma, McIntosh, O'Malley, Takeguchi-Feldman, Westcott; Acting Assistant Professors Bail, Espinosa

311 and 416 or their equivalents are prerequisites for all graduate courses in Educational Psychology. Students enrolled in colleges other than the College of Education are asked to confer with the department chairman before enrolling in 311.

311 Psychological Foundations (3) I, II
Principles of learning and individual differences; relationships of these factors to classroom experience. Pre: Psy 100.

399 Directed Reading (arr.) I, II
Staff
Individual reading or research. Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in education. Pre: consent of instructor and department chairman.

404 Education of Exceptional Children (3) I
McIntosh
Survey of characteristics of children who deviate from average in mental, sensory physical, social attributes; reviews adaptations made by schools to abilities and disabilities of exceptional children.

405 The Mentally Retarded (3) I
Takeguchi-Feldman
Review of psychological, social, vocational problems related to mentally retarded children and their families.

406 Curriculum Development for Mentally Retarded Children (3) I
Takeguchi-Feldman

408 The Emotionally Disturbed Child (3) I
Staff
Study of behavioral characteristics, methods of identification and management of emotionally disturbed children in regular and special classes in public schools, private day schools, clinics, residential schools, hospitals.

409 Culturally and Economically Disadvantaged Pupil (3) II
Chang
Survey of social and psychological factors related to culturally and economically disadvantaged pupil and his education. Review of local resources and facilities to assist these pupils. (Identical with Ed EF 409.)

410) Curriculum Development for the Emotionally Disturbed (3) I
Study of teaching methods and materials, techniques of curriculum development, methods of classroom organization and management used in education of emotionally disturbed children. Pre: 408.

414 Education of Gifted Children (3) II
Staff

416 Tests and Measurements (3) I, II
Adkins
Theory and techniques of measurement and evaluation in education, including supervised experience in instrument development and analysis.

429 Introductory Statistics (3) I
Introduction to statistical methods, with laboratory applications to educational and psychological data, especially scores on educational measurement devices and other indices of learning or behavioral change. Pre: one year of high school algebra or one college course in mathematics; consent of instructor; 311 and 416 desirable.

450 Practicum Experience with the Mentally Retarded (9) II
Staff
Observation and supervised student teaching with mentally retarded children at elementary and secondary levels. Includes 2-hour seminar each week. Pre: 405 and 406.
EDUCATIONAL PSYCHOLOGY

451 Practicum for Teachers of Emotionally Disturbed Children (9) II
Classroom and clinical experiences to prepare teachers for work with children whose learning problems are associated with behavioral disorders. Pre: 408 or concurrent registration.

493-494 Senior Honors Thesis (2-2) Yr.
For seniors in Honors Program.

497 Introduction to Learning Disabilities (3) I
Introduction to the education of learning-disabled children. A survey course covering mental, physical and academic characteristics of learning disabled children and a discussion of their programming, adjustment and school placement. Pre: 404, 416.

601 Guidance in the School (3) I, II
Basic principles of guidance; consideration of techniques, organization, materials, resources.

602 Elementary School Guidance (3) I
Principles, techniques, organization of guidance services in elementary school.

604 Occupational Information in Guidance (3) I
Occupational research and survey techniques; trends, sources of materials, use of occupational information in vocational guidance. Pre: 601.

605 Problems of School Adjustment (3) I
Principles of behavior affecting human relationships in school, with emphasis upon application to actual situations.

606 Student Personnel Services in Higher Education (3) II
Haehnlen
Philosophy, history, organization and administration of student personnel services at college and university levels including admissions, housing, student activities, financial aids, placement, counseling, health services.

608 Introduction to Educational Research (3) I, II
Dunn-Rankin
Fundamental design and evaluation procedures in educational research. Topics to include determining needs, defining objectives, research design, instrumentation, data collection, and evaluation. Pre: 416 or consent of instructor.

609 Tests and Inventories in Guidance (3) I, II
Staff

610 Counseling: Theory and Practice (3) I, II
Fullmer
Theories and techniques of counseling and psychotherapy as preparation for practicum and field work. Pre: 416 or equivalent course in tests and measurements, 601 or equivalent course in guidance, consent of instructor.

614 Theory and Assessment of Intelligence (3) I
Leton
Theories of intelligence, psychometric and social issues in intelligence testing; use of individual intelligence examinations for assessment of educability. Pre: 416 or Psy 425. Enrollment in graduate programs in clinical or school psychology, counseling and guidance or education of exceptional children.

615 Clinical Assessment of Exceptional Children (3) I
Staff
Diagnostic instruments used in clinical appraisal of exceptional children. Theoretical considerations will buttress field appraisal experience. Pre: 404, 416 and 429.

616 Seminar in the Education of Exceptional Children (3) II
Staff
Study of issues, research and program development in the following areas of special education: (1) mentally retarded, (2) emotionally disturbed, (3) learning disabilities. Pre: 9 credits from 404, 405, 406, 408, 409, 410, 615.

629 Educational Statistics (3) I, II
Bail
Statistical inference including applications of parametric and non-parametric methods to educational problems. Pre: 429 or its equivalent.

640 Programmed Learning (3) II
Reid
Learning theory, experimental procedures and related systems, readings in study
EDUCATIONAL PSYCHOLOGY

and development of programmed learning. Evaluation, selection, utilization of programs in classroom. Pre: 672 or consent of instructor. (Identical with Ed EC 640.)

645 American College Student (3) I Westcott
Study of psycho-social characteristics of American college student and college environment, from viewpoint of student personnel work. Pre: 311, 416.

655 Learning, Language, and Intellectual Function (3) II
Theory, research and method in study of language acquisition; function of language in intellectual activities; application to cognitive behavior modification. Pre: Psych 430. (Identical with Psychology 655.)

672 Advanced Educational Psychology: Learning (3) I, II Staats
Application of experimental evidence in learning upon major educational problems; analysis of research methods in classroom learning. Pre: consent of instructor.

673 Advanced Educational Psychology: Psycho-Social Development (3) I
Research methods and findings involving classroom group structures, attitude and personality development, psycholinguistic behavior. Pre: consent of instructor.

685 Children Learning Laboratory (3) I Staats
Application of learning theory and procedures to individual and group work with children in controlled studies; basic to behavior modification procedures in clinical and educational psychology. Pre: consent of instructor. (Identical with Psy 685.)

699 Directed Reading and/or Research (arr.) I, II Staff
Individual reading and/or research. Pre: consent of instructor and department chairman.

701 Seminar in Guidance (3) I, II Staff
Current issues and problems. (1) School psychology. (2) testing. (3) counseling theory. (4) vocational. (5) elementary school. (6) administration. (7) group procedures. (8) philosophical and social issues in guidance. Pre: 8 credits in guidance courses; consent of instructor. May be repeated for credit.

702 Group Guidance (3) II Staff

703 Guidance Practicum (3) I, II Koszuma
Supervised experience in guidance activities in schools. Guidance majors only. Pre: consent of instructor. May be repeated for credit.

708 Educational Research Methods (3) I, II Leton
Research techniques and thesis development. Pre: 429 or equivalent; consent of instructor.

709 Advanced Problems of Educational Measurement and Evaluation (3) II Reid
Theory of educational measurement and evaluation; analysis of educational tests and scales emphasizing statistical and psychological analysis of teacher-made and standardized tests and scales. Pre: 416, 429. (Identical with Psy 605.)

710 Counseling: Group Theory and Practice (3) I, II
Theories and techniques of group counseling and psychotherapy as preparation for practicum and field work. Pre: 610 or equivalent preparation, basic course in guidance, tests and measurements, counseling theory-practice, and consent of instructor.

729 Scaling Qualitative Data (3) II Dunn-Rankin
Theory and construction of major types of scales with examples from education, psychology, sociology. Pre: 429 or its equivalent. (Identical with Psy 604.)

768 Seminar in Educational Psychology (3) I, II Staff
Current issues and problems. (1) General. (2) learning. (3) measurement. (4) research and statistics. (5) psycho-social development. Pre: consent of instructor. May be repeated for credit.

800 Thesis Research (arr.) I, II Gorter
Health and Physical Education (HPE)

Professors Chui, Saake; Associate Professors Gustuson, O’Brien, Van Degrift, Vasconcellos; Assistant Professors Asato, Beamer, Krahenbuhl, Little, S. Sakamoto, Thompson; Acting Assistant Professors Rocker, Stevenson; Instructors Hanson, Kaina, Seichi; Lecturers Fajardo, Harada, Kawasaki, Pang, G. Sakamoto

Medical Clearance Requirement: To register for the following courses, a student is required to present a medical clearance issued by Student Health Service: 101-197, 233-236, 333-337, 433, 434, 454. Students without medical clearance will not be allowed to register in these courses.

101 Physical Fitness (1) I, II
Conditioning exercises and activities to develop and maintain physical efficiency. Motor fitness tests administered to measure status and progress. Separate sections for men and women.

103 Swimming: Beginning (1) I, II
Adjusting to and immersing in water, floating, sculling; correct arm stroke, leg kick, breathing techniques and their coordination.

104 Swimming: Intermediate (1) I, II
Perfecting and integrating basic strokes with added emphasis on swimming for distance and speed.

105 Swimming: Advanced (1) II
Correct techniques used in competitive swimming, racing starts, correct turning techniques, long distance swimming.

107 Tennis: Beginning (1) I, II
Rules, etiquette, grip, forehand and backhand strokes, serving, volleying; singles and doubles play.

108 Tennis: Advanced (1) II
Improving the serve, forehand and backhand strokes, volleying, chop shot, competitive strategy, problems in rules.

110 Golf: Beginning (1) I, II
Rules, etiquette, grip, stance, drive, normal iron shots, approach shots, putting.

111 Golf: Advanced (1) II
Improving drive, fairway wood shots, long iron shots, control shots, trouble shots, putting, course management, competitive strategy, problems in rules. Green fees paid by students for play on courses.

115 Bowling (1) I, II
Rules, etiquette, arm swing, approach, execution, scoring, spare pickups. Students pay charge for use of alley.

120 Badminton (1) I, II
Rules, etiquette, grip, forehand and backhand strokes, serving, smash, drive, net play, offensive and defensive strategy; singles and doubles play.

123 Folk and National Dances (1) I
Popular dances of various national groups, including square dances.

125 Dances of Hawaii (1) I, II
Background and fundamentals of hula. Selected dances with and without instruments.

126 Rhythmic Activities (1) I, II
Social dances including ballroom dances, mixers, etc.

135 Volleyball (1) I, II
Rules, serving, passing, setting-up, spiking, blocking, offensive and defensive team play strategy. Separate sections for men and women.
Basketball (1) I, II  
Rocker, Thompson  
Rules, passing, shooting, dribbling, rebounding, individual defensive and offensive maneuvers, two- and three-man plays; team offense and defense. Separate sections for men and women.

Weight Training (1) I, II  
Gustuson  
Kinesiology of lifting and weight training, various types of exercises and methods of training with resistance.

Tumbling and Rebound Tumbling (1) I, II  
Gustuson  
Single and combination stunts on tumbling mats and trampoline, balancing stunts; techniques of spotting; safety procedures.

Heavy Apparatus (1) II  
Gustuson  
Single and combination stunts on side horse, horizontal bar, parallel bars, still rings; techniques of spotting; safety procedures.

Judo (1) I  
Kawasaki  
Rules, etiquette, method of falling and breaking the fall, simple throws and their counters, simple holds and breaking of such holds, randori. (Student must provide own gi.)

Aikido (1) II  
G. Sakamoto  
Rules, etiquette, basic rolls, simple holds and the breaking of such holds, specific physical conditioning exercises. (Student must provide own gi.)

Karate (1) II  
Fajardo  
Rules, etiquette, basic stances, blocks, thrusts, kicks, ippon kumite, and selected kata. (Student must provide own gi.)

T'ai Chi Ch'uan (1) I, II  
Pang  
Analytical and laboratory study of classic forms of T'ai Chi Ch'uan (advanced form of Kung Fu).

Modern Health: Personal (1) I, II  
Staff  
Mental-emotional health, family living and scientific health information for personal hygienic living.

Modern Health: Personal and Community (2) I  
Van Degri(t, Krahenbuhl  
Primarily for majors in health education, physical education and recreation. Mental-emotional health, family-living and scientific health information for personal and community health.

Wrestling: Beginning (1) I or II  
Little  
Rules, fundamental takedowns, reversals, escapes, maneuvers, competitive strategy, and conditioning exercises. Pre: standard medical clearance (see "Student Health Service").

Courses numbered 201 and above are not open to lower division students (except for pre-education majors with the consent of department chairman).

School Health Problems: Elementary (2) I, II  
O'Brien  
Responsibilities of elementary school teacher in recognizing and meeting pupils' needs, emphasizing teacher's role in health instruction, health services, school health policies.

School Health Problems: Secondary (2) I, II  
Van Degri(t  
Responsibilities of secondary school teacher in recognizing and meeting pupils' needs, emphasizing health instruction, health services, healthful school living, school health policies.

Introduction to Physical Education (2) I, II  
Thompson  
Aims and objectives of physical education; basic concepts of body in movement; physical education as academic discipline; relationship to related fields such as health education, recreation, athletics.
204 Introduction to Coaching Athletics (2) I, II  
Asato  
Nature, responsibilities, personal and professional requirements of coach. Scientific principles applicable to coaching methodology and athletic competition.

208 Introduction to Recreation (2) I, II  
Saake  
Aims, objectives, foundations of recreation, emphasizing historical analysis of forces and influences affecting recreation and leisure in modern society. Recreation as professional field.

231 Methods and Materials in Health Education (2) II  
O'Brien  
Organization and content, methods and materials for health teaching in elementary and secondary schools. Pre: 201 or 202.

232 Safety Procedures and Accident Prevention (2) I, II  
Saake  
Understanding the fundamental principles and techniques of safety and accident prevention programming emphasizing school, home, public places, on the job and motor vehicle situations.

233 Physical Education: Elementary (3) I, II  
Hanson  
Content and methods for physical education in elementary school, emphasizing selection, planning, teaching, evaluation of movement exploration and physical activities.

235 Team Sports for Secondary Girls (2) II  
Kaina, Thompson  
Fundamental skills, rules, strategy of team sports for secondary school girls. Hockey, soccer, speedball, basketball, volleyball, softball.

236 Team Sports for Secondary Boys (2) II  
Asato  
Fundamental skills, rules, strategy of team sports for secondary school boys. Touch football, soccer, basketball, volleyball, softball, water polo.

238 Outdoor Recreation (2) II  
Harada  
Objectives and values of outdoor recreation; characteristics and determinants of program: planning, organization, leadership and facilities for recreational uses of natural environment.

241 Health Education Curriculum (2) I  
O'Brien  
Objectives of school health program, emphasizing scope and sequence of health instruction; critical examination of health curriculum guides from various states: Pre: 201 or 202.

249 Social Recreation (2) I  
Kaina  
Objectives and values of social recreation; social club organization; selections, planning, conduct and evaluation of social activities; characteristics and responsibilities of leadership. Pre: 208.

271 Evaluation in Health Education (2) I  
Krahenbuhl  
Processes involved in assessing school health education program with emphasis on measurement criteria and instruments, interpretation of data and content, organization and conduct of evaluation program. Pre: 201 or 202.

301 Health of the School Child (2) I  
O'Brien  
Health problems of school child; role of school in meeting them, with emphasis on symptoms, causes, treatment. Pre: consent of instructor; 201 or 202 desirable.

302 School's Role in Community Health (2) II  
O'Brien  
Functional interrelationships between school and other community health organizations in solving community health problems. Pre: consent of instructor; 201 or 202 desirable.

328 Community Recreation (2) I  
Saake  
Organized community recreation; recreation and government; recreation and social institutions; industrial recreation; commercial recreation interests; special groups. Pre: 208 desirable. (Not offered 1970–71.)

329 Organization and Supervision of Recreation (2) II  
Saake  
Community organization, planning, personnel, areas and facilities, programs and services, finance and business procedures related to organized recreation. Pre: 208 and 328 desirable.
32 Emergency Care and First Aid Instructor Training (2) I, II
Seichi
Practicum in training of persons to become qualified instructors of emergency
care knowledge and first aid skills; American Red Cross certificate may be earned. Pre:
consent of instructor.

33 Coaching of Football and Basketball (2) I
Saake, Vasconcellos
Fundamentals, position play, team play, strategy, rules, scouting, planning and
conduct of practice, specific training problems. Pre: 204.

34 Coaching of Baseball and Volleyball (2) II
Saake, Seichi
Fundamentals, position play, team play, strategy, rules, scouting, planning and con-
duct of practice, specific training problems. Pre: 204.

35 Coaching of Track and Field (2) II
Vasconcellos
Techniques and rules of sprints, distance runs, relays, hurdles, long jump, high
jump, pole vault, shot put, discus and javelin throws; conduct of track and field meets:
specific conditioning and training problems. Pre: 204.

36 Coaching of Swimming (2) II
Sakamoto
Techniques and rules of free style, breast-stroke, back-stroke, butterfly-stroke, relay
racing, starting, turning, diving; conduct of swimming meet; specific conditioning and
training problems. Pre: 204.

37 Coaching of Individual and Dual Sports (2) I
Saake, Seichi
Coaching and developing players for interscholastic teams in golf, tennis, bowling.
Emphasis on rules, individual play under match conditions, dual or partnership
strategy. Pre: 204.

38 Field Work in Recreation: Basic (arr.) I, II
Asato, Saake
Supervised leadership experience in recreational agencies. 1 hour per week in class
discussion sessions. For recreation majors only. Pre: consent of recreation adviser. May
be repeated once by consent of recreation adviser.

39 Programs in Recreation (2) I
Saake
Factors in planning recreation programs; standard classification of recreation pro-
grams with critical analysis of nature, scope, materials, resources of each classification.
Pre: 204 desirable.

40 Directed Reading (arr.) I, II
Thompson, Staff
Individual problems. Limited to senior majors in health education, physical edu-
cation or recreation with 2.7 overall grade-point ratio in major field.

41 Current Trends in Health (3) II
O'Brien
Critical analysis of current problems and trends in basic health education areas
which contribute to healthful living in community, home, school. Pre: 201 or 202;
consent of instructor; 302 desirable.

42 Organization and Supervision of Physical Education (3) II
Asato, Kaina
Organization and supervision of physical education instructional, intramural,
varsity athletic programs with emphasis on program content, policy and legal aspects,
budget and finance, personnel, facilities and equipment, public relations, special prob.
lems. Pre: 203 and 233 desirable.

43 Music and Rhythms in Physical Education (2) I, II
Kaina
Use of music in physical education program, emphasizing selection of appropriate
music for specific activities as expressive or creative movement, movement exploration,
rhythmic gymnastics, dancing. Pre: consent of instructor; Mus 117 and 118 desirable.

44 Techniques of Officiating in Athletics (2) I
Seichi, Thompson, Stevenson
Techniques used by officials in selected sports, emphasizing general concepts of
role of official and working knowledge of basic mechanics of officiating. Primarily for
physical education and recreation majors. Separate sections for men and women.

45 Methods and Materials of Aquatics and Life Saving (2) II
Saake, Seichi
Methods of teaching swimming; theory and techniques of life saving and water
safety leading to American Red Cross certification (W.S.I.). Pre: 104 or consent of
instructor.
HEALTH AND PHYSICAL EDUCATION

453 Anatomy in Physical Education (3) II
   Van Degrift
   Gross human anatomy, emphasizing identification and description of parts of
   musculo-skeletal system; selected applications to motor activity. Primarily for physical
   education majors but open to others with consent of instructor. Pre: 1 yr. of biology or
   equivalent.

454 Physiology in Physical Education (3) I
   Van Degrift
   Emphasis on physiological responses to exercise and physical training as related to
   strength, muscular endurance, circulo-respiratory endurance. Primarily for physical
   education majors, but open to others with consent of instructor. Pre: 1 yr. of biology or
   equivalent.

463 Kinesiology (3) II
   Little, Krahenbuhl
   Concepts and scientific principles essential to efficient human movement; proper ap­
   plication of kinesiological and mechanical principles to fundamental movements and
   selected complex motor skills. Pre: 453.

474 Assessment of Physical Fitness (3) I, II
   Krahenbuhl
   Current concepts and technology by which physical fitness and related aspects of
   structure, function and performance are assessed. Pre: 454 and 465 or consent of
   instructor.

476 Motor Learning and Performance (3) I, II
   Chui, Staff
   Basic considerations in kinesthesis, motor ability, fatigue, developmental factors,
   practice, motivation in relation to motor learning and human performance. Pre: 463,
   Ed EP 311, or consent of instructor.

477 Physical Education and Child Development (3) I, II
   Little, Krahenbuhl
   Conceptions of physical, social, emotional and intellectual growth and develop­
   ment of child as influenced by physical education. Pre: 203 and 233, Psy 320 or consent
   of instructor.

603 Scientific Foundations of Physical Education (3) I, II
   Little
   Scientific laws and principles relevant to man's physical and social environment as
   related specifically to physical fitness and human movement. Pre: 203, 453, 454 and 463,
   or consent of instructor.

623 Administrative Problems in Physical Education (3) II
   Chui
   Current problems and recent trends in conduct of physical education programs in
   educational settings. For administrators, teachers, graduate students in physical educa­
   tion and related fields. Pre: 423 or equivalent; consent of instructor. (Identical with
   Ed EA 623.)

634 Adapted Physical Education (3) II
   Staff
   Factors essential to practice of adapted physical education; disabilities, problems
   and needs of physically handicapped pupils with emphasis on accepted procedures for
   meeting these. Pre: 453, 454 and 463, or consent of instructor. (Not offered 1970–71.)

643 Public School Curriculum for Physical Education (3) I
   Little
   Detailed examination of contents of adequate curriculum for physical education in
   public schools, K-12. Pre: 203, Ed CI 343, Ed CI 636, or consent of instructor. (Identical
   with Ed CI 643.)

663 Mechanical Analysis of Sports Activities (3) II
   Chui
   Analysis of variety of sports activities in terms of applications of fundamental prin­
   ciples of mechanics with consideration to teaching and research. Pre: basic background
   in mathematics and physics; consent of instructor.

673 Evaluation and Measurements in Physical Education (3) I
   Chui, Krahenbuhl
   Processes involved in assessment of physical education program with emphasis on
   measurement criteria and instruments, interpretation of data and content, organization
   and conduct of evaluation program. Pre: 203 or Ed EP 416, or consent of instructor.

699 Directed Reading and/or Research (arr.) I, II
   Chui, Staff
   Individual reading and/or research. Pre: consent of instructor and department
   chairman.
The quality of life which we will or will not enjoy on this planet in year 2000 A.D. is dependent to a large extent upon the wisdom that is exercised during the next thirty years in the management of technology. An engineering degree provides an excellent background for seeking solutions to many of the problems related to the urban crisis, the enhancement of our living environment, and the preservation of the species man. The programs of study in all engineering curricula include both general and theoretical course work designed to equip the student with the ability and the motivation to meet the challenges of our technology-oriented society.

Engineering education has been a major program of study at this institution since the beginning of the University of Hawaii in 1907. Over 1700 engineering degrees have been granted, and the majority of the professional engineers currently practicing in industries, consulting firms, and governmental agencies throughout the state are graduates of this University. Curricula in civil, electrical, and mechanical engineering are fully accredited by the national accrediting agency—the Engineers' Council for Professional Development—which verifies that a graduate of the University of Hawaii is well-qualified to begin a challenging career in engineering.

Admission and Degree Requirements

General admission requirements of the University and recommended courses for prospective engineering students are listed on pp. 58-61. Additional screening of aptitude tests and high school records may be made for acceptance into the College of Engineering.

Although all undergraduate curricula are set up for completion in eight semesters, some engineering students take an additional semester or enroll in summer school course work to complete degree requirements. However, with the improved level of high school instruction and a reduction in the number of credits now required for an engineering degree, an increasing percentage of students are receiving their degrees in eight semesters.

To receive the bachelor of science degree in engineering a student must:
1. Complete the course work for one of the engineering curricula, which also satisfies all University requirements;
2. have a 2.0 grade-point ratio for all registered credits;
3. have a 2.0 grade-point ratio for all upper division courses in the major department.

Curricula

The College of Engineering offers accredited undergraduate programs in civil, electrical, and mechanical engineering, as well as a business-oriented curriculum in general engineering. The course work in each of these programs provides a fundamental science-oriented university education with adequate coverage of communications, the humanities and social sciences; the basic physical sciences of mathematics, physics and chemistry; the engineering sciences common to all engineering disciplines, such as thermodynamics and electricity; and engineering elective courses which introduce the student to the engineering method of design.

All engineering freshmen enroll initially in the department of general engineering and are advised by engineering faculty from the beginning of their academic program. The first year is common to all four curricula and includes the following courses:

Common First Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Credits</th>
<th>Second Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 100 Expository Writing</td>
<td>3</td>
<td>English Literature 251–256</td>
<td>3</td>
</tr>
<tr>
<td>*Math 205 (135) Calculus I</td>
<td>4</td>
<td>Math 206 (136) Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>†Chem 117 (108) Principles of Chem</td>
<td>4</td>
<td>Phys 170 General Physics</td>
<td>4</td>
</tr>
<tr>
<td>Chem 118 (108) Principles of Chem Lab</td>
<td>1</td>
<td>Phys 171 General Physics Lab</td>
<td>1</td>
</tr>
<tr>
<td>GE 107 World of Engineering</td>
<td>3</td>
<td>†GE 109 (105) Introd Design &amp; Graphical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

At the beginning, or during, the sophomore year the engineering student selects the field of study in which he wishes to receive his degree, and pursues one of the curricula listed on the following four pages. The course work for each of these programs of study satisfies the general educational requirements of the University.

*Math 134 may be required if math preparation is inadequate.
†If prerequisite for Chem 117 has not been met, 113–115 (103) and 114–116 (104) will be substituted.
‡GE 61 is required of students who have not had one year of high school mechanical drawing.
Those engineering students who are unusually well qualified academically are encouraged to participate in the Selected Studies and Honors Program. (See "Special Programs.") There is an honors coordinator for the College of Engineering, who works with the faculty adviser of the honor student to assure that a challenging program of study is established. Upon recommendation of the coordinator, the honor student is allowed some flexibility in course selection from the curricula that follow.

Civil Engineering Curriculum

SECOND YEAR

FIRST SEMESTER CREDITS SECOND SEMESTER CREDITS
CE 211 Surveying I 2 CE 212 Surveying II 3
CE 270 Applied Mechanics I 3 CE 271 Applied Mechanics II 3
Math 231 Multi-Variable Calculus I 3 Math 232 Ordinary Diff.
Phys 272 General Phys 3 Equations 3
Phys 273 General Phys Lab 1 Phy 274 General Phys 3
Hist 151 World Civilization 3 Hist 152 World Civilization 3
Sp 145 Interpersonal Speech-Comm. 3

Total 18 Total 15

THIRD YEAR

CREDITS CREDITS
CE 320 Fluid Mechanics I 3 CE 322 Fluid Mechanics II 3
CE 321 Hydraulics Lab 1 CE 350 Soil Mechanics 3
CE 370 Mech of Materials I 4 CE 372 Mech of Materials II 3
CE 371 Mech of Materials Lab 1 ME 311 Thermodynamics 3
EE 200 Electrical Science 3 Elec. (Human or Soc. Sc.) 6
Econ 120 Intro to Econ 3
Elec. (Human or Soc. Sc.) 3

Total 18 Total 18

FOURTH YEAR

CREDITS CREDITS
CE 431 Sanitary Eng 3 CE 405 Eng. Management 3
CE 461 Transportation Eng 3 *CE Electives 6 or 7
CE 485 Structural Design I 4 Elec. (Human or Soc. Sc.) 3
CE 421 Hydraulics or †Elec. 3
CE 481 Structural Analysis 3
Elec. (Human or Soc. Sc.) 3

Total 16 Total 15 or 16

*CE Elective sequences:
1. Hydraulic Eng: CE 424, CE 426
2. Structural Eng: CE 486, CE 482
3. Transportation Eng: CE 462, CE 450 and/or CE 467
4. Sanitary & Environmental Eng: CE 424, CE 492

†Approved by Advisor
# Electrical Engineering Curriculum

## SECOND YEAR

<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>CREDITS</th>
<th>SECOND SEMESTER</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 270 (170) Applied Mechanics I</td>
<td>3</td>
<td>CE 271 Applied Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>Math 231 Multi-Variable Calculus</td>
<td>3</td>
<td>Math 232 Ordinary Diff. Eq.</td>
<td>3</td>
</tr>
<tr>
<td>Phys 272 (172) General Physics</td>
<td>3</td>
<td>Phys 274 (174) General Physics</td>
<td>3</td>
</tr>
<tr>
<td>Phys 273 (173) General Physics Lab</td>
<td>1</td>
<td>Phys 275 (175) General Physics Lab</td>
<td>1</td>
</tr>
<tr>
<td>Hist 151 World Civilization</td>
<td>3</td>
<td>Hist 152 World Civilization</td>
<td>3</td>
</tr>
<tr>
<td>Sp 145 Interpersonal Speech-Comm.</td>
<td>3</td>
<td>EE 311 (211) Circuit Theory</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>CREDITS</th>
<th>SECOND SEMESTER</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 312 Circuit and System Analysis</td>
<td>3</td>
<td>EE 325 (221) Electronics I</td>
<td>3</td>
</tr>
<tr>
<td>EE 313 (223) Circuits Lab</td>
<td>1</td>
<td>EE 374 (232) Traveling Waves and Networks Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>EE 371 (273) Field and Waves I</td>
<td>3</td>
<td>EE 331 (351) Electromechanical Energy Conversion</td>
<td>3</td>
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<tr>
<td>Phys 440 Solid State Physics</td>
<td>3</td>
<td>EE 333 (353) Energy Lab</td>
<td>1</td>
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<tr>
<td>Econ 120 Introduction to Economics</td>
<td>3</td>
<td>EE 372 (373) Fields and Waves II</td>
<td>3</td>
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<tr>
<td>Elective*</td>
<td>3</td>
<td>ME 431 (460) Electronic Proc. in Materials or ME 371 (243) Mechanics of Solids</td>
<td>3</td>
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<td><strong>Total</strong></td>
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<td><strong>Total</strong></td>
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## FOURTH YEAR

<table>
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<th>CREDITS</th>
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<th>CREDITS</th>
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<tbody>
<tr>
<td>EE 326 (321) Electronics II</td>
<td>3</td>
<td>ME 311 (251) Thermodynamics</td>
<td>3</td>
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<tr>
<td>EE 327 (323) Electronics Lab</td>
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<td>Electives*</td>
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<tr>
<td>Electives*</td>
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<td><strong>Total</strong></td>
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</table>

*The 30 elective credits must satisfy University General Education requirements and must include 15 credits in technical electives (engineering, mathematics and physics courses 300 or above) of which at least 6 credits must be in EE.*
**General Engineering Curriculum**

**SECOND YEAR**

<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>CREDITS</th>
<th>SECOND SEMESTER</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 270 Applied Mechanics I</td>
<td>3</td>
<td>CE 271 Applied Mechanics II</td>
<td>3</td>
</tr>
<tr>
<td>Hist 151 World Civilization</td>
<td>3</td>
<td>Math 222 Ordinary Diff. Eq.</td>
<td>3</td>
</tr>
<tr>
<td>Math 281 Multi-Variable Calculus I</td>
<td>3</td>
<td>Phys 274 General Physics</td>
<td>3</td>
</tr>
<tr>
<td>Phys 272 General Physics</td>
<td>3</td>
<td>Hist 152 World Civilization</td>
<td>3</td>
</tr>
<tr>
<td>Phys 273 Experimental Analysis</td>
<td>1</td>
<td>Elective (Human or Soc. Sc.)</td>
<td>3</td>
</tr>
<tr>
<td>Sp 145 Interpersonal Speech-Comm.</td>
<td>3</td>
<td>Total</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
<td><strong>Total</strong></td>
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**THIRD YEAR**

<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>CREDITS</th>
<th>SECOND SEMESTER</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>CE 370 Mechanics of Materials I</td>
<td>4</td>
<td>CE 320 Fluid Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>CE 371 Mechanics of Materials Lab</td>
<td>1</td>
<td>CE 321 Hydraulics Lab</td>
<td>1</td>
</tr>
<tr>
<td>ME 311 Thermodynamics</td>
<td>3</td>
<td>Business or Technical Engineering Elective</td>
<td>3</td>
</tr>
<tr>
<td>Econ 120 Introduction to Econ</td>
<td>3</td>
<td>EE 200 Electrical Science</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Human or Soc. Sc.)</td>
<td>3</td>
<td>Business or Technical Engineering Elective</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Human or Soc. Sc.)</td>
<td>3</td>
<td>Mgt 301 Management and Organizational Behavior</td>
<td>3</td>
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<td><strong>Total</strong></td>
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**FOURTH YEAR**

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<tr>
<th>FIRST SEMESTER</th>
<th>CREDITS</th>
<th>SECOND SEMESTER</th>
<th>CREDITS</th>
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</thead>
<tbody>
<tr>
<td>ME 331 Materials Science</td>
<td>3</td>
<td>EE 305 Elect. Science Lab.</td>
<td>1</td>
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<tr>
<td>EE 304 Elect. Circuits</td>
<td>3</td>
<td>*Technical Engineering Elective</td>
<td>3</td>
</tr>
<tr>
<td>Business Elective (see list below)</td>
<td>3</td>
<td>CE 405 Engineering Management</td>
<td>3</td>
</tr>
<tr>
<td>Business Elective (see list below)</td>
<td>3</td>
<td>Elective (Human or Soc. Sc.)</td>
<td>3</td>
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<tr>
<td>Eng 310 or 315 or Technical Engineering Elect.</td>
<td>3</td>
<td>Elective (Human or Soc. Sc.)</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
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</table>

Business Electives: Acc 201, Acc 202, BEc 341, Mkt 300, +Mgt 302 (The above courses satisfy the undergraduate requirement in Business) BAS 302, Law 300, Finance 300. Technical electives must be approved by a G.E. advisor. If both "Business or Technical Engineering Electives" are taken in business, they must complete the undergraduate business requirement and the "*Technical Elective" must be ME 312.

*400 series course.
+Prerequisite not required for engineering students.
## Mechanical Engineering Curriculum

### Second Year

#### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>CE 270 (170) Applied Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>Math 231 Multi-Variable Calculus</td>
<td>3</td>
</tr>
<tr>
<td>Phys 272 (172) General Physics</td>
<td>3</td>
</tr>
<tr>
<td>Phys 273 (173) General Physics Lab</td>
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</tr>
<tr>
<td>Hist 151 World Civ.</td>
<td>3</td>
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<td>Elective (Human. or Soc. Sciences)</td>
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**Total 16**

#### Second Semester

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>CE 271 Applied Mechanics II</td>
<td>3</td>
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<tr>
<td>Hist 152 World Civilization</td>
<td>3</td>
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<tr>
<td>Math 232 Ordinary Diff. Equations</td>
<td>3</td>
</tr>
<tr>
<td>Phys 274 (174) General Physics</td>
<td>3</td>
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<tr>
<td>Sp 145 Interpersonal Speech-Comm.</td>
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**Total 15**

### Third Year

#### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ME 311 (231) Therodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ME 321 (230) Mechanics of Fluids</td>
<td>3</td>
</tr>
<tr>
<td>ME 331 (366) Materials Science</td>
<td>3</td>
</tr>
<tr>
<td>ME 371 (243) Mechanics of Solids</td>
<td>3</td>
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<tr>
<td>Econ. 120 Intro. to Econ.</td>
<td>3</td>
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**Total 18**

#### Second Semester

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>EE 200 Electrical Science</td>
<td>3</td>
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<tr>
<td>ME 300 (234) Measurements Lab</td>
<td>2</td>
</tr>
<tr>
<td>ME 312 (232) Applied Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ME 341 (367) Materials Processing</td>
<td>3</td>
</tr>
<tr>
<td>ME 375 (371) Intro. to System Dynamics</td>
<td>3</td>
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<td>Elective (Human. or Soc. Sciences)</td>
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</tbody>
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**Total 17**

### Fourth Year

#### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EE 304 (301) Electronics Circuits</td>
<td>3</td>
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<tr>
<td>ME 400 (333) Mechanical Eng. Lab</td>
<td>2</td>
</tr>
<tr>
<td>ME 422 (475) Heat Transfer</td>
<td>3</td>
</tr>
<tr>
<td>ME 467 (373) Optimum Design of Mechanical Elements</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Technical)*</td>
<td>3</td>
</tr>
<tr>
<td>Elective (Human. or Soc. Sciences)</td>
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**Total 17**

#### Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 305 (203) Electr. Science Lab</td>
<td>1</td>
</tr>
<tr>
<td>ME 468 (374) Intro. to Engr. Design</td>
<td>4</td>
</tr>
<tr>
<td>Electives (Technical)*</td>
<td>9</td>
</tr>
<tr>
<td>Elective (Human. or Soc. Sciences)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total 17**

*Technical Electives: Any mathematics, physics or engineering courses numbered 300 or above approved by adviser; 6 credits must be ME courses.*
INFORMATION SCIENCES PROGRAM

Information Sciences provides educational programs and encourages research in numerical and non-numerical information processing in cooperation with the University Computing Center. The program defines the interdisciplinary field of Information Sciences as the science of processing information by natural or artificial systems. It includes the theory and design of computers and other information processing communication systems. The Information Sciences M.S. program is intended to serve both the student who is interested in a career in information sciences and the student who expects to use information sciences in another profession. Prospective students with a baccalaureate degree from any field of study will be considered for acceptance. Additional information on this program, and other engineering disciplines may be found in the University of Hawaii Graduate Division Bulletin.

OCEAN ENGINEERING

The University of Hawaii is one of the first schools in the United States to offer a degree in ocean engineering, which is defined as the application of engineering principles and techniques to the ocean environment. The current program is an interdisciplinary one at both the Master of Science and Doctor of Philosophy levels, and involves the departments of oceanography as well as civil, electrical, and mechanical engineering. Graduate students in this program must have received a B.S. degree in engineering, or in a related science with engineering prerequisites. The department also offers undergraduate courses in ocean engineering that are taken by students from one of the traditional engineering disciplines.

CENTER FOR ENGINEERING RESEARCH

The purpose of the Center for Engineering Research is to promote and coordinate research activity within the College of Engineering. Current areas of research interests are in structural engineering, water resources, coastal engineering, waste-water treatment and disposal, theoretical mechanics, heat transfer, information theory, microwaves and atmosphere ionization. The center cooperates with other University agencies such as the Hawaii Institute of Geophysics, the Water Resources Research Center and the Pacific Biomedical Research Center, to bring the full resources of the University to bear on multidisciplinary research projects.

The James Look Laboratory of Oceanographic Engineering is one of the major research facilities of the Center for Engineering Research. This facility is the first structure of the Kewalo Oceanographic Research Center, and permits research activity that has direct bearing on many ocean-related problems occurring throughout the state of Hawaii. A partial list of current and planned research with this facility includes the following: tsunami wave action on harbor installations; undersea structures; harbor pollution studies; beach erosion; smallcraft harbor design.
Civil Engineering (CE)

Professors Burbank, Chiu, Evans, Go, Lau, Mitsuda, Nielsen, Szilard, Tinniswood; Associate Professors Anderson, Fok, Hamada; Haselwood, Kiefer, Taoka, Williams, Young, Yuen; Assistant Professors Cheng, Grace, Hummel, Nader, Zundelevich

211 Surveying I (2) I (1 L, 1 Lb)
Basic principles, computations, use of instruments involving horizontal and vertical measurements. Pre: trigonometry; GE 109.

212 Surveying II (3) II (2 L, 1 Lb)
Topographic mapping; curves; earthwork; computer applications; route problems. Pre: Math 205, CE 211 and GE 107 or GE 251.

270 Applied Mechanics I (3) I, II
Equilibrium of particles, rigid bodies, frames and machines; vectors, centroids, friction and moments of inertia. Pre: Phys 170.

271 Applied Mechanics II (3) I, II
Dynamics of particles and rigid bodies; force acceleration, impulse-momentum, work-energy. Pre: 270, Math 206.

320 Fluid Mechanics I (3) I, II
Properties of fluids, fluid statics, kinematics and kinetics; principles of momentum and energy; real fluid effects. Pre: 271 or Phys 310.

321 Fluid Mechanics Laboratory (1) I, II
Experiments and demonstrations of fluid flow in open and closed conduits, fluid measurements and hydraulic machinery. Pre: credit or concurrent registration in 320.

322 Fluid Mechanics II (3) II
Principles of ideal and real fluid flow applied to incompressible fluids with introduction to compressible fluid motion. Pre: 320, or concurrent registration in ME 311.

350 Soil Mechanics (3) I, II (2 L, 1 Lb)

370 Mechanics of Materials I (4) I, II (3 L, 1 Lb)
Elastic stress-strain relationship and behavior of members under flexural, torsional, axial loading. Pre: 270.

371 Mechanics of Materials Laboratory (1) I, II (1 Lb)
Introduction to experimental techniques, observation of materials under various loading conditions. Pre: credit or concurrent registration in 370.

372 Mechanics of Materials II (3) II
Inelastic behavior, unsymmetrical bending, theories of failure, curved beams, torsion, energy methods, buckling. Pre: 370.

405 Engineering Management (3) I, II
Business, legal, economic aspects of engineering. Pre: CE 370, ME 371 or EE 312.

411 Applied Probability and Statistics (3) I
Description of sample data; introduction to probability; theoretical frequency distributions; sampling; estimation of population mean and variance; fitting theoretical distributions to data histograms and testing goodness of fit; testing hypotheses; correlation; simple linear regression; discrete time series; introduction to random processes. Pre: consent of instructor.

*May apply toward graduate program. See Graduate Division rules.
421 Hydraulics (3) I
Yuen
Open channel flow emphasizing backwater curves, hydraulic jump, surges, flood-routing; pipe networks; surges, water hammer in hydro systems; pumps, turbines. Pre: 320.

424 Applied Hydrology (3) II
Lau
Introduction to occurrence, distribution, circulation of surface and ground water through precipitation, streamflow, evaporation, transpiration, infiltration. Engineering applications. Pre: 320 or equivalent.

426 Hydraulic Design (4) II (3 L, 1 Lb)
Yuen
Hydraulic design projects; feasibility studies; preliminary and detail design. Dams, canals, gates, energy dissipators and culverts. Pre: 421, 485 and credit or concurrent registration in 424.

431 Sanitary Engineering (3) I
Tinniswood, Anderson
Water resources. Fundamental aspects and design of water works. Pre: 320.

432 Sanitary Engineering (3) II
Tinniswood, Young
Pollution control. Fundamental aspects and design of wastewater works. Pre: 431 or consent of instructor.

450 Soils and Foundation Engineering (4) II (3 L, 1 Lb)
Evans

461 Transportation Engineering (3) I
Haselwood, Kiefer
Introduction to the economics, administration, planning, design, and operation of transportation carriers, routes, terminals, and systems. Pre: senior standing in engineering, consent of instructor.

462 Transportation Engineering (3) II
Haselwood, Kiefer
Traffic engineering - the operation of open-guidance transportation systems. Pre: 461, consent of instructor.

467 Photogrammetry (3) II
Iklsic
Basic principles; photographic equipment; control, method of compilation; mosaics. Pre: consent of instructor.

481 Structural Analysis (3) I
Hamada

482 Structural Analysis (3) II
Chiu, Hamada
Analysis of indeterminate beams, rigid frames, trusses, arches and space frames by classical methods, moment distribution, introduction to matrix analysis. Pre: 481.

485 Structural Design I (4) I (3 L, 1 Lb)
Zundelevich
Design of elements of steel and reinforced concrete structures, with emphasis on ultimate strength theory. Pre: 370.

486 Structural Design II (4) II (3 L, 1 Lb)
Zundelevich
Continuation of 485. Design of structural systems in timber, steel and reinforced concrete, introduction of prestressed concrete design. Design project. Pre: 485 and credit or concurrent registration in 482.

487 Prestressed Concrete (3) I, II
Go
Analysis and design of prestressed beams, columns, slabs, composite sections. Special problems. Pre: 486 or equivalent, consent of instructor.

499 Special Problems (arr.) I, II
Individual investigation in civil engineering topics as approved by instructor. Limited to seniors with 2.7 overall grade-point ratio, or 3.0 grade-point ratio in engineering.

* May apply toward graduate program. See Graduate Division rules.
621 Fluid Mechanics I (3) I
Williams
Mechanics of ideal fluid, potential flow, conformal mapping, vortex motion, deep and shallow water wave theory, introduction to gas dynamics. Pre: Math 232, CE 322 or consent of instructor.

622 Fluid Mechanics II (3) II
Williams
Mechanics of a real fluid, boundary layer and turbulence theory, drag, diffusion and other topics of advanced fluid mechanics. Pre: Math 232, CE 322 or consent of instructor.

624 Flow in Porous Media (3) II
Lau, Williams
Applications of fluid mechanics to flow of single-phase and multi-phase fluids in porous media. Pre: consent of instructor.

626 Surface-Water Hydrology (3) II
Lau
Quantitative studies of water cycle and relationships among principal hydrologic elements: precipitation, runoff, infiltration and evapotranspiration with emphasis on engineering and management of surface-waters. Pre: consent of instructor.

627 Ground-Water Hydrology (3) I
Lau
Ground-water occurrence, movement, quality, conservation, development, management. Hydromechanics of ground-water. Pre: consent of instructor.

631 Environmental and Sanitary Engineering Theory I (3) I
Anderson
Study of principles and unit processes involved in water and air resources problems, including water sources purification principles, distribution, air pollution control. Pre: consent of instructor.

632 Environmental and Sanitary Engineering Theory II (3) II
Anderson
Principles of waste water and solids waste handling, treatment and re-use, study of factors involved in disposal of waste to natural waters. Pre: 631.

633 Environmental and Sanitary Engineering Design I (3) I (1 L, 2 Lb)
Burbank
Functional design of modem water and air purification systems. Pre: consent of instructor.

634 Environmental and Sanitary Engineering Design II (3) II (1 L, 2 Lb)
Burbank
Functional design of modem waste water and solids waste treatment systems. Pre: 633.

635 Environmental and Sanitary Engineering Chemistry (4) I (2 L, 2 Lb)
Young
Chemistry of water, waste waters and air, including instrumentation and process control evaluations and interpretations of results as used in practice. Pre: consent of instructor.

636 Environmental and Sanitary Engineering Microbiology (4) (2 L, 2 Lb)
Staff
Fundamental microbiology involved in environmental engineering processes and research with special emphasis on mixed culture systems, biochemistry, physiological chemistry. Pre: consent of instructor.

637 Environmental and Sanitary Engineering Lab (3) II (2 L, 1 Lb)
Young
Studies of chemistry and physics of various unit processes in waste water and solids waste treatment, including laboratory work necessary for development of design criteria and operation and control of these systems. Pre: consent of instructor.

638 Environmental and Sanitary Engineering Public Health (3) II
Anderson
Characteristics of diseases, means of transmission and means of prevention through control of environment with special emphasis on public health administration, biostatistics, insect and rodent control, industrial hygiene. Pre: consent of instructor.

651 Soil Mechanics (3) II
Evans
Theories of soil resistance, seepage, consolidation settlement analysis, bearing capacity, stability considerations. Pre: consent of instructor.

655 Applied Soil Mechanics I (3) I (2 L, 1 Lb)
Evans
Foundation and stability analysis of retaining walls, footings, piles, load tests on
footing and piles, mass stability, compilations and analysis of test data. Pre: 651 or consent of instructor.

656 Applied Soil Mechanics II (3) II (2 L, 1 Lb) Evans
Continuation of 655 to include seepage settlement, mass stability, sheet piling and tunnels. Pre: 655.

671 Theory of Elasticity I (3) I Szilard

672 Theory of Elasticity II (3) II Nielsen
Stress, strain and elasticity relations in indicial notation. Solution of two and three dimensional problems by complex variables, potential functions and transform methods. Special topics. Pre: 671.

673 Theory of Plasticity (3) II Mitsuda

674 Stability of Structures (3) II Stuiver
Elastic and inelastic buckling of columns. Lateral buckling of beams. Stability of frameworks and elastically supported columns. Pre: consent of instructor.

675 Theory of Vibrations (3) I Taoka
Principal modes and natural frequencies of discrete and continuous elastic systems. Approximate methods. Forced motions, damping effects, wave propagation. Pre: consent of instructor.

676 Structural Dynamics (3) II Nielsen
Dynamic disturbances, free and forced vibration of structures with single-degree and multi-degree of freedom, elastic and inelastic beams, response of structures to dynamic loading. Pre: 675.

677 Energy Methods in Applied Mechanics (3) II Taoka
Variational principles of mechanics and their application to engineering problems. Virtual work, minimum potential energy, minimum complementary energy. Applications to structures, solid mechanics. Pre: 671.

678 Theory of Plates (3) I Szilard

679 Theory of Thin Shells (3) II Szilard

681 Indeterminate Structures (3) I Chiu
Energy methods, elastic center, column analogy, indeterminate trusses, arches, influence lines, elements of matrix analysis, introduction to plastic theory. Pre: consent of instructor.

682 Numerical Methods of Structural Analysis (3) II Chiu

683 Reinforced Concrete Design I (3) I Go
Ultimate strength theory, composite beams using precast and cast-in-place concrete, rigid frames and slabs. Pre: consent of instructor.
684 Reinforced Concrete Design II (3) II
Continuation of 683. Spherical, cylindrical and hyperbolic paraboloid shells, circular and rectangular tanks, folded plates structures. Pre: 683.

685 Plastic Analysis of Metal Structures (3) I
Nielsen

686 Numerical Methods in Continuum Mechanics (3) II
Staff

687 Design of Structural Systems (3) II
Staff
Planning and design aspects of structural systems. Design of buildings for lateral forces (frames, shear walls). Computer applications to design problems. Aesthetic considerations in structural design. Feasibility and suitability studies. Emphasis on actual designs. Pre: Graduate standing or consent of instructor.

696 Selected Topics in Civil Engineering (3) I or II
Highly specialized topics in structural, soils, hydraulics, sanitary, ocean engineering. Pre: consent of instructor.

697-698 Seminar in Civil Engineering (1–1) Yr.
Discussions and reports on literature, research, developments, and activities in one of these areas: (1) structural engineering; (2) environmental and sanitary engineering; (3) soil and foundation engineering; (4) hydraulic engineering; (5) water resources and hydrosciences. Pre: consent of instructor. Required of all graduate students.

700 Thesis Research (arr.)
Pre: consent of instructor.

Electrical Engineering (EE)

Professors: Abramson, Hwang, Kinariwala, Kuo, Peterson, Yuen; Associate Professors Barna, Grandborg, Kolde, Lin, Roelofs, Weaver, Weldon; Assistant Professors Chattopadhyay, Fang, Najita; Visiting Professor Kasami

200 Electrical Science I, II (3 L)
Introduction to electrical science, fields, circuits and electronics. Pre: Phys 272, Math 231, and concurrent registration in Math 232.

304 Electronics Circuits I (3 L)

305 Electrical Science Laboratory I (1 Lb)
Application of electric and magnetic field concepts to circuits, machines, electronics. For non-electrical engineers. Pre: registration in 304.

311 Circuit Theory I, II (3 L)
Kinariwala
Analysis of electrical circuits. Transform methods. Topology. Pre: Phys 272; Math 231

312 Circuit and System Analysis I, II (3 L)
Kuo
Laplace transform, s-plane analysis, transfer functions. Fourier analysis, sampling and correlation. Pre: 311; Math 232.

313 Circuits Laboratory I, II (1 Lb)
Najita
Laboratory for 312. Pre: 311.
ELECTRICAL ENGINEERING

325 Electronics I (3) I, II (3 L)  
   Fang, Roelofs  
   Operating principles and characteristics of diodes and amplifying devices. Their  
   applications as circuit elements in building basic electronic subsystems. Pre: 311.

326 Electronics II (3) I, II (3 L)  
   Fang, Roelofs  
   Theory and design of oscillators, waveforming circuits, modulators, demodulators,  
   logic circuits. Instrumentation. Pre: 325.

327 Electronics Laboratory (1) I, II (1 Lb)  
   Fang, Roelofs  
   Laboratory for 326. Pre: 374; registration in 326.

331 Energy Conversion (3) I, II (3 L)  
   Hwang  
   Application of electromagnetic field theory to energy conversion. Magnetic circuits  
   and transformers. A.c. and d.c. machines. Introduction to direct energy-conversion  

333 Energy Conversion Laboratory (1) I, II (1 Lb)  
   Hwang  
   Experiments on electromechanical energy conversion using generalized machine,  
   magnetic circuits and transformers. Elementary experiments on direct energy conversion.  
   Pre: 313, registration in 331.

371 Fields and Waves I (3) I, II (3 L)  
   Weaver, Yuen  
   Stationary and traveling waves in distributed parameter systems. Stationary electric  
   and magnetic fields. Pre: 311; registration in Math 232.

372 Fields and Waves II (3) I, II (3 L)  
   Weaver, Yuen  
   Solution of Maxwell's equations under various boundary conditions. Introduction  
   to microwave theory. Pre: 371.

374 Traveling Waves and Networks Laboratory (1) I, II (1 Lb)  
   Fang, Roelofs  
   Experiments on properties of linear active networks and distributed-parameter sys-  
   tems. Pre: 313; registration in 325, 372.

411 Introduction to System Analysis (3) I (3 L)  
   Chattopadhyay  
   Basic characteristics and mathematical models of physical systems. Energy space  
   approach to system representation. Impulse response and its relation to energy space  
   representation. Stability of systems. Observability and identification of systems. Attain-  
   able regions and other related concepts. Pre: 312; Math 232.

422 Electronic Instrumentation (3) II (3 L)  
   Basic transducers and signal processing amplifiers for electronic control and  
   measurements. Data acquisition and transmission circuits. Analog and digital circuits.  
   Pre: 312, 325.

423 Instrumentation Laboratory (1) II (1 Lb)  
   Fang, Roelofs  
   Laboratory for 422. Pre: 313, registration in 422.

425 Electronics III (3) I (3 L)  
   Roelofs  
   Characteristics and analysis of integrated circuits. Fabrication methods for resistors,  
   capacitors, diodes and active circuits. Application of linear and non-linear integrated  
   circuits in practical systems. Pre: 325.

427 Topics in Physical Electronics (3) II (3 L)  
   Fang  
   Physical principles underlying phenomena and devices based on controlled motion  
   of electric charges in solids and gases. Operational characteristics of microwave, interface,  
   and optoelectronic devices. Current advances in selected areas believed most likely  
   to have impact on electronics in the near future.

435 Power System Analysis (3) I (3 L)  
   Hwang  
   Characteristic of transmission systems. Matrix algebra and representation of power  

441 Principles of Communications (3) I, II (3 L)  
   Lin, Weldon  
   Signal representation, modulation, communication systems, noise. Introduction to  
   information theory. Pre: registration in 325.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor(s)</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>446</td>
<td>Information Theory and Coding (3) I, II (3 L)</td>
<td>Lin, Weldon</td>
<td>Open to all students. Pre: Math 134; junior standing or consent of instructor.</td>
</tr>
<tr>
<td>456</td>
<td>Digital Circuits (3) I, II (3 L)</td>
<td>Kuo, Weldon</td>
<td>Boolean algebra, electronic logic circuits, contact networks, minimization methods, symmetric functions, sequential circuits. RS, JK flip-flops, state diagrams, shift registers and counters, races and hazards, adding circuits, threshold logic, introduction to automata theory. Pre: junior standing or consent of instructor.</td>
</tr>
<tr>
<td>456</td>
<td>Digital Systems and Computer Design (3) I, II (3 L)</td>
<td>Kuo, Weldon</td>
<td>Machine language programming, computer architecture fundamentals, central processing units, computer memories, Input/Output devices, the control unit, multiprocessing and time-sharing, peripheral devices, computer graphics. Pre: 460.</td>
</tr>
<tr>
<td>452</td>
<td>Digital Techniques Laboratory (1) I, II (1 Lb)</td>
<td>Weldon</td>
<td>Laboratory for 461. Pre: registration in 461.</td>
</tr>
<tr>
<td>481</td>
<td>Bioelectricity (3) I (3 L)</td>
<td>Koide</td>
<td>Study of electrical phenomena in living systems primarily at the cellular level, mechanisms underlying bioelectric potentials and the quantitative evaluation of bioelectric parameters, measurement of bioelectricity. Pre: 311, Math 232.</td>
</tr>
<tr>
<td>491-492</td>
<td>Special Topics in Electrical Engineering (3–3) I, II (3 L)</td>
<td></td>
<td>Course content will reflect special interests of visiting and permanent faculty, and will be oriented toward juniors and seniors. Pre: consent of instructor.</td>
</tr>
<tr>
<td>613</td>
<td>Linear System Analysis (3) I (3 L)</td>
<td>Kuo, Lin</td>
<td>Discussion of fundamental concepts. Study of linear graphs, network equations and computational algorithms in linear algebra. Use of state space methods. Fourier transforms, generalized functions. Study of random signals in linear systems. Pre: 312 or equivalent.</td>
</tr>
<tr>
<td>614</td>
<td>Analysis of Nonlinear Systems (3) I or II (3 L)</td>
<td>Hwang</td>
<td>Analysis of nonlinear systems using computer, graphical and analytical methods. Oscillating and time varying systems. Stability studies. Applications to electronic circuit and control problems. Pre: 326, 451; Math 232 or equivalent.</td>
</tr>
<tr>
<td>616</td>
<td>System Theory (3) II (3 L)</td>
<td></td>
<td>Representation theory of linear operators and functionals. Short review of state space representation. Variational approach to state space theory, canonical representation of systems, irreducible systems, system identification, infinite dimensional state spaces. Pre: 411 or 451 or equivalent.</td>
</tr>
</tbody>
</table>
617 Computer-Aided Circuit Design (3) I or II (3 L)  
Kuo  
Computer methods of network analysis; the topological approach, optimization methods, device modeling, using analysis programs in circuit design, graphic data processing equipment, languages for computer graphics, printed and integrated circuit layout. Pre: 312, knowledge of FORTRAN or PL/1.

618 System Optimization (3) II (3 L)  

623 Advanced Electronic Instrumentation (3) I (3 L)  
Electronic conversion transducers for control and measurements: special-purpose amplifiers; analog and digital components and circuits; applications. Pre: 422 or equivalent.

627 Advanced Topics in Physical Electronics (3) I (3 L)  
Fang  
Recent developments in phenomena and devices of physical electronics. Pre: 427.

647 Applied Statistical Decision Theory (3) II (3 L)  
Abramson  
Random signals and noise; data processing and statistical decision theory. Detecting signals in presence of noise; applications to problems in communications, radar and radio astronomy. Signal processing in two dimensions with applications to tsunami detection and filtering of seismic signals. Adaptive decision making and pattern recognition. Pre: 613 or equivalent.

648 Error-Correcting Codes (3) II (3 L)  
Lin, Weldon  
Basic mathematical properties of block and convolutional codes, cyclic codes, correction of random and burst errors, implementation, use in practical error control systems. Pre: Math 311 or consent of instructor.

649 Error-Correcting Codes II (3) I (3 L)  
Lin, Weldon  
Majority logic decoding, codes based on Euclidean and projective geometries, polynomial codes, concatenated codes, advanced topics on cyclic codes, quasi-cyclic codes, non-linear codes, convolutional codes and related decoding procedures, sequential decoding. Current research problems. Pre: 648.

651 Advanced Feedback Control Systems (3) I (3 L)  
Analytical and numerical methods for investigation and solution of non-linear control systems, derivation of z-forms, the phase plane, describing function techniques, relay systems, sampled-data systems, non-linear compensation techniques, adaptive control systems. Pre: 451 or equivalent.

652 Optimization Techniques in Control Systems (3) II (3 L)  
State-space concepts, solution of matrix-differential equations, state vectors and fundamental matrix, development of maximum principle, minimum time and minimum energy problem, generalized performance criteria, effects of inaccuracies of components, optimum design of adaptive control. Pre: 451 or equivalent.

654 Concepts of Digital System Control (3) I (3 L)  
Granborg  
Characteristics of digitized control signals; digital control components; organization, design, evaluation of digital control systems; command and interelement communication; transducers; error detection and loop compensation; actuation; reliability enhancement; automated design methodology. Pre: 451 or equivalent.

655 Sampled-Data Control Systems (3) I (3 L)  
Theory and application of sampled-data control systems; sampling and filtering theorems, z-transforms, modified z-transforms, digital compensation and stability, optimization, application of state variable theory to sampled-data systems, on-line digital computer systems. Pre: 451 or equivalent.
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>656</td>
<td>Concepts of Systems Engineering</td>
<td>3 II 3 L</td>
<td></td>
<td>Organization of large systems; system phases and evolution; planning; reliability and maintainability; system evaluation; trade-off and cost-effectiveness; concepts task automation; typical large systems. Pre: 654 or consent of instructor.</td>
</tr>
<tr>
<td>661</td>
<td>Theory of Digital Machines</td>
<td>3 I 3 L</td>
<td>Peterson</td>
<td>Introduction to sequential switching circuit theory, theory of automata, and to mathematical theory of linguistics as it applies to automatons. Pre: 461 or consent of instructor.</td>
</tr>
<tr>
<td>671-672</td>
<td>Electromagnetic Theory and Applications</td>
<td>3-3 Yr. 3 L</td>
<td>Najita</td>
<td>Solutions and applications of Maxwell's equations to radiation and propagation of electromagnetic waves. Pre: 372 or equivalent; Math 232 or equivalent.</td>
</tr>
<tr>
<td>677</td>
<td>Antenna Theory</td>
<td>3 I 3 L</td>
<td>Roeilos</td>
<td>Principles of radiation; point sources and arrays: dipole and thin linear antennas; self- and mutual-impedances; antennas for LF, HF, VHF, UHF and microwave frequencies. Pre: 372 or equivalent.</td>
</tr>
<tr>
<td>693</td>
<td>Special Topics in Electrical Engineering</td>
<td>3 I, II 3 L</td>
<td></td>
<td>Course content will reflect special interests of visiting and permanent faculty. Pre: consent of instructor.</td>
</tr>
<tr>
<td>697-698</td>
<td>Seminar in Electrical Engineering</td>
<td>1-1 Yr.</td>
<td></td>
<td>Pre: graduate standing, consent of instructor.</td>
</tr>
<tr>
<td>699</td>
<td>Directed Reading or Research</td>
<td>arr. I, II</td>
<td></td>
<td>Pre: graduate standing, consent of instructor.</td>
</tr>
<tr>
<td>800</td>
<td>Thesis Research</td>
<td>arr. I, II</td>
<td></td>
<td>Pre: candidacy for M.S. or Ph.D. in E.E.</td>
</tr>
</tbody>
</table>

**General Engineering (GE)**

*Associate Professors* Avery, Hubbard; *Assistant Professors* Brown, Powell; *Instructor* Drake

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>61</td>
<td>Graphical Communication</td>
<td>1 I 2 Lb</td>
<td>Drake</td>
<td>Orthographic and pictorial instrument drawing and sketching, dimensioning, auxiliary and section views. Intended for engineering students who have not had 1 year of high school mechanical drawing.</td>
</tr>
<tr>
<td>107</td>
<td>The World of Engineering</td>
<td>3 I, II 2 L, 1 Lb</td>
<td>Brown, Drake, Hubbard</td>
<td>Introduction to engineering: nature of its goals and techniques including computer programming. Pre: Math 154 or equivalent.</td>
</tr>
<tr>
<td>109</td>
<td>Introductory Design and Graphical Analysis</td>
<td>1 I, II 1 L, 2 Lb</td>
<td>Avery, Brown, Hubbard</td>
<td>Use of graphical techniques for analysis of engineering problems: design project emphasizing creativity and presentation. Pre: 1 year of high school drawing or 61.</td>
</tr>
<tr>
<td>203</td>
<td>Technology/Society</td>
<td>3 I, II</td>
<td></td>
<td>Nature of technology and its impact on society. Historical interactions, current aspects, projections for the future. Present problems and conflicts, and prospects of resolutions. (Identical to IS 203.)</td>
</tr>
</tbody>
</table>
MECHANICAL ENGINEERING

251 Digital Computer Programming (2) I, II  Drake, Powell
Introductory computer programming for applied mathematics and physical science applications. Intended for students who have not taken 107. Pre: Math 134 or equivalent.

301 Architectural Structures “A” (3) II  Powell
Structure in architecture, introduction to basic mechanics and strength of materials. Pre: Math 205. (Identical with Arch 301.) Not open to engineering majors.

302 Architectural Structures “B” (3) I  Powell

451 Numerical Programming Applications (3) II (3 L)  Powell
Modeling, numerical and digital computer analysis of fluid, electrical, thermal, mechanical and interdisciplinary systems. Emphasis on general techniques applicable to non-linear problems with irregular geometry. Pre: 107 or 251, Math 232 or equivalent, and consent of instructor.

Mechanical Engineering (ME)

Professors Burgess, Chai, Faud, Stuiver; Associate Professors Cheng, Chou, Fox, Larsen-Badse, Munchmeyer; Assistant Professors Htun, Johnson, Jones, Kihara

300 Measurements Laboratory (2) II  Fox
Techniques of engineering measurements. Methods, instruments, computation and procedures. Applications to typical problems. Pre: junior standing in ME.

311 Thermodynamics (3) I, II  Chai, Fox

312 Applied Thermodynamics (3) I, II  Chou, Kihara

321 Mechanics of Fluids (3) I, II  Kihara

331 Materials Science (3) I, II  Jones
Behavior of materials as determined by structure and environment. Interrelationships between microscopic and macroscopic structure and phenomenological properties. Pre: Phys 271 (174).

341 Materials Processing (3) I, II (2 L, 1 Lb)  Htun
Development, processing, fabrication of engineering materials. Energy requirements of various manufacturing methods and their effect upon material properties. Pre: 331 (366).

371 Mechanics of Solids (3) I, II  Johnson
Analysis of deformable bodies. Definition of stress and infinitesimal strain. Linear elasticity. Stress, strain and deformation of simple bodies subjected to torsion, bending, and shear force.

375 Introduction to System Dynamics (3) I, II  Burgess, Stuiver

400 Mechanical Engineering Laboratory (2) I  Munchmeyer
MECHANICAL ENGINEERING

417 Thermal Environmental Engineering (3) II

418 Turbomachinery (3) II
Theoretical analysis of energy transfer between fluid and rotor; principles, performance, design of compressors and turbines. Pre: 312 (232).

419 Power Plants (3) I
Steam generators, prime movers, piping design, plant economy. Solar energy. Introduction to non-electromechanical energy conversion. Pre: 312 (232).

422 Heat Transfer (3) I, II

424 Introduction to Gasdynamics (3) II
One-dimensional compressible flow involving change of area, normal shock, friction, heat transfer. Pre: 312 (232), 321 (230).

431 Electronic Processes in Materials (3) II
Physical basis of electric, magnetic, optical properties of solids. Effects arising from material and processing variables and from impurities, imperfections, domains, grain boundaries. Pre 331 (366) or Phys 440.

433 Failures in Materials (3) II

441 Thermal Material Processing (3) I

451 Automatic Control (3) I

455 Nuclear Power Engineering (3) I

457 Marine Engineering (3) II

459 Introduction to Space Technology (3) I
History of space technology. Manned and unmanned space flight programs. The space environment. Fundamentals of launch vehicle dynamics, orbital mechanics, transfers and rendezvous, interplanetary flight. Spacecraft tracking. Application of satellites in science and technology. Pre: senior standing or consent of instructor.

467 Optimum Design of Mechanical Elements (3) I (2 L, 1 Lb)
Analysis and design of machine components for strength, rigidity, fatigue, etc. Fastenings, transmission devices, selected topics. Pre: senior standing in ME or consent of instructor.

468 Introduction to Engineering Design (4) II (2 L, 2 Lb)
MECHANICAL ENGINEERING

473 Mechanical Vibration and Shock (3) II Burgess
Motion of elastic mechanical systems modeled by discrete elements. Systems of one, two, and several degrees of freedom. Response to transient (shock), sinusoidal, and random excitation. Methods of measurement and analysis. Pre: 371 and 375 or consent of instructor.

474 Fundamentals of Acoustics (3) I Burgess
Wave motion in strings, bars, membranes, plates, and fluids. Plane and spherical acoustic waves. Transmission between media and through pipes. Resonators and filters. Methods of acoustic noise measurement and analysis. Pre: 375, or EE 312, or consent of instructor.

496 Mechanical Engineering Topics (arr.) I, II
Specialized topics in thermosciences, mechanics, materials, systems or design. Pre: consent of instructor.

499 Project (arr.) I, II
Investigation of advanced problems in mechanical engineering design or development. Pre: senior standing.

611 Classical Thermodynamics (3) I Fox

612 Statistical Thermodynamics (3) II Fox

617 Advanced Thermal Environmental Engineering (3) I Chou
Physiological response to chemical and thermal environment; air-conditioning and refrigeration load calculation; selection of system components; performance and control life supporting system for survival. Pre: 417 or consent of instructor.

621 Conduction Heat Transfer (3) I Chai

622 Convection Heat Transfer (3) II Fand

623 Radiation Heat Transfer (3) II Cheng

624 Gasdynamics (3) I Kihara

626 Viscous and Turbulent Flows (3) I Fand
Navier-Stokes and energy equations, their formulation, properties and some exact solutions; laminar boundary layers; laminar stability, transition and turbulence; turbulent boundary layers; non-Newtonian fluids. Pre: 321.

628 Theory and Measurement of Turbulence (3) II Fand
Theory of stability of laminar flows; mean motion, fluctuations and "apparent" turbulent stresses; universal velocity-distribution laws; turbulent flow through pipes and over flat plates; incompressible turbulent boundary layers with pressure gradients; turbulent boundary layers in compressible flow, free turbulence-jets and wakes; use of the hot wire anemometer to measure turbulence. Pre: 626.
630 Materials Science Laboratory (2) I
Larsen-Badse
Experimental determination of thermal, mechanical, chemical, electronic properties of materials as related to structure; influence of thermal treatments and of imperfections. Prerequisite: consent of instructor.

631 Advanced Materials Science (3) I
Larsen-Badse
Nature and properties of materials interpreted from the atomistic point of view. Molecular, amorphous, and crystalline structure. Crystal defects. Thermodynamics of solids; phase relations; diffusion; control of microstructure. Prerequisite: 331 or consent of instructor.

635 Corrosion Theory (3) I
Jones
Quantitative application of electrochemical theory and materials science to corrosion and oxidation reactions. Effect of environment. Cathodic protection, coatings, inhibitors. Treatment of water and steam systems. Prerequisite: 331.

636 Materials for the Ocean Environment (3) II
Larsen-Badse
Application of materials science and corrosion theory to study of materials problems associated with ocean and to selection of materials of construction for this environment.

641 Theory of Mechanical Properties of Solids (3) I
Hun
Elastic and inelastic properties of solids. Dislocation theory and its application to plastic deformation, fracture, damaging, fatigue, and creep of solids. Strengthening mechanisms; selection of materials for mechanical properties. Prerequisite: 331 or consent of instructor.

642 Mechanical Behavior of Engineering Materials (3) II
Larsen-Badse
Engineering aspects of elastic and plastic deformation of materials, ductile and brittle fracture, low-cycle and long-life fatigue, stress corrosion, cavitation erosion, corrosion fatigue, and creep. Selection of materials with emphasis on mechanical and ocean engineering application. Prerequisite: consent of instructor.

671 Mechanics of Continua I (3) I
Johnson

672 Mechanics of Continua II (3) II
Johnson
Constitutive relations for elastic, visco-elastic, ideally plastic, strain hardening, strain-rate sensitive materials. Applications. Prerequisite: 671.

678 Advanced Dynamics (3) II
Stuiver
Three-dimensional motion of particles and systems. Formulations of Newton, Lagrange and Hamilton. Central force motion. Dynamics of rigid bodies. Methods of Lagrange and Euler. Small oscillation theory. Application to space vehicle dynamics. Prerequisite: 375 or consent of instructor.

696 Advanced Topics in Mechanical Engineering (arr.) I, II
Highly specialized topics in thermosciences, mechanics, materials, systems or design. Prerequisite: consent of instructor.

697 Seminar (1) II
Current problems in all branches of mechanical engineering. Prerequisite: graduate standing, consent of instructor. May be repeated.

699 Directed Reading or Research (arr.) I, II
Directed study for graduate students on subject of mutual interest to student and a staff member. Prerequisite: consent of department chairman. May be repeated.

800 Thesis (arr.) I, II
Thesis for degree of M.S. in mechanical engineering. Prerequisite: admission to candidacy and consent of thesis adviser.
Ocean Engineering (OE)

Professors Bretschneider, Gerritsen, Parvulescu, St. Denis; Researcher O’Brien; Associate Researcher Lee; Assistant Professors Seidl, Venezian

401 Introduction to Ocean Engineering (3) I
Review of man’s past, present and future ocean-oriented activities with particular reference to ocean engineering. Ocean engineering environments, materials and systems. Introduction to ocean system design process.

411 Naval Hydrostatics (3) I
Ship nomenclature and geometry. Hydrostatic principles of surface ships in free-floating, partially waterborne and damaged conditions and of submerged bodies. Introduction to ship strength. Regulatory considerations and introduction to ship economics. Pre: CE 270, ME 321 or equivalent courses and/or experience.

412 Naval Hydrodynamics I (3) II

601 Ocean Engineering Laboratory (3) SS
Design, construction and evaluation of an ocean engineering system. Field experience supplemented with appropriate theory. Pre: consent of department.

603 Ocean Engineering Environment (3) I
Evaluation of ocean environment as it affects ocean engineering operations, design, construction, maintenance problems. Pre: Ocean 620 or equivalent.

609 Principles of Ocean Engineering (3) I
Principles of ocean engineering as application of knowledge of fluid mechanics and oceanography to engineering problems encountered in coastal and marine environments. Pre: consent of instructor.

610 Viscous Fluid Dynamics (3) II
Dynamics of real fluids with special emphasis on aspects of interest to ocean engineers. Navier-Stokes equations in inertial and rotating frames. Laminar and turbulent boundary layers. Heat flow, laminar stability and transition to turbulence. Diffusive processes. Pre: CE 322 or ME 321.

611 Naval Hydrodynamics II (3) I

612 Naval Hydrodynamics III (3) II

614 Ocean Hydrodynamics Laboratory (2) II
Experimental studies of ocean wave, current and sediment hydrodynamics and their relation to established theory. Look Laboratory of Oceanographic Engineering and nearby ocean front will be utilized. Pre: 609 or Ocean 620.

621 Introduction to Ocean Acoustics (3) I
Theory of sound. Measuring instruments and sound receivers. Sources of sound. Propagation of sound in the ocean. Applications of sound to oceanic measurements, detection, communication, navigation. Biological aspects of sound in the ocean. Pre: ME 747 or consent of instructor.

622 Sonar System Engineering (3) II
Principles of design for sonar components and for the integration of components into a complete system. Signal theory, signal processing, transducers, properties of the channel, for passive and active sonars. Pre: ME 474, or OE 621, or consent of instructor.
623  **Electroacoustics (3) I**  Parvulescu

Theoretical and experimental study of acoustical transducers with emphasis on those used in the ocean environment. Pre: ME 474 or OE 621 or 622, or consent of instructor.

631–632  **Design of Ocean Structures I & II (3-3) Yr.**  St. Denis, Seidl

Design of ocean structures to withstand the hydrostatic and hydrodynamic loading of the sea. Considerations include: type of material, factors of safety, proportioning of scantling by elastic and plastic theories, stress concentrations, and fatigue. Application is made to design of submarine pressure hulls, cargo ships and oceangoing platforms.

661–662  **Coastal and Harbor Engineering (3-3) Yr.**  Bretschneider, Gerritsen

Solution of practical problems related to planning, design, construction, and maintenance of beaches, harbors and other coastal structures. Pre: consent of instructor.

663  **Design of Coastal Structures (3) I**  Gerritsen

Discussion of boundary conditions near the sea shore such as littoral drift, waves, tides, stormtides, tsunamis, and their effect on coastal structures. Basic concepts of design of coastal structures including jetties, breakwaters, dikes, seawalls, and harbor structures. Pre: 609 or consent of instructor.

664  **Sediment Transport, Littoral Drift and Dredging Technology (3) II**  Gerritsen

Sediment transport in rivers, tidal inlets, (estuaries), and along seacoasts. The effect of man-made structures on sediment transport. Discussion of dredging technology in coastal areas, including sand by-passing plants at harbors and tidal inlets. Pre: 609 or consent of instructor.

671  **Submarine Vehicle Naval Architecture (3) I**  St. Denis

Environmental considerations, hydrostatic, hydrodynamic and structural mechanics principles pertinent to submarine vehicle system design. Pre-design and preliminary design procedures as applied to these systems.

691  **Special Topics in Ocean Engineering (arr.) I, II**  St. Denis

Course content will reflect special interests of visiting and permanent faculty. Pre: consent of instructor.

696  **Topics in Ocean Engineering (2)**

Pre: graduate standing, consent of instructor.

697–698  **Seminar in Ocean Engineering (1–1) Yr.**

Pre: graduate standing, consent of instructor.

699  **Directed Reading or Research (arr.) I, II**

Pre: graduate standing, consent of instructor.

707–708  **Statistical Dynamics of Ocean Systems I & II (3-3) Yr.**  St. Denis, Venezian

Waves of the sea, their loading on coastal and ocean structures and the responses of these structures are all characterized as statistical process. Provides a grounding in the fundamentals of time-series and spectral analysis and experience in the application of such statistical methods to actual problems.

800  **Thesis Research (arr.)**

Pre: candidacy for M.S. in ocean engineering.
Information Sciences (ISC)

Professors Abramson, Ferguson, Freeman, Gaarder, Jones, Kasami, Kinariwala, Kuo, Lester, Lin, Pager, Peterson, Pitts, Slepian, Rodgers, Wallen, Watanabe, Weldon

Gersch, Lew, Plasch

301-302 Computers and Information Sciences (3-3) Yr. Abramson
Introduction to computers and computer programming. History of information processing machines. Algorithms, languages and computer organization. Applications to linguistics, music and business. Experimental work using the facilities of the UH Computing Center will be required. Not intended for the information sciences or engineering major. Pre: high school algebra.

371 Elementary Probability Theory (3) I, II Staff
Sets, discrete sample spaces, problems in combinatorial probability, conditional probability, random variables, mathematical expectations, moments, variances, study of the classical distributions (binomial, Poisson, normal, etc.), applications. (Identical to Math 371) Pre: one year of college level mathematics, including one semester of calculus.

382 Elements of Pattern Recognition (3) II Watanabe
Describes at an elementary level the nature of the problems in pattern recognition and clustering and explains various algorithms. Pre: 371 or equivalent.

443 Statistical Data Analysis (3) I or II Jones
Estimation, hypothesis testing, regression and other topics in data analysis, with emphasis on computer applications and underlying assumptions. Pre: Math 206, I.Sc. 371 or equivalent.

445 Introduction to Random Processes (3) I or II Gaarder

446 Information Theory and Coding (3) I, II Watanabe
Fundamental properties of information. Sources and channels and coding of information. Applications to communication, linguistics, music, economics, psychology. Method of study based on elementary probability theory, but emphasis on significance of results. Open to all students. Pre: Math 134, I.Sc. 371, junior standing or consent of instructor.

456 Computer Organization and Programming (3) I, II Peterson
Organization and machine language of typical computers. Machine language programming techniques. Introduction of operating systems. Introduction to data structures, sorting, retrieving data from files of information. Pre: knowledge of some general programming language, such as FORTRAN, PL/I or COBOL.

467 Algorithmic Languages (3) I, II Peterson
Introduction to algorithms, languages for describing them, associated programming techniques. Commonly used languages for numerical and non-numerical computation. Pre: knowledge of some general programming language, such as FORTRAN, PL/1 or COBOL.

491 Special Topics in Information Sciences (3) I, II Staff
Course will reflect special interest of visiting and permanent faculty, and will be oriented toward juniors and seniors. In general, these will be in fields of computer systems, programming languages, artificial intelligence and computer nets. Pre: consent of instructor.

621 The Theory of Computer Languages (3) I or II Pager
Differences between computer languages and their application areas. FORTRAN, ASSEMBLER, ALGOL, PL/I, LISP, SNOBOL. Introduction to formal linguistics and compiler writing. Pre: 467.
625 Mathematical Properties of Natural Languages (3) I
Lester
The rule governed nature of natural languages. Construction and evaluation of
logical systems that mirror properties of natural languages. Pre: consent of instructor.

627 Information Structures (3) I or II
Staff
Modelling structures; implementation structures, storage management; representa­
tion of procedure; run time representation of programs; specialized data manipulation
languages and facilities; data definition; file management. Pre: 466.

641 Discrete State Stochastic Processes (3) II
Jones
Markov chains. Poisson processes, continuous time Markov processes, renewal
processes, semi-Markov processes and point processes. Queues and other applications.
Pre: Math 206, ISc. 371 or equivalent.

648 Theory of Inference (3) I
Watanabe
Formal and quantitative study of the process of inference in the human mind and
its computer simulation. Elements of information theory, structure analysis, deductive
and inductive inference, classification, pattern recognition, theory making, theory of
observation, and theory of learning.

650 Time Series Analysis (3) II
Jones
Filtering, prediction, spectrum estimation and transfer function estimation for
stationary processes. Regression with stationary errors. Random fields and space-time
processes. Pre: 443.

655 Principles of Estimation Systems (3) I or II
Gaarder
Data processing. Kalman-Bucy filtering, matched filter, statistical estimation and
detection theory, applications to radar, radio astronomy, communications, and sonar.
Pre: 445 or EE 613.

661 The Theory of Automata (3) I
Pager
Mealy and Moore sequential machines. Equivalence between machines and the
minimalization of machines. Analysis and synthesis of machines. Nerve nets and regular
Pre: consent of instructor.

663 Theory of Computability (3) I or II
Pager
This course is particularly relevant to students of Information Sciences, Logic and
Mathematics. There are no formal prerequisites. Consists of analysis of the categories of
problems which can or cannot be solved by "mechanical" means. Applications of the
theory include the unsolvability of the debugging problem for computer programs and
the renowned Godel theorem of logic. Turing machines, computability, semicom­
putability, combinatorial systems, the complexity of recursive functions.

665 Systems Programming (3) II
Peterson
Operating system functions, multiprogramming, time-sharing, resource allocation,
data management, priority scheduling, optimization. Pre: 466, 467.

671 Artificial Intelligence (3) I or II
Pager
Definition of artificial intelligence, heuristic programming, question-answering
machines, pattern recognition, simulation of cognitive processes. Pre: some program­
course.

693 Special Topics in Information Sciences (3) I, II
Staff
Course will reflect special interests of visiting and permanent faculty, generally in
the fields of computer systems, programming languages, artificial intelligence and com­
puter nets. Pre: consent of instructor.

697 Seminar in Information Sciences (1) I, II
Staff
Pre: graduate standing, consent of instructor.

699 Directed Reading (arr.) I, II
Staff
Graduate standing, consent of instructor.
College of Health Sciences and Social Welfare

The College of Health Sciences and Social Welfare provides educational programs and fosters research in the health fields of medicine, public health, nursing, and social work.

The School of Medicine carries students through the first two years in medicine, after which two further years in a mainland school lead to the M.D. degree; or, alternately, may lead to an advanced degree in a basic medical science, or in public health.

The School of Public Health offers programs leading to the M.P.H. or M.S. degrees.

The School of Nursing prepares students in professional nursing, technical nursing, and dental hygiene. The programs in dental hygiene and in technical nursing are lower division programs; that in professional nursing includes an upper division program leading to the B.S. degree, and a graduate program for specialization in mental health—psychiatric nursing, community health nursing, and medical surgical nursing leading to the M.S. degree.

The School of Social Work offers a two-year graduate program leading to the M.S.W. degree. The School also offers courses on the undergraduate and preprofessional levels for juniors and seniors.

SCHOOL OF MEDICINE

The School of Medicine was created in 1965 as increased interest developed in health education and research in Hawaii and the Pacific area. The first class was admitted in September, 1967. Full accreditation was granted in 1969.

Admission and Degree Requirements

A. Medical Students

"Medicine has 1,000 doors," some for skillful clinicians, some for teachers and researchers; some for those who wish to work with people, some for those who wish to work with figures, chemicals, or animals;
SCHOOL OF MEDICINE

some for those who wish to work at home and some for those who want to work in the international scene. The School seeks students with various talents and interests, and a serious attempt is made to recognize and foster these special qualities.

Applicants to the School of Medicine for the curriculum in medicine must have completed at least three years (about 90 semester units) of college work. Preference will be given those who possess a bachelor's degree. Students at the University of Hawaii will commonly have a bachelor's degree in biological sciences, but the degree may be in any field. An effort toward breadth of learning, both in the humanities and in the sciences, should be made.

The following specific work is required for entry into the School of Medicine.

Special Requirements for Admission to the School of Medicine

Biology: at least 10 units; work through comparative anatomy, embryology, and the fundamentals of genetics is desirable.

Chemistry: at least 16 units, including quantitative analysis and organic chemistry. Organic chemistry laboratory and physical chemistry are desirable.

Physics: at least 8 semester units.

Mathematics: work through one semester of calculus. Elementary statistics is recommended.

Medical College Admission Test (MCAT): required of all medical applicants.

The first year class is limited to 50 students. Applications are due October 1 and supporting papers must be received before December 1 for consideration for admission the following September.

Correspondence regarding admission should be directed to: Admissions Office, University of Hawaii School of Medicine, 3675 Kilauea Avenue, Honolulu, Hawaii 96816.

B. Non-medical students

Applicants to the School of Medicine for B.S., M.S., or Ph.D. degrees should fulfill the requirements as noted for the specific disciplines, for instance, biochemistry, or medical technology.

Application for admission to any of the departments of the School of Medicine as a candidate for a master's degree or doctor's degree in a specific discipline should be directed to the Dean of the Graduate Division; for a bachelor's degree it should be directed to the admissions office noted above.
Curriculum for Medical Students

Medical students will follow a two-year curriculum designed to make transfer possible at the end of the second year to the junior class of any mainland medical school. Elective time is provided in both years to allow development of special interests.

Provision is made for a limited number of students who wish to take the work spread over a three-year period, or longer. For further information, see Bulletin of the School of Medicine.

### FIRST YEAR

<table>
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<tr>
<th>First Semester</th>
<th>Credits</th>
<th>Second Semester</th>
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<td>Functional Microscopic Anatomy (Anat 601)</td>
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<td>Functional Human Anatomy (Anat 602)</td>
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<td>Neuroanatomy (Anat 604)</td>
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<td>History-Taking and Physical Examination (Med 602)</td>
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<td>Medical Genetics (Genet 611)</td>
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<td>Medical Physiology (Physl 602)</td>
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<td>Medical Biochemistry (Bioch 606)</td>
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<td>Introduction to Human Behavior (Psyty 607)</td>
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<td>Community Health Problems (PH 696)</td>
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<td>Medical Physiology (Physl 601)</td>
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### SECOND YEAR

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<td>Clinical Judgment (Med 611)</td>
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<td>Clinical Judgment (Med 612)</td>
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<td>Human Growth &amp; Development (Med 615)</td>
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<td>Clinical Conference (Med 672)</td>
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<td>Human Pathology (Path 601)</td>
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<td>Laboratory Diagnosis (Path 649)</td>
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<td>Pharmacology: Actions and Uses of Drugs (Pharm 600)</td>
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<td>Tropical Medicine &amp; Medical Microbiology (TrMed 605)</td>
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<td>Psychopathology (Psyty 616)</td>
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<td>Community Medicine (PH 786)</td>
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</table>

266
Allied Medical Sciences

Division of Comparative Medicine (CpMed)

Associate Professor Palumbo

The division of comparative medicine participates in graduate instruction, provides materials and guidance for research with emphasis on the study of disease processes in animals which relate to human health and biomedical research.

451 The Use of Animals in Research (2) I Palumbo
To acquaint students with concepts and methods in use and care of experimental animals.

Division of Medical Technology (MT)

Assistant Professors Bell, Bhagavan, Wulff, Uemura; Assistant Clinical Professor Ho, Instructors Kagawa, Moikeha, Sonoda, Taylor

The medical technology program at the University of Hawaii leads to a bachelor of science degree in medical technology.

The first two years are spent in the College of Arts and Sciences, but since scheduling of science courses in sequence is most important, a prospective student should designate his major as Pre-Med Tech as soon as possible. The last two years of the program are administered by the School of Medicine. Application to the medical technology program in the School of Medicine should be made early in the Spring semester of the sophomore year.

An interning year leading to registration with the National Registry of Medical Technologists (ASCP) follows graduation and is spent in an American Medical Association approved hospital either on the mainland or here in a hospital affiliated with the University.

For those few students who were enrolled as Freshmen before Fall 1967 or who, having a degree in one of the biological sciences, wish to earn a second baccalaureate degree, the internship course is still available for a total of 28 credits. These courses (MT 466, 467 and 468) will no longer be given for credit after the school year 1971-1972.

Degree Requirements

To be entitled to a degree of bachelor of science in medical technology, the student must:
1. Complete the course of subjects specified in the curriculum of medical technology, including at least 31 hours of the major;
2. offer at least 60 hours of credit in other than introductory courses, meeting the University core requirement;
3. acquire an aggregate of 129 hours of credit;
4. earn at least a 2.0 grade point ratio (C average) for all registered courses and a grade of C or higher in each major course and related course required for the degree;
5. submit an application for graduation to the Office of Admissions and Records during the semester preceding the awarding of the degree.

**FRESHMAN YEAR**

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<th>Fall Semester</th>
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<td>History 151</td>
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<td>Eng 100</td>
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<td>Math 134</td>
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<td>MT 151</td>
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There is an accelerated one semester course in Chemistry for especially well prepared students.

**SOPHOMORE YEAR**

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<td>Bio 270</td>
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<td>Eng Lit</td>
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<td>Chem 243-245</td>
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<td>MT 251</td>
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Electives: 3 credits in Humanities; 6 credits in Social Sciences

**JUNIOR YEAR**

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<td>Micro 351</td>
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<td>MT 431 Med Parasit or Zoo 340</td>
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**SENIOR YEAR**

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<td>CREDITS</td>
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<td>Micro 461-463</td>
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<td>MT 451 Hematology</td>
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<td>MT 471-473 Clin Biochem</td>
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<td>MT 457 Clin Lab Instr</td>
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<td>Total</td>
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</table>
151 Introduction to Medical Technology I (2) I, II
   Designed to acquaint student with relationship of medical technology to the
   medical field.

251 Introduction to Medical Technology II (2) I, II
   Taylor, Wulff
   Designed to acquaint student with basic principles of medical technology.

431 (497) Medical Parasitology (3) I
   Bell
   Diagnosis of parasitic diseases by laboratory methods: outstanding features
   of life cycles, classification and medical significance of parasites.

451 Basic Hematology (3) I
   Ho, Kagawa
   Fundamental study of blood in normal and pathological states: formation,
   development, and classification of blood cells. Pre: Micro 351, Physiol 301.

457-458 Clinical Laboratory Instruments (2-2) Yr.
   Moikeha
   Principles of spectrophotometry, optics, electronic measurement, and use of
   automated equipment. Pre: college physics, concurrent registration in Clinical Bio-
   chemistry.

464 Immunohematology (3) II
   Taylor
   Antigen-antibody relationships in human blood, study of blood groups, clinical
   problems in transfusion. Pre: Micro 461 or consent of instructor.

466, 467, 468 Internship (4-12-12) SS, I, II
   Wulff, Taylor
   Internship in affiliated hospital. Pre: three years of prescribed courses and
   at least one semester on U.H. campus.

471-472 Clinical Biochemistry, Lecture (2-2) Yr.
   Bhagavan

473-474 Clinical Biochemistry, Lab (2-2) Yr.
   Sonoda
   Pathological processes involved in organic and infectious diseases and labora-
   tory techniques used in their clinical diagnosis and measurement. Pre: Physiol 301,
   Basic Biochem.

499 Directed Reading and Research (arr.) I, II
   Taylor

Division of Speech Pathology and Audiology (SPA)

Professor Ansberry; Associate Professor McPherson; Assistant Professors May,
   Pang-Ching; Associate Clinical Professor Watson

Students who plan to obtain a B.S. degree in speech pathology and
   audiology should complete their University curriculum requirements in
   the College of Arts and Sciences during their first two years of residence.
   At the end of the second year, a transfer should be made to the School of
   Medicine, College of Health Sciences and Social Welfare.

   Specialized courses in speech pathology and audiology required for
   the undergraduate major are: 300, 301, 302, 303, 320, 402, 410, and 411.
   Other specific requirements are: a basic course in phonetics; a minimum
   of 4 credits in physics and 3 credits in mathematics; and, 12 credits in
   psychology including Psychology of Adjustment and Developmental Psy-
   chology. The introductory course in Human Development (HD 231–
   232) may be substituted for Developmental Psychology. A minimum
   of 124 semester hours of credit is required.

   Prospective undergraduate and graduate majors should consult with
   the Chairman, Division of Speech Pathology and Audiology for advice
concerning their programs and obtain a copy of the outline of the pro-
grams in speech pathology and audiology. Students in the College of
Education who wish to prepare themselves for work in this field will
require special programs and should have similar consultations as soon
as possible after initial enrollment. Graduate students should refer to
the Graduate Division Bulletin for additional pertinent information.

**UNDERGRADUATE COURSES**

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Instructor(s)</th>
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<tbody>
<tr>
<td>300</td>
<td>Introduction to Speech Correction (3) I</td>
<td>McPherson</td>
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<tr>
<td></td>
<td>Survey of field of speech correction; study of types of speech defects and hearing problems as they relate to speech dysfunctions.</td>
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<tr>
<td>301</td>
<td>Introduction to Audiology (3) I</td>
<td>Ansberry</td>
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<tr>
<td></td>
<td>Basic concepts: psychoacoustics, anatomy and physiology, measurement of hearing, rehabilitation of hard-of-hearing.</td>
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<tr>
<td>302</td>
<td>Methodology of Speech Correction (3) II</td>
<td>McPherson</td>
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<td></td>
<td>Methods used in clinical procedures for organic and functional disorders of speech; observation of clinical procedures. Pre: 300; Ling 410 or Sp 211.</td>
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<tr>
<td>303</td>
<td>Testing of Hearing (3) II</td>
<td>Pang-Ching</td>
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<td>Screening testing programs; conventional and special tests of hearing; interpretation of results; observations of clinical audiometry. Pre: 301.</td>
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<tr>
<td>320</td>
<td>Speech and Hearing Science (3) II</td>
<td>McPherson</td>
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<tr>
<td></td>
<td>Study of science of speech and hearing including anatomy and physiology of organs involved.</td>
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<tr>
<td>402</td>
<td>Pathology of Speech (3) I</td>
<td>May</td>
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<td></td>
<td>Etiology and symptomatology of speech and language disorders. Pre: 300, 302, 320.</td>
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<tr>
<td>410</td>
<td>Practicum in Speech Pathology (3) II</td>
<td>McPherson, May</td>
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<td></td>
<td>Clinical practice in use of diagnostic procedures and rehabilitation techniques with variety of speech disorders at various age levels. Pre: 300, 302, 320, 402.</td>
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<tr>
<td>411</td>
<td>Practicum in Audiology (3) I</td>
<td>Ansberry, Pang-Ching</td>
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<tr>
<td></td>
<td>Clinical practice in testing of hearing, hearing conservation, auditory training, speech reading, speech correction and conservation. Pre: 303.</td>
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<tr>
<td>600</td>
<td>Research Methods (3) I</td>
<td>Pang-Ching</td>
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<tr>
<td></td>
<td>Research methods applicable to field of speech pathology and audiology: analysis and reporting of data; bibliography; contemporary research. Required of all graduate students.</td>
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<tr>
<td>610</td>
<td>Organic Disorders of Speech (3) I</td>
<td>May</td>
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<td></td>
<td>Study of disorders of speech resulting from organic anomalies: cleft palate, cerebral palsy, laryngectomy, brain injury.</td>
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<tr>
<td>611</td>
<td>Auditory Training and Speech Reading (3) I</td>
<td>Pang-Ching</td>
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<td>Principles and methods of development of maximum communication ability through training in use of residual hearing and by observation of visible bodily clues.</td>
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<tr>
<td>612</td>
<td>Functional Disorders of Speech (3) II</td>
<td>May</td>
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<td></td>
<td>Diagnostic and therapeutic approaches to disorders of speech which are primarily functional in nature—articulation, voice, rhythm, language.</td>
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<tr>
<td>613</td>
<td>Language Development for Children with Hearing Deficiencies (3) II</td>
<td>Pang-Ching</td>
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<td></td>
<td>Language acquisition by hard-of-hearing and deaf children; methods of stimulating growth.</td>
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701 Advanced Audiology (3) I
Ansberry
Instrumentation; selection of hearing aids; special tests of hearing; vocational problems of individuals with impaired hearing.

710 Advanced Practicum in Speech Pathology (3-6) I, II
McPherson, May
(1) General clinical; (2) public school. Supervised clinical practice in diagnostic and therapeutic procedures.

711 Advanced Practicum in Audiology (3-6) I, II
Ansberry, Pang-Ching
(1) General clinical; (2) public school. Supervised clinical practice in administering special tests; interpretation of audiograms; counseling of individuals with impaired hearing; use of varied rehabilitation techniques.

720 Seminar in Speech Pathology (3) I, II
McPherson
(1) Diagnostic procedures; (2) functional disorders; (3) organic disorders. Section 1 1st sem.; sections 2 and 3 2nd sem. in alternate years. Section 1 not offered in 1970–71. May be repeated.

721 Seminar in Audiology (3) I, II
Ansberry
(1) Diagnostic procedures; (2) rehabilitation. Section 1 2nd sem.; section 2 1st sem. May be repeated.

799 Research (1-4) I, II
Ansberry, Pang-Ching
(1) Speech pathology; (2) audiology. Required of all graduate students following program (Plan A).

800 Thesis Research (8) I, II
Ansberry, Pang-Ching
(1) Speech pathology; (2) audiology. Limited to graduate students enrolled in non-thesis program (Plan B); open to other qualified graduate students.

Anatomy (Anat)

Professors De Feo, Noyes; Associate Professors Diamond, Yanagimachi; Assistant Professor Teichman; Associate Clinical Professor Gordon

Instruction in the department of anatomy is planned primarily to meet the needs of medical and graduate students but, insofar as facilities permit, all of the courses are open to other properly qualified third- and fourth-year undergraduate students. Those who are not registered in medicine but wish to take work in the department should make arrangements in advance with the instructors concerned.

Facilities are available for a limited number of doctors of medicine, or others with equivalent training, who may wish to do special dissections or pursue work on problems within the scope of the department.

The primary research and graduate training effort of the department is in the biology of mammalian reproduction and includes such related aspects as development, endocrinology and sexual behavior. Graduate programs combining work in anatomy with other fields, e.g., physiology, psychology and zoology can be arranged.

601 Functional Microscopic Anatomy (4) I
De Feo, Staff
Structural and functional correlates in organization of human cells and tissues as revealed through light and electron microscopy. Pre: admission to Medical School, or equivalent and consent of instructor for non-medical students.
SCHOOL OF MEDICINE

602  Functional Human Anatomy (5) II  Teichman, Staff
Structure and function of various organ systems of human body. Laboratory dissection and demonstration. Pre: admission to Medical School, or equivalent and consent of instructor for non-medical students.

604  Neuroanatomy (2) II  Diamond, Staff
Structural and functional organization of human nervous system. Pre: admission to Medical School, or equivalent and consent of instructor for non-medical students.

630  Reproductive Biology (3) II  De Feo, Staff
Comprehensive study of morphology, biochemistry, physiology of reproductive system in a number of experimental animals. Major emphasis on mammals and their regulatory mechanisms (local, endocrine, neural). Pre: 601 or equivalent and consent of instructor.

632  Reproduction and Sexuality (2) II  Diamond, Staff
This lecture-seminar course will provide the developing professional with fundamental information facilitating his understanding and treatment of various subjects and problems related to human sex and reproduction. Pre: enrollment in Medical School or Graduate Division (with permission of instructor).

634  Experimental Methods in the Study of Reproductive Behavior (arr.) II  Diamond
Individual research on endocrine and neural aspects of sexual behavior in experimental animals. Pre: one year of psychology; one year of zoology; consent of instructor.

636  Seminar: Current Readings in Reproductive Behavior (2) II  Diamond
Seminar which attempts to correlate observed behavior with underlying causal factors and influences with particular emphasis on structural and chemical mediators of behavior. Pre: one year of psychology; one year of zoology; consent of instructor.

691  Seminar (1) I, II
Current topics of biologic structure and function; reports, discussions. May be repeated. Pre: consent of instructor.

699  Directed Research (arr.) I, II
Each graduate student selects preceptor and a problem compatible with laboratory equipment and experimental animals required. Several students may work on various aspects of a general problem currently under study. Students learn specific techniques, methodology and pitfalls of experimental research under close guidance by faculty member. Pre: consent of instructor.

Biochemistry (Bioch) and Biophysics (Bioph)

Professors Gibbons, Greenwood, Manel, Mower, Piette, Winnick, Yasunobu; Associate Professors Mann, McKay; Assistant Professors McConn, McConnell, Morton

The biochemistry and biophysics department offers graduate programs leading to the M.S. and Ph.D. degrees, and provides the requisite courses for medical students.

601-602 (or the equivalent) is prerequisite for all graduate work in this department.

BIOCHEMISTRY

441  Basic Biochemistry (3) II  Morton, Yasunobu
Lectures on function and composition of biological substances and their metabolic transformation in animals, plants, micro-organisms. Pre: Chem 113-114, 243, 244 or equivalent.
442 Basic Biochemistry Laboratory (1) II (1 Lb) Morton
Experiments working with substances discussed in 441.

601-602 General Biochemistry (3-3) Yr. Mower, Yasunobu
Comprehensive survey of chemistry, structure, metabolism, physiological functions of important components of living organisms. Pre: Chem 243-244, Chem 351-352, or consent of instructor.

605-606 Medical Biochemistry (2-2) Yr. Greenwood, Mower
Survey of the field of biochemistry with particular emphasis upon contributions of this subject to the medical and biological sciences. Pre: acceptance in medical school, Chem 113-114, 243, 244 or equivalent.

611 General Biochemistry Laboratory (2-2) Yr. Greenwood
Selected physio-chemical and metabolic experiments to illustrate important principles of 601-602.

671 Seminar (1) I, II
Weekly discussions and reports on various subjects; current advances in biochemistry and biophysics.

705 Special Topics in Biochemistry (2) I, II
Advanced treatment of frontiers in Biochemistry. May be repeated. Pre: permission of instructor.

710 Special Topics in Enzymology (2) II
Selected detailed discussions on properties and mechanism of several important enzymes. Pre: 601-602. (Alt. yrs., offered 1970-71.)

713 Advanced Enzyme Kinetics (2) I (2 L) McConn
Theory of chemical relaxation. Relaxation methods and their application in the study of enzyme kinetics. Particular emphasis on stopped flow and temperature jump techniques which were used in the kinetics studies on several enzymes. Pre: 601-602.

720 Bioenergetics (2) I Mower

730 Nucleic Acids and Viruses (2) I Mandel

740 Advanced Protein Chemistry (2) I Yasunobu

799 Directed Research (arr.) I, II
Students may register on approval of department.

800 Thesis Research (arr.) I, II
Approval of department faculty required.

BIOPHYSICS

601 Survey of Biophysics (3) I Piette, McConnell
Theory and application of various physio-chemical techniques used in molecular biology, including optical absorption, light scattering, magnetic resonance, ultracentrifugation, viscometry, microscopy, circular dichroism and optical rotary dispersion. Pre: Chem 351-352 and Math 206.

602 Survey of Biophysics (3) II Mann, McConnell
Structure and biological significance of water, physical chemistry of biopolymers and relationship of their structure to biological function. Pre: 601.
603 Biophysics Laboratory (3) II
McConn
Application of physio-chemical techniques to biological systems. Use of analytical ultracentrifuge absorption, optical absorption, electron spin resonance, viscometry, diffusion and light scattering. Pre: 601 and 602.

701 Molecular Structure and Function of Chromosomes (2) I
Mandel
Physical properties of phage and bacterial chromosomes as determined by sedimentation velocity, buoyant density, ultraviolet absorption autoradiography, electron microscopic techniques, and their correlation with genetic structure and function. Pre: 601 and 602. (Alt. yrs., offered 1970–71.)

703 Conformational Analysis of Biopolymers (2) I
McConnell
Discussion of applications of statistical mechanics to study of macromolecules in solution with special emphasis on biopolymers. Calculation of average dimensions of randomly coiling macromolecules, including polyelectrolytes, helix-coil transition in polypeptides and polynucleotides, discussion of protein and nucleic acid denaturation. Pre: 601 and 602.

704 The Role of Free Radicals in Biological Systems (2) II

705 Special Topics in Biophysics (2) I, II
Advanced treatment of frontiers in biophysics. May be repeated. Pre: permission of instructor.

706 Molecular Structure and Function of Cell Organelles (2) II (2 L) Gibbons
Macromolecular organization of organelles considered in relation to their function in the cell.

799 Directed Research (arr.) I, II
Students may register on approval of department.

800 Thesis Research (arr.) I, II
Approval of department faculty required.

Community Medicine (PH)
(Affiliate from the School of Public Health)

Professors Burbank, Chung, Gilbert, Grossman, Lee, Mytinger, O'Rourke, Sachs, Schwartz, Voulgaropoulos, Worth; Associate Professors Clark, Conway, Davenport, Dickinson, Furuno, Hankin, Jensen, Johnson, Lenzer, Matsumoto, Park, Smith, Wolff; Assistant Professors Bell, Hayakawa, Stringfellow, Suehiro, Young; Lecturers Wiederholt, Armstrong, Earickson, Coffman

The School of Public Health provides instruction to students in the Medical School and serves the academic function of a department of community medicine for the Medical School.

The following courses are part of the required curriculum for medical students:

696 Community Health Problems (2) I
Gilbert, Staff
Field experience in community health problems in various settings: medical office and clinic hospital, official and voluntary agencies, total community. Emphasis on interdisciplinary cooperation and organizational coordination.

786 Community Health Concepts and Methods (1) II
Gilbert, Staff
Presentation and discussion of current ideas relating to organization and delivery of health services; manpower; political, legal and economic constraints; social influences. Introduction to epidemiologic and biostatistical methods in solving community health problems.
Genetics (Genet)

Professors Ashton, Carson, Chung, Hunt, Paik, Rosenberg; Clinical Professors Halperin, Waxman; Associate Professors Mi, Rashad; Assistant Professor Vann

The M.S. and Ph.D. in genetics are offered in human genetics, biochemical genetics, cytogenetics, population genetics, and immunogenetics. Intended candidates must have or acquire adequate preparation in biology, biometrics, chemistry through organic chemistry, analytic geometry and calculus genetics and physics.

451 Principles of Genetics (3) I Ashton
Fundamental genetic principles, with examples from microorganisms, plants, animals, man. Pre: one semester of biological science. College algebra and elementary chemistry recommended.

452 Genetics Laboratory (1) I Experiments with a variety of organisms to illustrate principles of 451.

480 Molecular Genetics (3) II Hunt
Genetic principles at the cellular level as related by structure of proteins and nucleic acid to genetic fine structure, mutagenesis, transfer of genetic information and control of development. Pre: 451 and one semester of biochemistry recommended, and consent of instructor.

602 Techniques in Genetics (2) II Ashton, Hunt
Modern techniques and relevant study for high school teachers of biology. Pre: consent of instructor and school teaching experience.

611 Genetics for Medical Students (2) I Rashad
Principles of genetics for medical students. Pre: consent of instructor.

618 Cytogenetics (3) II (2 L, 1 Lb) Rashad

625 Advanced Topics in Genetics (2) I, II Ashton
Advanced treatment of frontiers in genetics. Pre: graduate standing in genetics or consent of instructor.

650 Population Genetics (3) II Paik

654 Genetics Seminar (1) I, II Carson
Research and topical literature reports in genetics. May be repeated. Pre: graduate standing in genetics or consent of instructor.

660 Statistical Methodology in Genetics (3) I Mi
Application of statistics to genetics and human biology, with emphasis on high speed computing methods. Pre: 451 or equivalent, calculus, biometry or statistics. (Alt. yrs.; offered 1970-71.)

699 Directed Research (arr.) I, II
Pre: graduate standing; consent of instructor.

800 Thesis Research (arr.) I, II
Pre: consent of instructor.
GRADUATE COURSES IN GENETICS OFFERED BY OTHER DEPARTMENTS

*Biochemistry 730 Nucleic Acids and Viruses
†Horticulture 666 Radiation Biology
†Animal Sciences 645 Quantitative Genetics
*Microbiology 671 Microbial Genetics

†Offered 1970-71.

**SCHOOL OF MEDICINE**

**GRADUATE COURSES IN GENETICS OFFERED BY OTHER DEPARTMENTS**

*Biochemistry 730 Nucleic Acids and Viruses
†Horticulture 666 Radiation Biology
†Animal Sciences 645 Quantitative Genetics
*Microbiology 671 Microbial Genetics

†Offered 1970-71.

**Medicine (Med)**


The department assumes responsibility for assisting the student in integrating his learning in the humanities, social sciences, and the physical and biological sciences by confrontation with clinical situations. Thus, operational knowledge ranging from the structure and behavior of submolecular particles, through that of the whole human organism, to that of social interactions are correlated and brought to bear on the problems of health and disease and the individual patient.

Early attention is given to the student’s acquisition of habits of continuing, critical and disciplined self-education, and basic clinical skills. These skills include collection and evaluation of data, systematic reasoning in case problem-solving, and consideration and perceptiveness in dealing with patients, their families, and other members of the health team.

The department also participates in internship and residency training programs in affiliated hospitals. The close association of the student with graduate physicians in these programs also affords valuable learning experiences.

Research in selected clinical fields, for which facilities are available, is fostered.

601 Clinical Correlation (1) I Blaisdell

Correlation of anatomy, biochemistry, genetics, physiology and public health with natural history of health and illness. Focus each week on patient cases demonstrating principles or application of material covered during the same week in non-clinical courses. Students guided by Clinical Tutors, with participation by clinical subspecialists as appropriate. For first-year students. Pre: consent of instructor.
602 History-Taking and Physical Examination (3) II  
Blaisdell
Instruction through student participation with Clinical Tutors, and use of patients in the clinics and hospitals with emphasis on modern techniques and pathophysiologic basis of symptoms and signs. For first-year students. Pre: consent of instructor.

603 Historical Introduction to Medicine (1) I  
Bushnell, Judd
Consideration of the inter-relationships of historical, ethical, social and scientific aspects of medicine. Topics to be correlated with concurrent courses in first year. For first year students. Pre: consent of instructor. (Offered 1970–71.)

611–612 Clinical Judgment (3–3) Yr.  
Barrett, Blaisdell, Gardner, Nugent, Staff
Clinical problem-solving with collection of data analysis of symptoms, signs, laboratory data and previous therapy; pathogenetic formulation; plan of management; oral case presentations; subspecialty sessions. Instruction coordinated with concurrent courses. For second-year students. Pre: consent of instructor.

615 Human Growth and Development (1) I  
Char, Shirkey, Noyes
Personality development, learning, socialization, aging and major events in the human life cycle, considered in relation to developmental anatomy, physiology, endocrinology, genetics and biochemistry. For second-year students. Pre: consent of instructor.

649–650 Clinical Laboratory Examinations (2–2) Yr.
Theory and application of indications for, and significance of, clinical laboratory examinations, with special reference to interpretation of results. Clinical case material utilized for instruction in hematology, cytology, clinical chemistry, serology and microbiology. Instruction coordinated with concurrent courses in microbiology, pathology, pharmacology and medicine. For second year students. Pre: consent of instructor. (Not offered 1970–71.)

671–672 Clinical Conference (1–1) Yr.  
Mamiya, Noyes, Shirkey, McDermott, Gault
Presentation of patient-cases and discussion in depth by specialists, including visiting professors and non-clinical scientists with emphasis on multi-factoral determinants of illness, and the importance of quantitation in diagnostic and therapeutic evaluation. For second-year students, hospital housestaff and faculty. Pre: consent of instructor.

681 Selected Topics (1) I, II
Advances in the frontiers of biomedicine, participation of local and visiting authorities. Pre: consent of instructor.

699 Directed Research (arr.) I, II
Independent study in cardiology, endocrinology-metabolism, nuclear medicine, pulmonology, neurology, dermatology, nephrology, hematology, surgery, obstetrics-gynecology, pediatrics, radiology, and psychiatry. For first and second-year students. Pre: consent of instructor.

Section of Obstetrics and Gynecology (Ob-Gyn)

Professor Noyes; Associate Clinical Professors Boyson (Okinawa), McCallin, Nishijima, Ohtani, Sakimoto, K. S. Tom, Vaughn, T. S. Wong; Assistant Professors Krieger, McCorriston, Natoli, M. Seto, Terada; Assistant Clinical Professors Berger, Crim, Duhring, Fleming, G. Goto, Hunter, Li, Matsuoka, Mundt, Nakagawa, Nakata, Ogami, Oshiro, Saiki, Valpey; Instructors Davi, E. Nordyke, C. Sprague; Clinical Instructors Brock, Hale, Hindle, Lee, Shimomura, Takemoto, Teruya, Tseu, Vu; Clinical Teaching Assistants Aiu, Chongsiriwatana, Cote, F. C. Li, Mitchell, Winn, E. Yamashiro

The section of obstetrics and gynecology provides teaching in these disciplines for the introductory courses given by the department of medicine and assists hospitals and others in continuing medical education.
SCHOOL OF MEDICINE

Pathology (Path)

Professors Hartroft, Hokama, Nishimura, Skinsnes; Associate Professor Haber; Associate Clinical Professors Stemmermann, Will, Uemura; Assistant Professors Yang; Assistant Clinical Professors Kelley, Kroe (Okinawa), McCarthy, Namiki, Paik; Assistant Researchers Moikeha, Instructor C. Sprague, Clinical Instructors Galup (Okinawa), Plumbo, Wilson (Okinawa)

Instruction in pathology is given to second-year medical students. The emphasis in the first semester will be general pathology which underscores important biologic events leading to reaction patterns of injury resulting from a variety of exogenous and endogenous etiologic factors. Systemic pathology, which is primarily concerned with the classification, causation and clinical correlation of diseases, will be taught in the second semester.

Elective courses in immunopathology and research are offered for advanced students and residents (M.D.) in specialty training (Pathology).

601-602 Human Pathology (5-2) Yr.  Nishimura, Staff
Study of biological responses to injuries. Reactions of cells and tissues in pathogenetic events which accompany necrosis, degeneration, inflammation, hyperplasia and neoplasia. Systematized classification and clinico-pathologic correlation of diseases. Pre: consent of instructor; gross human anatomy and histology; human physiology and biochemistry.

649 Laboratory Diagnosis (2) I  Haber, Staff
Theory and practical application of indications for and significance of laboratory examinations, with special reference towards interpretation of results. Clinical case material will be utilized for instruction of basic techniques and demonstrations in hematology, immunohematology, clinical chemistry, serology, and microbiology. Pre: consent of instructor.

670 Immunopathology Seminar (1) II  Hokama
Autoimmune diseases and transplantation immunity. Pre: Micro 361 or 625 and Path 601.

699 Directed Research (arr.) I, II

Section of Pediatrics

Professors D. Char, Shirkey; Clinical Professors Marshall, Waxman; Associate Professor Ooge (Okinawa), Associate Clinical Professors Bass, Bond, Choy, L. T. Chun, Eckles, Ewing, Hasegawa, Kometani, Nance, Peyton, Richardson (Samoa), Roth, Sia; Assistant Professors Bintliff, Sakamaki; Assistant Clinical Professors Cashman, J. Chang, Cook (Samoa), Hagino, R. Ho, Nagao, Nakamura, Oren, Reddy, Sexton, M. Tottori, Watt; Instructor Jacang; Clinical Instructors Y. Ching, Choa, E. K. Kagihara, Jr., Kaye, Long (Okinawa), Mertz, Nakata, Natino-Badua, Nekonishi, Soo, Stephenson, H. Tottori, R. J. C. Wong, Yamaoka, A. B. Yee, H. I. Yim

The section of pediatrics provides teaching in pediatrics, particularly for the introductory clinical courses and assists hospitals and others in continuing medical and paramedical education. It cooperates with other departments in fellowship training.
Pharmacology (Pharm)

Professors Cutting, Furusawa, Lum, Norton, Shibata, Shirkey; Clinical Professor Anderson; Associate Professors Casarett, Chou, Lenney; Associate Clinical Professor Tabrah; Assistant Professors Palmer, Read; Assistant Clinical Professors Cashman, Lee, Roberts; Junior Pharmacologists Casarett, Kashiwagi; Clinical Instructor Reichert

The department of pharmacology offers the requisite work for medical students, and for the M.S. and Ph.D. degrees.

Intended candidates for the M.S. or Ph.D. in pharmacology must have or acquire adequate preparation in biology, chemistry, physics and mathematics. The course work required includes basic courses in related sciences, or demonstrated competence in these fields, plus other courses adapted to the needs of the particular students as determined by the major professor and the thesis committee. Most students will be expected to take graduate courses in biochemistry, physiology and pharmacology. Elective courses in pathology, microbiology, anatomy, chemistry and clinical medicine will be recommended.

600 Pharmacology: Actions and Uses of Drugs (6) II (3 L, 2 Lb) Lum
Systematic consideration of the history, chemistry, actions, dangers, fates and uses of major classes of drugs in medicine. Adequate preparation in biology, chemistry, physics and mathematics.

610 Marine Pharmacology (1) II
Phylogenetic consideration of the potential of marine organisms for the production of new drugs. Emphasis is also placed on clinical aspects of intoxication and public health problems relating to the marine flora and fauna. (Alt. yrs., not offered 1970–71.)

613–614 Seminar in Pharmacology (1–1) Yr. Lenney
Reporting and discussion of current research in pharmacology.

615 Toxicology (4) 1 (3 L, 1 Lb) Casarett
Basic description of toxicology according to systems and classes of substances. Principles of toxicology will be stressed in context with practical biomedical toxicological problems. Pre: consent of instructor. (Alt. yrs., not offered 1970–71.)
631-632 Medicinal Chemistry & Structure-Activity Relations (3-3) Yr. Norton
Organic chemistry of substances of medicinal value based on chemical classification. Chemical and physical properties will be related to pharmacological action. Pre: Org. Chem., Pharm 600. (Alt. yrs., not offered 1970-71.)

634 Molecular Pharmacology (2) I (1 L, 1 Lb) Chou, Lenney
Current knowledge regarding the action of drugs at the molecular level. Effects of drugs on cellular processes involving proteins, membranes, cell walls, and enzymes. Pre: biochemistry, physiology and Pharm 600. (Alt. yrs., offered 1970-71.)

635 Experimental Chemotherapy (1) I Furusawa
Use of anticancer, antiviral and immunosuppressive drugs at clinical and investigative levels will be evaluated from the experimental bases of chemoprophylaxis and chemotherapy. Current articles and present work in the department will be introduced and discussed. Laboratory exercises will be optional.

637 Autonomic Nervous System Pharmacology (2) I Lum
Course will emphasize recent advances in field of autonomic physiology and pharmacology. The drug receptor concept, agonist-antagonist interactions, chemical transmission as well as the pharmacodynamic effects of autonomic agents will be stressed. Pre: consent of instructor.

639 Advanced Cardiovascular Pharmacology (2) II (1 L, 1 Lb) Shibata
Actions of drugs on the cardiovascular system will be considered in appropriate detail including discussions on catecholamine metabolism, the effects of drugs on the biochemistry and electrophysiology of cardiac and vascular smooth muscle cells as well as discussion on selected aspects of comparative pharmacology of drugs which have actions on the cardiovascular system. Pre: consent of instructor.

699 Directed Research (arr.) I, II
800 Thesis Research (arr.) I, II

Physiology (Physl)

Professors HONG, ROGERS, WHITLOW; Clinical Professor BATKIN; Associate Professor RAYNER; Assistant Professors GILLARY, HAMPTON, LIN, MOORE; Junior Physiologist SETLIFF; Research Associates HAYASHI, SZEKERCZES

The department of physiology offers undergraduate courses as well as the requisite work for medical students and both the M.S. and Ph.D. degrees. Intended candidates for the M.S. or Ph.D. must have or acquire adequate preparation in biology, chemistry, physics, and mathematics. The course work required includes basic courses in related sciences, or demonstrated competence in these fields, plus other course work adapted to the needs of the particular student as determined by the major professor and the thesis committee. Most students will be expected to take graduate courses in physiology, pharmacology, and biochemistry.

89(99) Introduction to Human Physiology (5) I (3 L, 2 Lb) Hampton
Primarily for associate degree candidates in the School of Nursing.

301 Elements of Human Physiology (4) I (3 L, 1 Lb) Rogers
Pre: 1 year of introductory zoology or biology, and introductory general and organic chemistry.

601-602 Medical Physiology (2-4) Yr. (2 L, I; 4L-Lb, II) I, II Staff
Comprehensive course for medical students and other graduate students Pre: admission to medical school or consent of instructor.
SCHOOL OF MEDICINE

603-604 Seminar in Physiology (1-1) Yr.
Discussion of current research in one or more areas.

605 Physiology of Nerve and Muscle (3) I
Gillary, Rayner
Advanced course in the electrophysiology of nerve and muscle with emphasis on research techniques. Pre: 601-602, Psych 634, or consent of instructor.

606 Comparative Physiology of Thermoregulation (3) II
Hampton, Whittow
Physiological and behavioral mechanisms by which the major groups of animals, including man, regulate their body temperature, heat production, and heat loss. Detailed study of sweating, panting, peripheral blood flow changes, metabolism and behavior and their control by peripheral receptors and the central nervous system. Evolutionary aspects of temperature regulation. Pre: 601-602 or equivalent. (Alt. yrs.; not offered 1970-71.)

607 Physiological Adaptation to the Environment (2) I (2 L)
Moore
Adaptive physiologic changes in mammals in response to acute or chronic alterations in environment, internal or external. Acclimation mechanisms from cellular level through whole organism. Pre: 601-602 or consent of instructor. (Alt. yrs; offered 1970-71.)

608 Advanced Renal Physiology (2) II (2 L)
Hong
Course will deal with the comparative anatomy of the kidney, evolutionary significance of renal function, cellular mechanisms of tubular transports, various techniques to study renal functions, and the role of the kidney in maintaining homeostasis. Pre: 601-602 or equivalent. (Alt. yrs.; offered 1970-71.)

609 Cardiovascular and Respiratory Physiology (3) I (2 L, 1 Lb)
Lin
Advanced course in cardiovascular and respiratory physiology with special emphasis on applications of control theory and on the interactions between cardiovascular and respiratory systems. Pre: 601-602, or consent of instructor. (Alt. yrs.; not offered 1970-71.)

610 Advanced Physiology Laboratory (2) II (2 Lb)
Staff
Selected physiology experiments for graduate students to illustrate important principles of 601-602. Pre: 601 or consent of instructor.

699 Directed Research (arr.) I, II

800 Thesis Research (arr.) I, II

Section of Psychiatry (Psyty)

Professors W. Char, McDermott; Associate Professor Bolian; Associate Clinical Professors Hannum, K. Y. Lum; Assistant Professor Sakamaki; Assistant Clinical Professors Cody, Collis, Cottington, Devereux, Gramlich, Haertig, Hauschild, Kemble, Markoff, Moulon, Pope, Roat, Schnack, Stojanovich, Weaver; Clinical Instructors Amjadi, Boyar, De Tata, Eliashof, Golden, D. Lum, Rock, Schramel, Tillich, Trockman, Watanabe

The section of psychiatry provides teaching, training, service and carries on research in the field of psychiatry.

607 Introduction to Human Behavior (2) I
Char, McDermott, Staff
Genetic, biological, familial and social forces are considered as well as endopsychic forces which work together to shape the personality of man. His personality is examined within the context of health and disease. Special emphasis is placed
upon the nature of the doctor-patient relationship examining attributes and attitudes of the physician as they interact with the patient under the stress of illness. Cross-cultural aspects of the doctor-patient relationship will be emphasized. For first-year students. Pre: consent of instructor.

616 Psychopathology (1) II
Char, McDermott, Staff
Survey of psychiatric disorders with major emphasis placed upon those problems of contemporary social-medical importance viewed in developmental sequence and in cross-cultural perspective. For second-year students. Pre: consent of instructor.

681 Cross-Cultural Psychiatry (1) II
Elective seminar in the cultural determinants of human behavior and illness. For second-year students. Pre: consent of instructor.

683 Psychosomatic Medicine (1) II
Elective clinic and seminar on coordinated clinical, psychological, and physiological approaches to the understanding and management of certain human illnesses, such as asthma, peptic ulcer, and hypertension. For second-year students. Pre: consent of instructor.

Section of Surgery (Surg)


The section of surgery provides teaching in surgery and the surgical specialties for the introductory courses in the department of medicine. Also, it provides surgical representation on medical school committees, facilitates research in surgery by the clinical faculty, and assists hospitals and others in programs of continuing medical and paramedical education.

Section of Tropical Medicine and Medical Microbiology (TrMed)

Professors Bushnell, Desowitz, Halstead; Clinical Professor Rosen; Associate Professor Siddiqui; Associate Clinical Professor Hathaway; Assistant Professors Beales (Samoa), Diwan; Assistant Clinical Professors Cutting, Dean, Wallace

605 Tropical Medicine and Medical Microbiology (6) I
Halstead, Bushnell, Desowitz, Staff
Instruction in laboratory and principles of medical bacteriology, virology, immunology, mycology, parasitology for second year medical students. Pre: consent of instructor.
SCHOOL OF NURSING

The School of Nursing offers programs to prepare students for professional nursing, technical nursing, and dental hygiene. The baccalaureate program in nursing began in September 1952 and the technical nursing program was founded in September 1964. The present two-year program in dental hygiene was inaugurated under the School of Nursing in 1961. The nursing programs are accredited by the Hawaii State Board of Nursing and the National League for Nursing. The dental hygiene program has been granted full approval by the Council on Dental Education of the American Dental Association. A bachelor of science degree is granted for completion of the undergraduate program in professional nursing. An associate of science degree is granted for work completed in the technical nurse program and a certificate is granted for the two-year program in dental hygiene.

A program leading to the master of science in nursing prepares graduates of accredited baccalaureate nursing programs for specialization in mental health-psychiatric nursing, community health nursing, and medical-surgical nursing. Preparation for either administration or teaching in nursing is selected by the individual student according to his career goal.

Admission and Degree Requirements

Applicants for the baccalaureate degree in nursing program and the dental hygiene program must meet University admission requirements. Further selection is made on the basis of scores on selected tests, quality of high school and/or previous college work and references. Applicants for the associate degree program must have graduated from an accredited high school, and achieved a satisfactory score in college aptitude tests. Completion of a chemistry course and a life science course in high school is highly recommended. Women and men, married or single, may apply. Specific requirements for the bachelor of science degree in nursing, associate of science degree in nursing and certificate in dental hygiene are listed below.

BACHELOR OF SCIENCE DEGREE IN NURSING. Complete curriculum requirements and earn at least 138 credits with a grade-point average of at least 2.0 (C) and a grade of C or higher in each major course.

ASSOCIATE OF SCIENCE DEGREE IN NURSING. Complete curriculum requirements and earn at least 64 credits with a grade-point ratio of at least 2.0 and C or higher in each major course.

CERTIFICATE IN DENTAL HYGIENE. Complete curriculum requirements and earn at least 70 credits with a grade-point ratio of 2.0, and a minimum of C in each major course.
Academic Advising

The instructional staff of the School of Nursing and the personnel in the office of student services, Webster 415, are readily available for students to talk about any matter impinging on educational progress.

In the technical and professional nursing programs, each faculty member is assigned four to eight students whom they will advise for the entire period that the student is in the program. As the student progresses from one nursing course to another, faculty responsible for teaching the course also provide advising as related to the specific course requirements. Dental hygiene freshmen are advised at least two times yearly and sophomores have at least six advisory conferences yearly with faculty. Should a student not be able to contact her departmental adviser or because of the specific nature of her problem, she may go to the office of student services, Webster 415.

Professional Nursing Curriculum
Leading to Bachelor of Science in Nursing

The baccalaureate program in nursing offers a foundation in the liberal arts with a major in professional nursing. Its aims are to prepare students for beginning positions in all fields of nursing and to provide a sound basis for graduate study in nursing. The student graduates with a bachelor of science degree and is eligible to write the state examination for licensure as a registered nurse.

Pre-nursing students enroll in the College of Arts and Sciences and are admitted to the professional nursing curriculum at the end of the sophomore year upon completion of a minimum of 63 credits in the liberal arts, including the following:

PRE-NURSING REQUIREMENTS

<table>
<thead>
<tr>
<th>General (All courses in Group I)</th>
<th></th>
<th>16</th>
</tr>
</thead>
<tbody>
<tr>
<td>I English 100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speech Communication 200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History 151-152, 161-162, 351-352</td>
<td></td>
<td></td>
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<tr>
<td>Mathematics or Philosophy 210</td>
<td></td>
<td></td>
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<tr>
<td>HPE—one activity course</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Electives                         | 6                      |

| One lower division, one upper division |

<table>
<thead>
<tr>
<th>Humanities (Two courses in Group I; Optional, Group II)</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I English 251, 252, 253, 254, 255, 256 (any two)</td>
<td></td>
</tr>
<tr>
<td>II Phil 100, 200</td>
<td></td>
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<tr>
<td>Rel 150, 151</td>
<td></td>
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<tr>
<td>Art 101</td>
<td></td>
</tr>
<tr>
<td>Music 160, 170, 265, 266</td>
<td></td>
</tr>
<tr>
<td>I.S. 131, 132</td>
<td></td>
</tr>
</tbody>
</table>
The pre-nursing requirements will also satisfy the general requirements of the University of Hawaii.

The upper division curriculum in professional nursing consists of five semesters of sequential nursing courses of increasing complexity, and continuing requisite and elective courses in Arts and Sciences. Students accepted into the program will complete upper division requirements as described in the next section.

**Upper Division Requirements**

At least 15 credits of non-introductory courses will be selected from the area requirements (I, II, III) listed below on the bases of relevance to the nursing major and the individual interests and long-range planning needs of students. Additional courses may be selected as electives (10 units). All students will complete requirements listed under IV Nursing.

**Area Requirements**

**I. HUMANITIES** ................................................................. 3-10

Courses selected from: English, drama, history, philosophy, religion, art, music or languages in accordance with goals and interests of student.
Recommended: English 310 (3)

**II. NATURAL SCIENCES** ....................................................... 7-10

Courses selected from: biology, botany, chemistry, foods & nutrition, geology, physics, oceanography, genetics, microbiology, physiology, zoology.
Required: Food & Nutrition 385 (3)  
Physiology 301 (4)

**III. SOCIAL SCIENCES** .......................................................... 3-10

Courses selected from: anthropology, psychology, sociology, economics, geography, political science.
Required: Psych 113, Ed EP 429,  
or other equivalent course ................................................. 15
## IV. NURSING

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 301-302 (5-5)</td>
<td>5</td>
</tr>
<tr>
<td>Nursing 305-306 (5-5)</td>
<td>5</td>
</tr>
<tr>
<td>Nursing 415-416 (8-8)</td>
<td>8</td>
</tr>
<tr>
<td>Nursing 455 (8)</td>
<td>1</td>
</tr>
<tr>
<td>Nursing 450 (3)</td>
<td>3</td>
</tr>
<tr>
<td>Nursing 451 (3)</td>
<td>3</td>
</tr>
</tbody>
</table>

### V. ELECTIVES

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
</tr>
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</table>

### TOTAL CREDITS

- FIRST YEAR: 75
- SECOND YEAR: 12
- THIRD YEAR: 16
- FOURTH YEAR: 17
- FIFTH YEAR: 17

### FIRST SEMESTER

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>English 100</td>
<td>3</td>
</tr>
<tr>
<td>History 151, 161 or 351</td>
<td>3</td>
</tr>
<tr>
<td>Math/Phil 210</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 113-115</td>
<td>4</td>
</tr>
<tr>
<td>Psy 100 or 100-112</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16</td>
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</table>

### SECOND SEMESTER

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech Communication 200</td>
<td>3</td>
</tr>
<tr>
<td>History 152, 162 or 352</td>
<td>3</td>
</tr>
<tr>
<td>HPE</td>
<td>1</td>
</tr>
<tr>
<td>Chemistry 114-116</td>
<td>4</td>
</tr>
<tr>
<td>Sociology 151</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
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</table>

### SECOND YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eng 251, 253 or 255</td>
<td>3</td>
</tr>
<tr>
<td>Biology 220</td>
<td>5</td>
</tr>
<tr>
<td>Human Development 231</td>
<td>3</td>
</tr>
<tr>
<td>Social Science 301</td>
<td>3</td>
</tr>
<tr>
<td>Micro 130, 140</td>
<td>4</td>
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<td></td>
<td>18</td>
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### THIRD YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 301</td>
<td>5</td>
</tr>
<tr>
<td>Nursing 305</td>
<td>5</td>
</tr>
<tr>
<td>Physiology 301</td>
<td>4</td>
</tr>
<tr>
<td>Upper Division Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>17</td>
</tr>
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</table>

### FOURTH YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 415</td>
<td>8</td>
</tr>
<tr>
<td>Nursing 450</td>
<td>3</td>
</tr>
<tr>
<td>Statistics Course</td>
<td>3</td>
</tr>
<tr>
<td>Upper Division Elective/</td>
<td>3</td>
</tr>
<tr>
<td>Area requirement</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>17</td>
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</table>

### FIFTH YEAR

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing 455</td>
<td>8</td>
</tr>
</tbody>
</table>

286
Program for Registered Nurses

Registered nurses who have completed the general and pre-nursing requirements listed above with a grade-point average of 2.0 or better may enroll in the professional nurse program. No advanced standing credit will be granted for nursing courses completed in a diploma or associate degree program. However, the University of Hawaii, in common with many other universities, allows students to take the regular University department examinations in courses in which it is deemed the student has had equivalent training.

An enrolled student who has a grade-point average of 2.4 or better and presents evidence to her college dean that she has had the equivalent of a course through experience or training but has not received college credit for the course may apply for credit by examination. (See “Credit by Examination.”) Application must be made at least two weeks before the final examination period begins in the semester. Courses passed by examination do not carry grade-points although credit is granted for the course.
Technical Nursing Program
Leading to an Associate of Science Degree in Nursing

The program in Technical Nursing covers four academic semesters and leads to the associate of science degree in nursing. It consists of a minimum of 64 semester credits with a balance of general education and nursing course work. The last 12 credits in nursing must be taken in the department of technical nursing. The School of Nursing reserves the right to withhold the degree or to request the withdrawal of any student for any reason deemed advisable by the faculty.

Graduates of the program are eligible to take the state examination for licensure as a registered nurse. They are prepared for staff positions in hospitals, clinics, doctors' offices and private duty.

### FIRST YEAR

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CREDITS</strong></td>
<td><strong>CREDITS</strong></td>
</tr>
<tr>
<td>Microbiology 130</td>
<td>3</td>
</tr>
<tr>
<td>Physiology 89</td>
<td>5</td>
</tr>
<tr>
<td>Psychology 100</td>
<td>3</td>
</tr>
<tr>
<td>Technical Nursing 53 (Basic Nursing)</td>
<td>5</td>
</tr>
<tr>
<td>English 100 or Elective</td>
<td>3</td>
</tr>
<tr>
<td>Psychology 320</td>
<td>3</td>
</tr>
<tr>
<td>Sociology 151</td>
<td>3</td>
</tr>
<tr>
<td>Technical Nursing 54 (Nursing Science)</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
</tr>
<tr>
<td>16</td>
<td>16</td>
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</table>

### SECOND YEAR

<table>
<thead>
<tr>
<th>Third Semester</th>
<th>Fourth Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CREDITS</strong></td>
<td><strong>CREDITS</strong></td>
</tr>
<tr>
<td>History 145</td>
<td>3</td>
</tr>
<tr>
<td>Speech 145</td>
<td>3</td>
</tr>
<tr>
<td>Technical Nursing 55 (Nursing Science)</td>
<td>7</td>
</tr>
<tr>
<td>English 100 or Elective</td>
<td>3</td>
</tr>
<tr>
<td>History</td>
<td>3</td>
</tr>
<tr>
<td>Technical Nursing 56 (Clinical Nursing)</td>
<td>8</td>
</tr>
<tr>
<td>Technical Nursing 58 (Nursing Trends)</td>
<td>2</td>
</tr>
<tr>
<td>Elective</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
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<tr>
<td>16</td>
<td>16</td>
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</tbody>
</table>
Two-Year Program in Dental Hygiene Leading to a Certificate in Dental Hygiene

The program is planned to provide for the education and preparation required of the dental hygienist as a member of the dental health team for the rendering of professional preventive dental hygiene services and for educating the public in oral health.

FIRST YEAR

<table>
<thead>
<tr>
<th>FIRST SEMESTER</th>
<th>CREDITS</th>
<th>SECOND SEMESTER</th>
<th>CREDITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry 113</td>
<td>3</td>
<td>Chemistry 141</td>
<td>3</td>
</tr>
<tr>
<td>Chemistry 115</td>
<td>1</td>
<td>Chemistry 142</td>
<td>1</td>
</tr>
<tr>
<td>Dental Hygiene 121</td>
<td>2</td>
<td>Dental Hygiene 140</td>
<td>1</td>
</tr>
<tr>
<td>Dental Hygiene 131</td>
<td>3</td>
<td>Dental Hygiene 150</td>
<td>1</td>
</tr>
<tr>
<td>English 100</td>
<td>3</td>
<td>Dental Hygiene 166</td>
<td>1</td>
</tr>
<tr>
<td>Physiology 89</td>
<td>5</td>
<td>Food &amp; Nutrition 285</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Speech 145</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>16</td>
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</table>

SUMMER SESSION*

<table>
<thead>
<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPE 190</td>
</tr>
<tr>
<td>Psychology 100 or Sociology 151</td>
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</table>

SECOND YEAR

<table>
<thead>
<tr>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microbiology 130</td>
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<tr>
<td>Microbiology 140</td>
</tr>
<tr>
<td>Dental Hygiene 251</td>
</tr>
<tr>
<td>Dental Hygiene 267</td>
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<tr>
<td>Dental Hygiene 269</td>
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<tr>
<td>Dental Hygiene 279</td>
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<tr>
<td>Dental Hygiene 281</td>
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<td>Dental Hygiene 270</td>
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<tr>
<td>Dental Hygiene 272</td>
</tr>
<tr>
<td>Dental Hygiene 280</td>
</tr>
<tr>
<td>Dental Hygiene 282</td>
</tr>
<tr>
<td>Psychology 100 or Sociology 151</td>
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</tbody>
</table>

*It is required that all students in dental hygiene complete the standard Red Cross First Aid course during the first year or by the end of that summer session. A copy of the Red Cross certificate must be filed in the office of the chairman of the department of dental hygiene.
SCHOOL OF NURSING

Dental Hygiene (DH)

Associate Professors Ah Moo, Nobuhara, (Clinical Supervising Dentists); Assistant Professor Koga; Instructor Lee, Assistant in Dental Hygiene Cromley

121 and 131 prerequisite to all dental hygiene courses numbered over 131, and subsequent dental hygiene courses must be taken in sequential offering, except by special permission.

121 Introduction to Dental and Oral Hygiene (2) I
Orientation to profession; relationship of dental hygienist to dental hygiene and dentistry; role of hygienist in preventive dentistry.

131 Oral Anatomy and Tooth Morphology (3) I (3 L, 2 Lb)
Anatomy of teeth, bones of skull; muscles of mastication, tongue, face, pharynx; glands of oral cavity; cranial nerves, blood vessels of head and neck; laboratory procedures in drawing and carving of anterior and posterior teeth. Pre: Chem 113, 115, Physl 89 or concurrent registration.

140 Introduction to Dental Prophylaxis Procedures and Techniques (1) II (1 L, 2 Lb)
Clinical instruction and practice on manikin; clinical application of operative technical procedures of instrumentation, polishing, charting on selected patients.

150 Introduction to Dental Histology and Embryology (1) II

160 Introduction to Human Pathology (1) II
Basic causes, progress and termination of disease. Emphasis of defense mechanisms of body. Pre: 150 or concurrent registration.

251 Dental Histology and Embryology (2) I (2 L, 1 Lb)
Formation, structure and function of enamel, dentin, cementum, pulp, periodontium, alveolar process, gingiva. Pre: 150.

267 Oral Pathology (2) I
Study of oral diseases of concern to dental hygienist. Pre: 166, 251 or concurrent registration.

269-270 Survey of Dentistry (2-3)
(2) I (2 L, 1 Lb); (3) II (3 L, 3 Lb)
Principles and procedures used in dentistry. Subject areas include dental materials, operative dentistry, prosthodontics, orthodontics, periodontics, pedodontics, endodontics, oral surgery, anesthesia, practice management, dental assisting.

272 Dental Health Education and Dental Public Health (3) II
Principles of learning, dental health education as related to office, school, public health; methods, materials and practice in teaching; laws, ethics and economies involved; theory and practice of preventive dentistry with emphasis upon community dental health.

279-280 Dental Hygiene and Prophylaxis (5-5) Yr. (3 L, 13-hr Lb)
Clinical experience in dental prophylaxis; topical application of fluorides; medical-dental history; oral inspection; charting; roentgenographs; patient education; emergency first aid.

281 Dental Roentgenography (2) I (2 L, 2 Lb)
Lecture-laboratory course in study, technique, use and application of roentgen ray to dentistry.

282 Pharmacology (2) II
Principles of pharmacology; considerations of drug groups; clinical therapeutics for dental hygienist.
SCHOOL OF NURSING

Nursing (Nurs)

Professor Anderson; Associate Professors Bermosk, Gross; Assistant Professors Chase, Felton, Iwata, Kim, Love, Rodewald, White; Instructors Benson, Brooks, Carino, Cockrill, Dunwell, Fong, Hata, Kubo, Leton, Shimamoto, Williams (on leave)

Registration is restricted to students preparing for nursing except by special permission.

301-302 Pathophysiological Basis of Nursing
Practice (5-5) Yr. Benson, Brooks, Rodewald

Broad overview of major functional and structural changes which occur in health and illness. Content includes pharmacology, professional and technical nursing skills, and specific pathophysiological conditions. Laboratory study in hospital and varied community resources. Pre: acceptance in department of professional nursing or consent of instructor.

305-306 Basic Nursing Science (5-5) Yr. Chase, Fong, Dunwell, Leton

Overview derived from the behavioral sciences of the basic concepts and theoretical basis of nursing practice. Synthesis of knowledge from the biological, natural and social sciences and humanities in understanding the individual as a bio-psycho-social being. Introduction of beginning skills in communication, interviewing, observation and problem solving in relation to the individual patient. Laboratory study in hospital and varied community resources. Pre: acceptance in department of professional nursing or consent of instructor.

399 Directed Reading or Research (arr.) I, II Cockrill
Limited to seniors and juniors in nursing.


Orientation to analytical process for understanding, identification, solution of nursing problems; 4 hours lecture and 12 hours laboratory weekly. Pre: 305-306 or consent of instructor.

450 Nursing in the Changing Social Order (3) I Kim
Study of social foundations of nursing practice. Focus on historical base, interpersonal, moral and legal ramifications of formal and informal components of social systems in which nursing is practiced.

451 Study of the Nursing Profession (3) II Kim
Study of institutional, associational, societal aspects of professional nursing practice with emphasis on rights and obligations of professional status within nursing, between professionals and in relation to community. Pre: 450.

455 Nursing Leadership (8) I Cockrill, Kubo
Study of theoretical concepts basic to planning, organizing, implementing, and evaluating nursing care of individual and groups of patients and for understanding the role of the professional nurse on the nursing and health teams. Pre: 415-416 and a statistics course or consent of instructor.

493-494 Senior Honors Thesis (2-2) Yr. Cockrill
Preparation of research paper under individual faculty supervision. Required for graduation with honors. Pre: 399.

602 Orientation to Nursing Research (3) II
Critique of selected nursing research literature and evaluations of problem areas directed toward understanding concepts of systematic problem exploration and research contributions to nursing practice.

607 Seminar on Issues in Nursing (3) I or II Anderson, Felton
Study of factors relevant to understanding different conceptual models and philosophical approaches to nursing and the influences of legislation and demographic and social forces.
SCHOOL OF NURSING

611 Socio-Cultural Influences on Health and Health Services (3) I, II
Examination of socio-cultural influences on concepts of health and illness and on the nature of health practices.

615 Interaction Processes (3) I, II Bermosk
Interviewing, interpersonal dynamics and communication theories related to nurse-patient interactions; process recording and process analysis. Lecture-discussion, student presentations, field work.

617 Concepts and Nursing Practice (3) I
Exploration of a conceptual approach to nursing practice.

622 Advanced Nursing Concepts I, Mental Health-Psychiatric Nursing (4) II Bermosk
Application of behavioral concepts to nursing interventions; exploration of the social system and study of modalities of treatment. Pre: N615, 655.

623 Advanced Nursing Concepts I, Community Health Nursing (4) II Gross
Assessment of individual and family health status; family health maintenance patterns; interrelations of family and community; concepts and theories relevant to community health nursing intervention. Pre: PH609, N615, 617.

624 Advanced Nursing Concepts I, Medical-Surgical Nursing (4) II Felton
Study of the pathologic physiology of patients with medical and surgical problems requiring hospital and associated institutional services. Pre: Physiol 601, N617.

626 Advanced Nursing Concepts II, Mental Health-Psychiatric Nursing (4) I Bermosk

627 Advanced Nursing Concepts II, Community Health Nursing (4) I Gross
Study and analysis of a sector of the community; planning for the development of community health nursing programs; development of skills in working with groups. Pre: 623, Soc 465, PH610.

628 Advanced Nursing Concepts II, Medical-Surgical Nursing (4) I Felton
Continuation of an analysis of alteration in body physiology and the implications for nursing practice. Pre: 624, Physiol 602.

633 Curriculum Development (3) I or II Anderson
Development of philosophy and objectives for educational programs, curriculum design, content, teaching methods and evaluation.

635 Seminar and Practicum in Teaching (4) II Anderson
Designed to prepare the student to coordinate theory and its application as a beginning teacher. Pre: fulfillment of prior requirements for the teaching minor.

643 Concepts of Leadership in Nursing (3) I or II
Concepts of behavioral sciences applicable to nursing leadership, development of leadership skills, effect of leadership styles on group development.

645 Seminar and Practicum in Nursing Service Administration (4) II
Designed to prepare the student to coordinate theory and its application to function as a beginning nursing service administrator. Pre: fulfillment of prior requirements for the administration minor.

646 Advanced Nursing Concepts III, Mental Health-Psychiatric Nursing (4) II Bermosk
Exploration of family therapy concepts and formulation of nursing interventions into maladaptive family behaviors, community, international and cross-cultural psychiatry. Pre: 628.
647 Advanced Nursing Concepts III, Community Health Nursing (4) II Gross
Problems in community health nursing services; evaluation of the effectiveness of nursing care, interdisciplinary team functioning. Synthesis of the role of the clinical specialist in a community agency setting. Pre: 627.

648 Advanced Nursing Concepts III, Medical-Surgical Nursing (4) II Felton
Culminating evaluation of normal physiology and the consequences of pathologic physiology and the interrelation of process and knowledge base in the clinical specialist role. Pre: 628.

655-656 Advanced Psychiatric Concepts (3-3) Yr. Cody
Theories of modern dynamic psychiatry related to personality development and functioning. Principles of psychopathology, major mental illness and methods of treatment. Lecture, student presentations, participant observation.

699 Directed Study or Research (arr.) I, II
Directed study of problems related to nursing theory and practice. Open only to 2nd-year graduate students.

Summer Study and Work Experience

During the summer an opportunity is provided for one or two second-year graduate students to participate in the Rural Community Mental Health Demonstration Project on the island of Maui as mental health-psychiatric nursing clinical specialists. Other opportunities for independent study and/or course work are provided in Honolulu as deemed appropriate for an area of concentration.

Technical Nursing (TN)

Associate Professor AUI; Assistant Professors LO, JOHNSON; Instructors BENNETT, BISHOP, GOO, GRANT, GRIFFIN, HORTON, ISHIDA, LAUBSEN, MURRII.

53 Basic Nursing (5) I
Basic principles of nursing and fundamental skills in patient care. Guided independent study and clinical experience; 3 hours lecture and 8 hours laboratory per week.

54-55 Nursing Science (7-7) Yr.
Man as a system of bio-psycho-social behaviors. Planning and giving nursing care in situations where there are disruptions of behavior in specific subsystems; 3 hours lecture and 12 hours laboratory per week in health agencies. Pre: 53.

56 Clinical Nursing (8) II
Synthesis and application of knowledge of behavioral subsystems of man in planning and giving nursing care. Opportunities provided in health agencies for students to identify patient problems and use appropriate nursing intervention; 3 hours lecture and 15 hours laboratory per week. Pre: 55.

58 Nursing Trends (2) II
Development of nursing and future trends, including socio-economic influences. To be taken concurrently with 56; 2 hours lecture per week.
The School of Public Health, one of 16 accredited U.S. schools of public health, received its accreditation in October 1965. It was established in July 1962 as a department of public health within the Graduate School. The School is concerned primarily with maintaining and improving the general health of the community, and accordingly, offers graduate programs designed to prepare individuals who will contribute to knowledge in the sciences pertinent to public health, or perform public health services in the community. The School offers a wide range of programs designed to meet the needs of a varied student body. In addition to basic work in public health common to all students in the School, candidates are expected to pursue intensive work in a selected area of emphasis within the public health field. The broad areas of program emphasis offered include: administration (including comprehensive health planning, health services administration and public health administration), biostatistics, environmental health (including sanitation and public health engineering), epidemiology (including public health laboratory), international health, maternal and child health (including mental retardation), mental health, population and family planning studies, public health education, and public health nutrition. Program content may combine more than one area of emphasis for eligible students. Such expanded programs will usually require an additional semester of study.

A limited number of traineeships may be available for qualified students who can demonstrate a career interest in public health practice. Traineeships are awarded on a competitive basis from available funds. In many cases traineeship funds are for specially designated areas of emphasis. The status of traineeship availability varies greatly from year to year.

Master of Public Health Degree

The M.P.H. program is designed to prepare persons for a variety of careers in the broad field of public health at local, state, national, and international levels. The degree candidate must meet the minimum admission requirements of the Graduate Division and present a minimum of 18 semester credits in the physical and social sciences. Depending upon the area of emphasis selected, different undergraduate preparation may be required; in some cases, at least two years of health or related work experience is also required. A candidate's total curriculum is developed with the approval of his Program Committee. All candidates must complete 30 or more semester hours, including courses PH 609–610 and PH 791. A final examination or other final requirement as determined by the student's Program Committee must be completed before graduation. In some cases, degree requirements may involve up to two years of residence. (Refer to School of Public Health Bulletin.)
Master of Science Degree

The M.S. program is intended to provide preparation for individuals who require more concentrated work in a specific area of emphasis. The program may require up to 24 months; both Plan A and B are available. In Plan A the minimum course requirement is 30 semester hours, including PH 609–610 and 6 credits for thesis research. A final oral examination on the thesis and related subjects is required. In Plan B, 30 or more semester hours, including PH 609–610 and PH 791, are required; a final examination or other final requirement as determined by the student's Program Committee must be completed before graduation. (Refer to School of Public Health Bulletin.)

Public Health (PH)

Professors Burbank, Chung, Desowitz, Gilbert, Grossman, Halstead, Lee, Mytinger, O'Rourke, Sachs, Schwartz, Voulgaropoulos, Worth; Associate Professors Armstrong, Clark, Conway, Davenport, Dickinson, Furuno, Hankin, Lenzer, Matsumoto, Park, Smith, Wolff, Young; Assistant Professors Bell, Coffman, Earickson, Hayakawa, Johnson, Stringfellow, Suehiro; Lecturers Alexander, Bertellotti, Goto, Kau, Tokuyama, Wiederholt

601 Medical Care Systems (3) I Mytinger
Consideration of forms in which medical care services are organized; interpretation of need and demand for medical care; types, numbers, nature, relationships of medical institutions and manpower; financing medical care; national plans for medical care.

602 Supervision and Leadership in Health Services (1) I Conway
Methods of personnel supervision and leadership modes of specific applicability of health and medical programs; work scheduling and personnel practices.

603 Legal Basis for Health Services (1) I Mytinger, Staff
Exploration of constitutional and other bases for regulation of public health; aspects of administrative law including disclosure, confidentiality; consent, interference with person and property, permits and licenses, search and inspection, abatement, seizure, and liability.

604 Principles of Organization of Health Services (2) I O'Rourke
Consideration of organizational structure in theory and practice in the health industry; policy determination in health organizations; organizational change and innovation; professional and public relations.

605 Personnel Practices in Health Services (2) I Mytinger, Staff
Development, deployment and utilization of health manpower; personnel management practices including recruitment, placement, and retention; labor relations; staff and executive development.

606 Economics of Health Service (3) II Coffman
Economic analysis as a basis for individual and social decision-making; supply and demand aspects of health and medical activities; health aspects of economic development. Pre: consent of instructor.

607 Seminar in Health Services Administration (1) II Mytinger
Advanced study of current issues and problems related to the social and bureaucratic organization of health services, the direction of health programs, and the planning and integration of health services.
609-610 Public Health Organization and Administration (3-3) Yr.

609: Development of modern health movement; current organizational patterns and programs for developing and industrial countries. Interdisciplinary perspective introduces basic concepts of administration, biostatistics, epidemiology, environmental health, international health. Utilization of community resources in problem solving. 610: Continuation of 609, featuring chronic disease, nutrition, mental health, maternal health, family planning, child health, the crippled child, mental retardation, social sciences as applied to public health. Further examples of use of community resources for a realistic solution to current public health problems.

611 Information Systems and Planning (3) II
Earickson
Systems analysis approach to public activity problems; problem identification, information sources, hypothesis testing, predictive and prescriptive models, and evaluation of results. Investigation of public issues in Hawaii and elsewhere as related to health, social and political prerogatives. Geographic investigation of differences in planning and information systems. Pre: consent of instructor.

612 Ecological Concepts and Planning (3) II
Armstrong
Concepts of human ecology as bases for environmental management planning with emphasis on comprehensive health planning. Pre: consent of instructor.

613 Seminar in Comprehensive Health Planning (3) I, II
Wiederholt
Advanced study of health system as community sub-system. (1) Examination of goals and objectives, measurement and evaluation of results, priority determination in programming, policy formulation, resource allocation. (2) Examination of relationship of health system to total community systems. Pre: consent of instructor. May be repeated for credit.

616 Basic Concepts of International Health (3) I, II
Voulgaropoulos, Staff
Brief description of international health and health issues. Three main areas are covered in broad perspective. (1) development of international health and agencies; (2) socio-cultural, economic, political determinants of health; (3) health problems of developing nations of Asia and Pacific.

617 Comparative Public Health Systems (3) II
Voulgaropoulos, Staff
Review of health systems in selected countries and communities of Asia and Pacific. Emphasis on historical development and relevant socio-cultural, economic, political factors influencing development.

618 Seminar in International Health (2) II
Suehiro, Staff
Studies in health programming with emphasis on practical aspects of developing health programs and projects. Students assigned to on-going international program for in-depth study and field training.

624 Community Mental Health (2) II
Schwartz
Review of nature of community and individual mental health and of social and cultural forces influential in the incidence, prevention, or alleviation of community and individual mental illness.

629 Dental Public Health (2) II
Kau
Principles of conservation of oral structures and prevention of dental diseases through dental health programs. Pre: consent of instructor.

631-632 Public Health Nutrition (2-2) Yr.
Hankin
Methods of assessing dietary intakes and nutritional status of populations and of identifying nutrition problems. Nutrition programs for selected age groups and persons with special needs, living in various socio-cultural and economic conditions. Concurrent observations of nutrition activities in Hawaii and development of community nutrition project during second semester. Course is for students who will be directing public health nutrition programs. Pre: Majors or consent of instructor.

633 Seminar in Public Health Nutrition (1) I, II
Hankin
Specific nutrition problems in preventive medicine and public health. Pre: 631 or consent of instructor.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>634</td>
<td>Nutrition in Public Health Programs (2) I</td>
<td>Hankin</td>
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<tr>
<td></td>
<td>Review of major health programs with nutritional components and practical methods or aids in solution. Designed for non-nutrition majors who will be consulting with nutritionists or using their services in health programs. Pre: Public Health degree candidates or consent of instructor.</td>
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<tr>
<td>642</td>
<td>Maternal and Child Health I (2) I</td>
<td>Smith, Stringfellow</td>
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<td></td>
<td>Basic principles and practices in maternal and child health programs.</td>
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<td>643</td>
<td>Maternal and Child Health II (2) II</td>
<td>Smith, Staff</td>
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<td></td>
<td>Advanced course in maternal and child health. Pre: 642.</td>
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<tr>
<td>644</td>
<td>The Handicapped Child (2) II</td>
<td>Smith, Stringfellow</td>
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<td>Problems and programs relative to children with handicapping conditions.</td>
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<td>645</td>
<td>Principles of Comprehensive Maternity Care (2) I</td>
<td>Smith</td>
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<td></td>
<td>Objectives and organization of comprehensive maternity care from public health viewpoint. Pre: 642 or consent of instructor.</td>
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<tr>
<td>646</td>
<td>Health Services for the Mentally Retarded (2) I</td>
<td>Furuno</td>
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<td></td>
<td>Etiology, prevention, management, community programs for mentally retarded. Pre: consent of instructor.</td>
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<td>649</td>
<td>Family Planning in Theory and Practice (2) I, II, SS</td>
<td>Jenney</td>
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<td></td>
<td>Philosophy, techniques, organization of domestic and foreign family planning programs with concentration on practical problems of medical nature.</td>
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<td>650</td>
<td>Demography and World Population Problems (3) II</td>
<td>Matsumoto</td>
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<td>Introduction to study and description of human populations, including recent trends in world populations, analysis of projected trends. Pre: consent of instructor.</td>
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<td>651</td>
<td>Fertility and Reproduction (2) II</td>
<td>Goto</td>
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<td></td>
<td>Historical and contemporary methods of control of fertility. Pre: consent of instructor.</td>
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<tr>
<td>652</td>
<td>Staff Seminar in Population Dynamics (2) I, II</td>
<td>Matsumoto</td>
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<td>Ecological considerations of factors involved in human population dynamics. Pre: consent of instructor.</td>
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<tr>
<td>655</td>
<td>Public Health Statistics (3) I</td>
<td>Park</td>
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<td></td>
<td>Analysis, evaluation, interpretation, uses of statistics as related to public health problems. Pre: college algebra or equivalent or consent of instructor.</td>
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<td>656</td>
<td>Biostatistics (3) I</td>
<td>Park</td>
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<td>More theoretical treatment than 655 of elementary statistical concepts and methods of analysis of vital and health statistics. Pre: Math 134 or equivalent or consent of instructor.</td>
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<td>657</td>
<td>Statistical Analysis (3) II</td>
<td>Chung</td>
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<td>Extension of 655 and 656. Further treatment of estimation and tests of hypothesis, analysis of variance and covariance, multiple regression and correlation as related to public health problems. Pre: 655 or 656 or consent of instructor.</td>
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<td>658</td>
<td>Seminar in Biostatistics (1) I, II</td>
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<td>Discussion of specific problems in biostatistics as related to public health.</td>
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<tr>
<td>663</td>
<td>Principles of Epidemiology (2) II</td>
<td>Worth, Dickinson</td>
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<td>Basic epidemiologic principles, methods, their application with particular reference to geographic patterns of diseases in Pacific area. Pre: 655 or 656.</td>
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<td>665</td>
<td>Public Health Aspects of Chronic Diseases (2) I, II</td>
<td>Sachs</td>
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<td>Discussion of major chronic diseases and application of epidemiologic and administrative principles to chronic disease screening, case-finding, control programs. Pre: consent of instructor.</td>
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<tr>
<td>666</td>
<td>Epidemiology of Infectious Diseases in the Pacific Area (3) I</td>
<td>Bell, Staff</td>
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<tr>
<td></td>
<td>Systematic presentation of existing knowledge of important infectious diseases in the Pacific area. Emphasis on epidemiology, ecology and public health con-</td>
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cepts rather than clinical aspects of each disease. Pre: 655 or 656 or consent of instructor.

667 Laboratory Aspects of Infectious Diseases in the Pacific Area (2) II Halstead, Desowitz
Lectures and practical training in the public health aspects of laboratory techniques relating to infectious diseases of the Pacific Basin. Pre: 666 or consent of instructor.

670 Socio-Cultural Aspects of Health and Illness (3) I, II Wolff
Public health practices and orientation in socio-cultural perspective. Pre: consent of instructor.

673 Educational Approach to Public Health (2) I Clark, Grossman
Consideration of socio-cultural and psychological factors involved in health education of the public; role of health worker as agent of planned change; principles, concepts, methods of public health education; theoretical considerations in development of educational activity.

674 Community Health Education Laboratory I (2) I Hayakawa
Field laboratory experiences correlated with content of 673. Emphasis on community study and analysis, particular attention to diagnosis of community health education problems, opportunities.

675 Group Methods in Public Health (2) I Grossman
Consideration of theory and practice of group development as educational component of community public health efforts. Lectures on theory of group processes and relevance to public health. Laboratory on group process analysis and application of theory to group problem solving.

676 Health Information Processes in Public Health—Theory and Practice (2) II Davenport
Philosophy and practices in health information aspects of public health program development; theoretical considerations from communication theory and research. Analysis and field testing of information media.

677 Educational Program Evaluation in Public Health (2) I Grossman, Clark
Unique aspects of educational evaluation in public health, consideration of evaluation as educational process; development of procedures for adequate educational data collection; function of evaluative efforts in program development.

678 In-Service Training and Staff Development in Public Health (2) I, II Bertellotti
Theory and practice of training program development in health fields; analysis of training needs and methodologies; consideration of new approaches to manpower development in public health; design and testing of training materials and programs, special emphasis on public health and medical care settings.

681 Environmental Health (2) I Johnson
Characteristics of disease associated with environmental factors, means of transmission, principles of control of such communicable disease.

682 Vector Control in Environmental Health (3) II Johnson
Organization, administration, application of vector control methods in the control of diseases of environmental significance. Pre: 681 and consent of instructor.

683 Occupational Health I (2) II Burbank
Historical development of occupational health; occupational diseases and accidents; control of hazards in occupational environment; study of selected occupations and specific problems. Pre: consent of instructor.

685-686 Solid Waste Management and Control (3-3) Yr. Burbank
Organization and operation of solid waste programs at federal, state, and local government levels. Reviews laws, ordinances, and regulations as well as relationship of solid waste disposal to air and water pollution control. Pre: completion of or concurrent registration in 681, CE 638, or consent of instructor.
SCHOOL OF PUBLIC HEALTH

687 Sampling and Analysis of Solid Wastes (4) I
   Young
   Methods of sampling and analyzing solid wastes to determine their physical,
   chemical and bacteriological characteristics. Pre: concurrent enrollment in 685,
   consent of instructor.

688 Design of Solid Waste Disposal Facilities (4) II
   Burbank
   Design of storage, collection, transfer and disposal facilities for solid wastes. Pre:
   685 and concurrent enrollment in 686 or consent of instructor.

696 Community Health Problems (2) I
   Gilbert, Staff
   Field experience in community health problems in various settings: medical
   office and clinic, hospital, official and voluntary agencies, total community. Emphasis
   on interdisciplinary cooperation and organizational coordination.

700 Management of Health Services (3) II
   Mytinger
   Principles and practices of managing health and medical institutions and pro-
   grams. Pre: 603, 604 and 605.

701 Seminar in Medical Care Organization (2) II
   Mytinger
   Advanced study of current and emerging issues in the organization of delivery
   and financing systems for health and medical care, with specific emphasis on the
   articulation of high quality services. Pre: 601 or consent of instructor.

702 Principles of Fiscal Management for Health Services (2) II
   Conway, Staff
   Budget-making and the budgetary process in public and private health serv-
   ices; capital development and planning; fiscal reporting and grants management;
   Planning-Programming-Budgeting System; procedures of fiscal management as
   administrative controls.

703 Planning and Evaluation of Health Services (3) II
   Conway
   Management science and its application to the establishment and evaluation of
   medical care sub-systems and facilities.

704 Institutional Health Care Facilities (3) II
   Conway
   Principles and practices relating to the organization and function of general and
   special hospitals, extended care facilities, nursing homes and other health facilities.

705 Non-Institutional Health Care Facilities (2) II
   Conway
   Organization and function of ambulatory care services including clinics, group
   practices, home care services, disease detection programs, laboratory and pharma-
   ceutical services. Pre: concurrent enrollment in 604.

706 Case Studies in Health Service Administration (2) I
   Mytinger
   Detailed analysis of selected administrative cases with a view toward applying
   a wide spectrum of general principles and concepts of management to the diagnosis
   and solution of administrative problems.

736 Seminar on Health of the School-Age Child (2) II
   Furuno, Davenport
   Health needs of school-age child with particular emphasis on health problems
   which may present obstacles to learning process; role and responsibility of health
   personnel in working with these problems.

746 Techniques in Demographic Analysis (2) II
   Park
   Statistical methods of analysis of population data including construction of life
   tables, adjustment of rates, evaluation of census and vital statistics data, migrations,
   population projections, survey methods. Concurrent registration in 650 recommended.
   Pre: 655 or 656.

747 Statistical Methods in Epidemiological Research (3) II
   Chung
   Introduction to design, data processing, analysis of epidemiological studies of
   non-infectious diseases with emphasis on computer applications.

763 Advanced Community Health Education (2) II
   Grossman, Clark
   Program planning and development in community health education; theoretical
   considerations; current studies and research; educational dimensions of selected pro-
   grams; local, state, national, international trends in planning and development.
764 Advanced Community Health Education Laboratory II (2) II Hayakawa Field laboratory correlated with content of 763. Students participate in problem-solving activities related to planning, development, evaluation of educational components of community health action programs.

765 Advanced Seminar in Special Public Health Education Problems (2) I Grossman, Clark Current research implications for educational activity in newly emerging fields of public health interest such as family planning, community mental health, accidental injury prevention, home care. Content varies with students' needs and interests and status of available literature. May be repeated for credit.

771 Environmental Control of Disease Through Food Protection (2) II Johnson Organization, administration, application of sanitary methods used to investigate and control food-borne diseases of environmental significance.

772 Environmental Factors in Health Problems (3) II Johnson Introduction to air pollution, occupational disease, industrial hygiene; particular reference to common industrial processes, presence and recognition of hazards associated with them, evaluation of hazards; methods of determination of effectiveness of control measures. Pre: 681 and consent of instructor.

773 Measurement of Environmental Factors (3) II Young Use of instrumentation for collection, identification and measurement of air pollutants and environmental hazards. Techniques for sampling and analysis of industrial atmosphere for dusts, mists, gases, fumes; interpretation of other physical measurements such as radiation, light, sound, noise. Pre: completion of or concurrent registration in 772 and consent of instructor.

786 Community Health Concepts and Methods (1) II Gilbert, Staff Presentation and discussion of current ideas relating to organization and delivery of health services; manpower; political, legal and economic constraints; social influences. Introduction to epidemiologic and biostatistical methods in solving community health problems.


799 Directed Reading/Research (arr.) I, II, SS Pre: consent of instructor.

800 Thesis Research (arr.) I, II, SS Pre: consent of instructor.
SCHOOL OF SOCIAL WORK

The School of Social Work offers a two-year graduate program leading to the M.S.W. degree. It also offers courses on the undergraduate and preprofessional levels for juniors and seniors. Each student is assigned a faculty adviser. The function of the adviser is to help the student plan his program to bring about maximum coordination in use of class and field curriculum in order to enhance the student's total educational experience.

The School operates the Social Welfare Development and Research Center (see "Research and Service Operations"). The School was started in 1940 and received accreditation from the Commission on Accreditation of the Council on Social Work Education in 1950. For specific information on admission and degree requirements write: School of Social Work, 1395 Lower Campus Rd., Honolulu, Hawaii 96822.

Social Work (SW)

Professors Aptekar, Fisher, Jambor, Kurren, Polemis, Sikkema, Takasaki, Walsh; Associate Professors Hartman, Krisberg, Kumabe, Merritt, Nagoshi; Assistant Professors Asato, Caulfield, Chung, Hoover, Ishimoto, Masuda, Morris, Rosen, Shimomura, Takase, Tyson, Verdeyen, Wong, Woodruff; Instructor Okazaki

GRADUATE PROGRAM

603-604 General Social Work Practice (3-3) Yr.
Designed to give the student a basic understanding of all forms of social work practice. It is focused on the social worker in action in work with individuals, families, groups, neighborhoods, organizations and communities.

605-606 Social Work Practice with Individuals and Groups (3-3) Yr.
Emphasizes the contributions of casework and group work to social work practice. Designed for those students (generally experienced in some field of social work) who do not need a general introduction to social work methods and who wish to specialize in the realm of service to individuals and groups.

607-608 Social Work Practice in Community Organization (3-3) Yr.
Community organization as a process and method in social work intervention. Agency typology. Services rendered by community organizers. Practice in the use of a problem-solving model.

610-611 Human Behavior and the Social Environment (3-3) Yr.
Designed to provide synthesized understanding of physical, mental, emotional growth; due regard to social and cultural influences on individual development.

620-621 Integration Seminar with Director of Field Work and Advisors (1-1) Yr.
Designed to enable the student to see the inter-relationships of field and classroom instruction. It also serves to bring together into a coherent whole the student's simultaneous experience in the areas of social policy and services, behavioral studies, practice courses and social welfare research.

626 Prevention and Treatment of Juvenile Delinquency (2) II
Social work practice in relation to problems of juvenile delinquency.
SCHOOL OF SOCIAL WORK

627-628 Policies and Services in World Social Welfare (2-2) Yr.
Societal needs, values, and planned change are considered as unifying themes in this sequence of two courses. Comparative analyses of social welfare policy, programs, and services in the U.S. and other countries. Focus on social forces, problems, and issues; philosophies of governmental and voluntary responsibility.

651 Introduction to Scientific Method and Research Principles in Social Work (2) I

652 Research Methodology in Social Welfare and Social Work (2) II
Application of probability analysis in social research, including identification of research questions, development of hypotheses, consideration of cause-effect relationships, types of design, collection and analysis of data, tests of significance, relationship of research results to practice. Includes reading of one or two research studies.

660-661 Practicum (3-3) Yr.
Field units are maintained by the school in public and private welfare agencies, as well as in governmental departments of various types. In such units students receive instruction related to their school experience with social problem situations.

703-704 General Social Work Practice (2-2) Yr.
Designed to broaden and deepen the understanding of the student who has taken Courses 603-604. The practicum is held in a different setting, and the problems of individuals, families, groups, organizations and communities are analyzed from the standpoint of the mature practitioners. Skills required for problem-solving are examined in greater detail than in the first year and each student is required to compare his own professional functioning with that of less experienced and more experienced workers.

720-721 Integration Seminar with Director of Field Work and Advisors (1-1) Yr.
Designed to enable the student to see the inter-relationships of field and classroom instruction. It also serves to bring together into a coherent whole the student's simultaneous experience in the areas of social policy and services, behavioral studies, practice courses and social welfare research.

753 The Law and Social Welfare and Social Work (2) II
The principles of law with which the social worker should be familiar. Problems in judicial administration and substantive law that affect individuals in relation to social problems.

760-761 Practicum (3-3) Yr.
Field units are maintained by the school in public and private welfare agencies, as well as in governmental departments of various types. In such units students receive instruction related to their school experience with social problem situations.

764 The Social Caseworker and the Use of Group in Treatment (2) II
Guidelines for caseworker with client groups. Consideration of similarities and differences in casework and group work methods. Pre: 3 semesters of work in School of Social Work leading to M.S.W. degree. Consent of instructor.

765 Advanced Social Casework (2) I
Case discussion of generic casework concepts as applied in work with emotionally disturbed individuals. Concurrent with 760.

766 Seminar in Social Casework (2) II
Analysis and evaluation of case material contributed from student's experience and selected records.

302
767  Casework with Children (2) I
Casework concepts in care of children. Pre: 765, consent of instructor.

770  Advanced Social Group Work (2) I
Further emphasis on the needs of individuals in groups; analysis of the group worker’s activity in groups with a treatment focus. Concurrent with 760.

771  Seminar in Social Group Work (2) II
Analysis and evaluation of case material contributed from student’s experience and selected records. Presentation of papers on current issues in group work. Study and assessment of various models for work with groups.

Analysis of Social Planning Ideology; Social Planning as an action process including goal and strategy formulation, program design and implementation, monitoring and evaluation of programs. The translation of social policies into administrative action is stressed throughout the course.

785  Methods of Supervision in Social Work (2) II
Supervision in social work as it relates to casework and group work. Open to agency workers who are potential or actual supervisors. Pre: consent of instructor.

794–795  Group Research Project (3–3) Yr.
Principles of objective fact-finding, primary and secondary sources of social data, organization of material, relationship to an advisory committee or expert technical consultant and preparation of a report or thesis.

796–797  Directed Individual Study in Substantive Field (3–3) Yr.
(Child Welfare, Social Work in Health Settings, et al)
Students, on the basis of mutual interest, will select a faculty member to work with on a problem for which planned individualized study is deemed advisable.

800  Thesis Research (3)
Research on an individualized basis, under supervision, by students who are meeting the requirements for the master’s degree in social work.
The School of Social Work offers the following courses on the undergraduate level (Pre: junior standing).

300 The Field of Social Work (3) I
Non-professional orientation course intended to acquaint student with philosophy, scope, aims of social work. Pre: junior standing.

301 Social Welfare as a Social Institution (3) II
Purpose and philosophy governing establishment and operation of social welfare programs. Interrelationship of social, cultural, political, economic factors in development of social welfare. Junior standing.

305 Community Planning and Development in Social Welfare (3) II
Current trends in community welfare planning programs. Material from fields of social work, sociology, social psychology, others. Pre: 300-301 (or with consent of instructor concurrently with 301.)

315 Social Work Methods (3) I
Analysis of techniques most commonly used in social work practice. Casework, group work, community organization, administration, research. Open to seniors. Pre: 300-301.

320 Social Work with Juvenile and Adult Offenders (3) I
Study of social welfare resources and institutions for treatment of offenders. Pre: 300-301.

335 Seminar in Social Welfare (3) II
Designed to coordinate and integrate social welfare concepts with practice. To be taken concurrently with 340. Pre: 315.

340 Field Experience (2) II
Short-term experience in a social agency with opportunity to observe and participate in agency service at appropriate level. To be taken concurrently with 335.
College of Tropical Agriculture

The College of Tropical Agriculture prepares students for professional work in agriculture and human resources development. There are 3 curricula in agriculture: agricultural technology, agricultural economics, and agricultural science. Agricultural technology has two options—general and mechanized agricultural crop production. Agricultural science has four options—entomology, animal sciences, agronomy and soil science, and tropical horticulture. Agricultural economics has two options—agricultural economics and agricultural business.

Four curricula are offered in human resources development: fashion design, textiles and merchandising, home economics, food and nutritional sciences, and human development.

All curricula lead to the bachelor of science degree.

Establishment of the College of Agriculture was approved in principle by the board of regents on December 7, 1944. Its name was changed to the College of Tropical Agriculture in February 1960.

The College also includes the Hawaii Agricultural Experiment Station and the Cooperative Extension Service in Agriculture and Human Resources Development.

Admission and Degree Requirements

Requirements for admission are the same as those for the University. Students who lack some of this required preparation are unable to follow regular programs and may need more than four years to complete degree requirements.

To be eligible for the degree a student must:
1. Complete the general requirements prescribed by the University (pp. 58–61);
2. complete the course requirements of a curriculum;
3. have a 2.0 grade-point ratio for all registered credits.
CURRICULA IN AGRICULTURE

The program is designed to give a knowledge of the fundamental principles underlying agriculture as a science, and to prepare for effective service in research, teaching, business, and industry, as well as in practical farming.

In addition to the general University requirements in communications, quantitative reasoning, world civilization, humanities, natural sciences and social sciences, the College requirements include a basic core consisting of Ag 100, AS 141, Hort 262, Ag Econ 220, Ent 161 and Soils 304. Curricular requirements are:

1. AGRICULTURAL TECHNOLOGY: Ag Eng 331, Agron 310, Ent 372, Hort 450, PPath 410, Soils 350. In Mechanized Agricultural Production, 18 credits from above or Agronomy 201, 411, 412.
   (a) in the General Agriculture option: 18 credits from agronomy, agriculture, ag engineering, animal sciences, botany, plant sciences; 18 credits from humanities, social sciences, HPE.
   (b) in the Mechanized Agricultural Production option: Ag Eng 332, 431, 432, 435; GE 109; Ag Econ 434; 21 credits from the following: Ag Eng 499; Ag Econ 327; BAS 111, 315, 321; Soils 460; CE 270, 320, 421, 424; EE 303, 304, 305; GE 251; ME 312, 331, 371, 467; Math 205, 206, 231, 232.

2. AGRICULTURAL SCIENCE: Chem 243, 245; Chem 244, 246 or Ag Biochem 402, 403; Genet 451; Phys 160, 161; Micro 351 and
   (a) in the Animal Science option: AS 241, 341; 9 credits from AS 342, 343, 344, 345, 346; Zool 320; 16 credits from Ag Biochem 402, 403; Ag Econ 327; Ag Eng 331; Agron 201, 413; AS 442, 443, 444, 445, 446; Chem 133; Econ 150; Ent 372; Zool 340, 416, 417, 430.
   (b) in the Entomology option: Ent 361, 362, 372; one year of a foreign language: German, French, Spanish, Japanese or Russian; 15 credits from Ag Eng 331; Bot 105, 353, 461, 470; Chem 133; Geog 300; Hort 450, 453; Phil 210; PPath 410; Soils 340, 350; Zool 330, 340, 416, 417, 430, 631, 632.
   (c) in the Agronomy and Soil Science option: With emphasis on crops—Agron 310, 499; Ag Bio 402; Bot 470 and 18 credits from the courses listed below. With emphasis on soils—Chem 133, 134; Soils 340, 350, 499 and 18 credits from the courses listed below.

Agron 201, 310, 411, 412; Ag Econ 327, 433, 434; Ag Eng 331, 435; An Sci 444; Bot 160, 201, 353, 410, 412, 430, 454, 461, 470; Chem 133-134, 351, 352, 422; Geog 101, 300, 314, 400; Geo Sci 101, 102, 311, 302, 424;
Hort 450, 453, 481; Math 205, 206, 231, 232; Phil 210; PPath 410, 415; Soils 340, 350, 440, 460, 461, 470; Zoo 631, 632; one year of approved foreign language.

(d) in the Tropical Horticulture option: Hort 450 and 28 credits from the following: Ag Bio 402, 403; Ag Eng 331, 435; Agron 310, 412; Biol 220, 250, 401, 440; Bot 105, 160, 201, 353, 399, 410, 412, 430, 435, 436, 440, 450, 454, 461, 470, 480; Chem 133; Ent 161, 372; Hort 350, 453, 471, 481, 499; Math 205, 206; PPath 410, 415; Soils 340, 350; one year of a foreign language approved by adviser.

3. AGRICULTURAL ECONOMICS: Econ 150, 151, 300, 301, 340; Acc 201; Math 205; PolSc 110; Ag Econ 321, 322, 327, 428, 429, 432, 434 and

(a) in Agricultural Business options: Elementary accounting 201, 202; marketing & foreign trade elective; Law 300; Ag Econ 427, 430 and two electives from econ, business, ag engineering.

(b) Agricultural Economics option: seven electives from agronomy, economics, business, ag engineering.

AGRICULTURE COURSES

See pp. 4–5 for a discussion of course descriptions.

Agriculture (Ag)

Associate Professor S. Goto; Lecturer G. Sussman

100 Agriculture Orientation (1) I Goto
Lectures and field trips to acquaint student with background of agriculture and to help him select major.

299 Agricultural Practice (2) I, II, SS Goto
Agricultural practice on projects at Pearl City Instructional Facility. May be repeated.

310 Community Action Program (3) II Sussman
Dynamics and structure of community action; case studies of international and Hawaiian programs.

399 Agricultural Thesis (arr.) I, II, SS
Advanced individual work in field, laboratory, library, government service practicum.

401 Introduction to Cooperative Extension Work (3) II
Objectives and organization. Methods, selection, training of voluntary leaders; basic principles in program development and appraisal.
Agricultural Biochemistry (AgBio)

Professor Matsumoto; Associate Professor Hylin; Assistant Professor Tang

402 Principles of Metabolism (3) I, II
Hylin
Study of fundamental processes common to all living organisms. Pre: Chem 117-118 or 113-115, 114-116, and 241-242, or consent of instructor. Approved for graduate credit.

403 Principles of Metabolism-Laboratory (1) I, II
Hylin
This laboratory course may not be taken without lectures (402).

Agricultural Economics (AgEc)

Professors Davidson, Ishida, Larson, Marders, Philipp, Scott; Associate Professors Gopalakrishnan, Holderness, Keeler, Spielmann; Assistant Professors Anderson, Boyer, Renaud, Yamauchi; Lecturers Baker, Gertel, Wallrabenstein

220 Agricultural Economics (3) I, II
Ishida
Introduction to economics of agricultural production, marketing, prices, income, policy. Includes government policy and program related to agriculture, land use, farm tenancy, socio-economic problems of farmers in nation and world.

321 Agricultural Prices (3) II (2 L, 1 Lb)
Spielmann
Factors affecting prices of agricultural products; evaluation of governmental price policy. Pre: course in economics.

322 Marketing Agricultural Products (3) II (2 L, 1 Lb)
Ishida
Problems, agencies, functions, costs, prices, regulations affecting marketing; proposed improvements. Pre: introductory course in economics or consent of instructor.

327 Farm and Ranch Management (3) I (2 L, 1 Lb)
Keeler
Principles of organization and management of individual farms and ranches; choice of enterprises; farm planning; budgeting; business aspects; records; farm and plantation visits.

399 Directed Study (arr.) I, II
Davidson
Limited to exceptional undergraduate students qualified to carry on advanced study. Pre: consent of instructor.

410 Introduction to Quantitative Methods in Agricultural Economics (3) I
Larson
Mathematics applied to economics. College algebra, analytical geometry, calculus; introduction to matrix algebra. Examples drawn from agricultural economics. Pre: Math 134 or consent of instructor.

424 Marketing of Tropical and Subtropical Agr. Products (3) II
Scott
Marketing system and market analysis for sugar, rice, pineapple, coffee, citrus, other tropical and subtropical crops. Pre: 220, 322 or consent of instructor. (Alt. yrs.; not offered 1970-71.)

425 Marketing of Livestock, Poultry and Dairy Products (3) II
Davidson
Marketing systems and market analysis for livestock, poultry and dairy products. Pre: 322 or consent of instructor. (Alt. yrs., offered 1970-71.)
427 Management of Agri-Business Firms (3) I
Ishida
Basic principles of management. Problems encountered in management of cooperative and non-cooperative business firms directly or indirectly related to the agricultural economy, management structure and performance of food processors, agricultural supply businesses and various other agriculture related organizations will be discussed and analyzed. Pre: 321 or consent of instructor. (Alt. yrs.; not offered 1970–71.)

428 Production Economics (3) I
Anderson
Economic analysis of agricultural production, including theory of firm, resource allocation, production and cost functions, input-output analysis, farm size, enterprise combinations, tenure arrangements, risk, decision making. Pre: Econ 301, 327 or consent of instructor.

429 Agricultural Policy and Planning (3) II
Spielmann
Roles of government and private enterprise in agriculture. Pre: Econ 150–151, or consent of instructor. (Alt. yrs.; not offered 1970–71.)

430 Agricultural Finance (3) II
Holderness
Financing of agricultural production and marketing enterprises, operation of agricultural credit systems in the U.S. and developing countries of Asia. Pre: 327 or consent of instructor. (Alt. yrs.; not offered 1970–71.)

432 Introduction to Natural Resource Economics (3) I
Gopalakrishnan
Economic principles involved in the efficient utilization and management of natural resources—e.g., marine resources, water, land, timber, etc. Pre: Econ 151 or consent of instructor.

433 Advanced Management and Plantation Economics (3) II (2 L, 1 Lb) Keeler
Advanced work in management and organization of commercial farms; farm business analysis; plantation economics. Pre: 327 or consent of instructor. (Alt. yrs.; offered 1970–71.)

434 Statistical Methods (3) I
Larson
Principles and methods of statistical analysis. Frequency distributions, probability, tests of significance, confidence intervals, regression and correlation, analysis of variance. Applications to agricultural economic research.

435 Economics of Food Distribution (3) I
Boyer
Major emphasis on food store management. Supervision and development of personnel. Cost control, inventory control, customer service, records and reports, community relations and store maintenance will also be emphasized. Pre: 322, 326 or consent of instructor. (Alt. yrs.; not offered 1970–71.)

470 Regional Economic Analysis (3) I
Renaud
Introduction to location theory and regional economic analysis. Included are studies in regional structure location theory and land use, regional accounts and income analysis, input-output and related models, etc. Pre: 321 or Econ 300.

480 Computer Programming in Agricultural Economics Research (3) II Yamauchi

624 Research Methodology (3) I
Davidson
Philosophical setting for scientific inquiry, scientific method and its antecedents, application in agricultural economics research. Original research project required. Pre: graduate standing. (Alt. yrs.; offered 1970–71.)
AGRICULTURAL ECONOMICS

625 Economics of Agriculture: Tropical Countries and Asia (3) I Gopalakrishnan
Agricultural development, economics of agricultural technology, resource utilization, comparative advantage, international and intra-country marketing problems, institutions affecting agricultural economy. Pre: Ag Econ 220 or consent of instructor.

626 Collection of Economic Data in Agriculture (3) II Wallrabenstein
Methods of collection of agricultural data for regular programs and for special purposes. Pre: 434 or consent of instructor.

629 Advanced Production Economics (3) II Davidson
Economics of resource allocation at firm and industry levels. Advanced analytical techniques of analysis: linear programming; synthesis; budgeting; statistical analysis. Pre: 428, 480 or consent of instructor.

630 Market Development for Agricultural Products (3) II Scott
Methodology for determining market potentials; methods and costs of market development for products of agricultural origin. Pre: 322 or consent of instructor. (Alt. yrs.; not offered 1970–71.)

634 Quantitative Methods and Statistical Analysis (3) I Renaud
Principles of statistical inference, least squares estimators, two-variable model, three-variable model, general linear model, errors in variables, auto-correlations, multicollinearity, heteroscedasticity, dynamic models, shift variables and analysis of variance, simultaneous-equation problems. Pre: 434, 480 or basic course in statistics.

635 Seminar: Agricultural Price Analysis and Statistics (3) I Larson
Selected topics in application of statistics to research in agricultural production and marketing. Pre: 634 or consent of instructor. (Alt. yrs.; offered 1970–71.)

636 Seminar: Agricultural, Resources, and Ecological Policy (3) II Spielmann
Economic analysis of agricultural policy at state, national and international levels. Examination of resources (especially water and land) policies as they pertain to conservation and efficient usage. Examination of policies affecting ecological problems—(e.g., usage of insecticides, herbicides, etc.). (Alt. yrs.; offered 1970–71.)

637 Resource Economics (3) II Yamauchi
Analysis of problems of development and management of natural resources with emphasis on resources in agriculture and role in economic development. Pre: 428, 432, or consent of instructor. (Alt. yrs.; not offered 1970–71.)

638 Seminar: Land Use in Developing Countries (3) II Gertel
Role of land use pattern on agricultural economic development and welfare of rural people in emerging agricultural nations. Pre: 432 or consent of instructor. (Alt. yrs.; offered 1970–71.)

639 Agricultural Development Economics and Development Planning (3) I Anderson
Theories of agricultural development, agriculture in total development process; formulation of agricultural development plans and policies. (Alt. yrs.; offered 1970–71.)

680 Rural Sociology and the Agricultural Economy (3) I Marders
Social factors influencing economic processes related to agriculture; diffusion of innovations in rural societies.

699 Directed Research (arr.) I, II Staff
Pre: consent of instructor.
701 Seminar in Agricultural Economics (arr.) I, II  Staff
Topics of current interest and current research related to agricultural production, marketing, statistics, rural sociology, development and policy.

Agricultural Engineering (AgEng)

Professors Kinch, Wang; Associate Professors Gitlin, Hundtoft, Smith; Assistant Professors Liang, Wu

331 Mechanizing Food Production (3) I  Kinch
Significance of mechanization in the growth of food production industries. Importance and application of power units and machines in modern agriculture. Pre: Math 134.

332 Engineering Application in Food Production (3) II  Kinch
Introduction to principles and applications of farm structures, crop processing, surveying and irrigation in the production and handling of agricultural products. Pre: 331.

431 Agricultural Power (3) I  Kinch
Principles of operation, maintenance, repair and power measurement of gasoline and diesel engines. Farm tractor selection, power measurement, safety and study of the tractor's power transmission components. Pre: 332.

432 Agricultural Implements (3) II  Kinch
Fundamentals of operation of agricultural machinery. Integration of power and equipment on plantation, ranch, farm; methods of evaluating capacity, efficiency, cost. Pre: 431.

435 Irrigation Principles and Practices (3) II  Wu
Basic principles of irrigation science with applications to irrigation methods; water conveyance, distribution, measurement; water requirements of crops; irrigation efficiency and cost. Pre: 331 or consent of instructor.

499 Directed Research (arr.) I or II  Kinch
Research in the area of Mechanized Agricultural Production. Pre: consent of instructor.

631 Analysis of Implement Design (3) II  Hundtoft
Application of machine design principles and basic soil, crop requirements in solving typical equipment design problems. Pre: ME 468 or equivalent.

635 Farm Irrigation System Design (3) I  Wu
Design based on water requirements; design of water conveyance and diversion structures and of application methods. Irrigation economics. Pre: CE 421 or equivalent.

638 Optimization of Biological Production Systems (3) I  Liang
Develop concept of optimization and a general approach to the solution of an optimization problem. Characteristic of biological production systems. Methods for modeling systems. Review system optimization techniques such as linear and non-linear programming, search technique, dynamical programming, etc. Applications to design and operation of irrigation system, processing systems, field equipment system, etc., are emphasized.
647 Methods of Agricultural Engineering (3) I
Wang
Study of mathematical tools of agricultural engineering, including dimensional
analysis, model studies, queuing theory, boundary value problems and application
to theory of drying and vibrations of elastic bodies. Pre: Math 402.

648 Post-Harvest Process Engineering (3) II
Wang
Advanced topics in heat transfer; forced convection, condensing vapor, boiling
liquid; physical properties of agricultural products; design of pre-cooling systems.
Pre: ME 422, Math 402.

699 Directed Research (arr.) I, II
Staff

700 Seminar (1) I, II
Hundtoft
Review of recent literature. Pre: consent of instructor. May be repeated once.

Agronomy and Soil Science

Professors Ekern, Fox, Sanford, Swindale; Associate Professors Green, Kanehiro,
Rotar, Uehara, Young; Assistant Professors Bartholomew, El-Swaify, Ikawa,
Jones, Silva, Urata

Agronomy (Agron)

201 Principles of Tropical Agronomy (3) I (2 L, 1 Lb)
Bartholomew
Relation of plants, nutrients, environment, cultural practices to field crop pro-

310 Tropical Crop Production (3) I
Rotar
Current agricultural practices in production of food, feed, and fiber crops in the
tropics. Pre: 201 or equivalent.

411 Sugar Cane Agronomy (3) II
Silva
Cane plant; breeding, physiology, culture, growth, harvesting, milling, market-
ing; field practices and management; international agreements. Pre: Soils 304 or
consent of instructor.

412 Pineapple Culture (2) I
Sanford
Historical development of pineapple culture around world. Morphological and
physiological peculiarities of pineapple plant. Agronomic practices used in pineapple
culture in Hawaii. Pre: consent of instructor. (Alt. yrs., offered 1970–71.)

413 Pasture Management (3) II
Rotar
Origin, establishment, inventory, utilization, management of pasture and range
forage. Emphasis on applications in tropics. Pre: Bot 101. (Alt. yrs., offered
1970–71.)

499 Directed Study (arr.) I, II
Pre: senior standing in Agronomy, consent of instructor.

610 Physiology of Crop Production (3) I
Bartholomew
Physiological principles underlying developments and production of crop com-
munities. Topics include establishment of crop, population and distribution effects,
energy and nutrient supply, energy transport and storage and aspects of regrowth.
Pre: Bot 470 or consent of instructor. (Alt. yrs., offered 1970–71.)
Breeding of Asexually Propagated Crops (2) II
Urata
Breeding of asexually propagated perennial species, including sugar cane, pineapple, tropical forage grasses, with special emphasis on genetical, cytological, evolutionary principles involved. Pre: Genet 451 or consent of instructor. Hort 453 recommended. (Alt. yrs., not offered 1970-71.)

Directed Research (arr.) I, II
Pre: candidacy for M.S. degree; consent of instructor.

Seminar in Advanced Agronomy (1) I, II
Review of recent research findings in tropical agronomy. Pre: graduate standing.

Mineral Nutrition of Tropical Crops (2) I
Sanford

Directed Research (arr.) I, II
Pre: candidacy for Ph.D. degree, consent of instructor.

Soil Science (Soils)

Tropical Soils (4) I (3 L, 1 Lb)
Ikawa

Soil Chemistry (3) I (2 L, 1 Lb)
Kanehiro
Study of soil reaction, availability of plant nutrients, chemical analyses of soils. Pre: 304.

Soil Fertility (3) II
Fox
Nutrient availability in relation to chemical and physical properties of soil; fertility evaluation by plant response and soil tests. Pre: 304.

Soil Salinity and Irrigation Water Quality (3) II (2 L, 1 Lb)
El-Swaify
Nature, management, and reclamation of salt-affected soils, irrigation water quality criteria and classifications, salt tolerance of crops and principles of soil salinity control. Pre: 340 or consent of instructor. (Alt. yrs.; offered 1970-71.)

Soil Physics (3) II (2 L, 1 Lb)
Uehara
Physical properties of soils; structure and moisture relationships. Pre: Phys 161 or 171; Soils 304.

Soil Erosion: Causes and Controls (3) I
Ekern
Physical properties of soil which influence erodibility; energy sources and mechanics of water and wind erosion; principles of vegetative and mechanical controls; survey of development and spread of conservation movement. Pre: consent of instructor. (Alt. yrs.; offered 1970-71.)

Tropical Soil Survey and Interpretation (2) I

Directed Study (arr.) I, II
Pre: senior standing in soils; consent of instructor.
ANIMAL SCIENCES

640 Advanced Soil Chemistry (3) II (2 L, 1 Lb) 
Physico-chemical properties of soils and soil solution with emphasis on colloidal, surface, ionic equilibrium relationships. Pre: 340; Chem 351 recommended. (Alt. yrs.; not offered 1970-71.)

650 Advanced Soil Fertility (4) I (2 L, 2 Lb) 
Ion exchange, organic matter transformations, and mobility of nutrient and non-nutrient ions related to crop growth and composition. Use of soil and plant analyses for estimating fertilizer requirements. Pre: consent of instructor. (Alt. yrs.; offered 1970-71.)

661 Meteorology in Agriculture (3) II 
Elements and mechanics of weather; response of plants to weather elements; manipulation of microclimate; weather requirements of major crops; weather and plant disease and insects; weather and warm-blooded animals, including man. Pre: consent of instructor. (Alt. yrs.; offered 1970-71.)

670 Soil Formation and Classification (4) I 
Weathering and alteration of rocks and sediments; formation of soils; comprehensive review of effects of climate, vegetation, drainage, topography and time on formation of soils and sediments; comparative survey of soil classification systems. Emphasis on tropical soils. Pre: consent of instructor.

671 Soil and Clay Mineralogy (3) II (2 L, 1 Lb) 
Identification of soil secondary minerals with emphasis on clay. Pre: consent of instructor.

699 Directed Research (arr.) I, II 
Pre: candidacy for M.S. degree; consent of instructor.

704 Soil Science Seminar (1) I, II 
Review of recent findings in soil science research in fields of soil chemistry, physics, classification, fertility, bacteriology, technology. Pre: graduate standing.

799 Directed Research (arr.) I, II 
Pre: candidacy for Ph.D. degree; consent of instructor.

Animal Sciences (AnSc)

Professors Brooks, Hugh, Koshi, Ross, Wayman; Associate Professors Herrick, Miyahara, Nolan, Stanley, Vogt; Lecturer Smith

141 Animals and Man (3) II 
Study of major farm animals and poultry and their contribution to man, origin of species, distribution and economic importance.

241 Feeds and Feeding (3) I (2 L, 1 Lb) 
Basic principles of feeding farm animals; composition and nutritional value of feeds; nutritional requirements of beef cattle, dairy cattle, horses, poultry, swine; balancing rations for specific productive purposes. Pre: Chem 114, 116.

341 Livestock Management Laboratory (3) SS (5 L, Lb for 6 weeks) 
Assigned problems and practical experience in management of livestock; evaluating, feeding, housing beef cattle, dairy cattle, poultry, swine. Recommended for Animal Sciences majors during summer between junior and senior years. May be taken by other students with adequate background. Pre: consent of chairman.
ANIMAL SCIENCES

342 Beef Production (3) II Nolan
World beef production problems, resources and opportunities; selection of breeding stock, principles of handling and feeding on range and in feedlot. Pre: 141.

343 Tropical Dairying (3) II Koshi
Principles involved in economical milk production in the tropics; breeds of dairy cattle, selection, raising young animals; care, housing, management of milking herd; factors affecting quantity and quality of milk produced. Pre: 141.

344 Swine Production (3) I Hugh
Principles of efficient pork production including breeds, breeding, feeding, management, marketing. Pre: 141.

345 Poultry Production (2) II Herrick
Principles involved in economical production of poultry meat and eggs; breeding, feeding, housing, management of different types of poultry. Problems associated with tropical environment emphasized. Pre: 141, 241 or consent of instructor.

346 Horses and Horsemanship (3) I (2 L, 1 Lb) Smith
Origin of species, breeds, nutrition, care, management. Laboratory on management practices with work on light horses.

442-443 Physiology of Domestic Animals (4-4) Yr. (3 L, 1 Lb) Wayman
Organ systems of body, their anatomical arrangement, structure, function. Emphasis on most important species. (Alt. yrs.; not offered 1970-71.)

444 Animal Nutrition (4) II (3 L, 1 Lb) Brooks
Sources, digestion, metabolism, functions, requirements and inter-relationships of nutrients for maintenance and production of domestic animals. Pre: 241, AgBio 402. (Alt. yrs.; offered 1970-71.)

445 Animal Breeding (3) I Vogt
Application of genetic principles to improvement of livestock, including poultry. Pre: Genet 451 or consent of instructor. (Alt. yrs.; not offered 1970-71)

446 Animal Diseases and their Control (3) I (2 L, 1 Lb) Miyahara
Disease problems of livestock and poultry; prevention, control, eradication. Pre: 141, and consent of instructor.

499 Directed Study or Research (arr.) I, II
Limited to exceptional undergraduate students, generally with a 2.7 overall grade-point ratio or 3.0 in major. Exceptions may be granted students with high achievement in last 3 semesters. Pre: consent of instructor.

641 Seminar in Animal Science (1) I, II
Topics of current interest and current research related to nutrition, genetics, physiology. Pre: consent of instructor.

642 Ruminant Nutrition (2) II Stanley
Physiology and nutrition of ruminant, including microbiology of rumen, carbohydrate utilization, production of volatile fatty acids, protein metabolism, absorption of nutrients, metabolic processes, normal and abnormal functions within rumen. Pre: 442-443, 444; AB 402. (Alt. yrs.; offered 1970-71.)

643 Physiology of Reproduction (3) I Wayman
Comparative differentiation, development, growth, function of the reproductive systems of mammals and birds; external factors which influence response; artificial insemination. Pre: 442-443 or equivalent. (Alt. yrs.; offered 1970-71.)
ENTOMOLOGY

645 Quantitative Genetics (3) II (2 L, 1 Lb) Vogt
Concepts relating to genetic properties of populations and to inheritance of

699 Directed Research (arr.) I, II, SS
(1) Genetics—Vogt; (2) Nutrition—Brooks, Ross, Stanley, Palafox; (3) Physio-
logy—Wayman, Herrick; (4) Pathology; (5) Management—Staff.

800 Thesis Research (arr.)

Entomology (Ento)

Senior Professors Bess, Hardy; Professors Mitchell, Namba, Nishida, M. Sherman;
Associate Professors Beardsley, Haramoto, LaPlante, Tamashiro
Assistant Professor Chang

101 General Entomology (4) I, II (2 L, 2 Lb) Hardy, Mitchell
Structure, habits, biology, classification of insects; insects characteristic of

361 Insect Morphology (3) I (2 L-Lb) Namba
Comparative and gross morphology; homologies of structures; anatomy; develop-
ment in representative groups. Pre: 161.

362 Sytstematic Entomology (3) II (2 L-Lb) Hardy
Classification of insects; orders and families. Use of taxonomic tools. Pre: 361.

372 Economic Entomology (4) II (3 L, 1 Lb) Sherman
Insect pests; principles of chemical, biological, cultural control. Laboratories on
Hawaiian insects of households, plants, animals. Pre: 161; Chem 113–114.

399 Directed Research (arr.) I, II
Limited to exceptional undergraduate students qualified to carry on research
problems.

641 Insect Physiology (3) I (2 L, 1 Lb) Chang
Study of the principal physiological and biochemical functions of insects. Pre:
361; Chem 243, 244 or Ag Bio 402–403 or consent of instructor. (Alt. yrs., offered
1970–71.)

661 Medical and Veterinary Entomology (3) I (2 L, 2 Lb) Hardy
Insects and other arthropods in relation to human and animal diseases. Pre: 161,
desirable Zool 340 and Micro 351.

662 Advanced Systematic Entomology (3) II (2 L-Lb)
Principles of systematics; Nomenclatorial problems; international code. Pre: 362.

664 Immature Insects (3) II (2 L, 2 Lb) Beardsley
Identification, structure, literature, economic significance, emphasis on Holometabo-
la. Pre: 362.

671 Insect Ecology (3) II (2 L, 1 Lb) Bess, Nishida
Insects as living units in an environment of physical and biotic factors. Pre: 362,
372; desirable Zool 631, 632. (Alt. yrs.; not offered 1970–71.)

672 Acarology (3) II (2 L, 2 Lb) Haramoto
Taxonomy, biology, ecology of mites. Emphasis on medically and agriculturally
important species. Pre: 362. (Alt. yrs.; not offered 1970–71.)


673 Insect Pathology (3) I (2 L, 1 Lb)  
Diseases of insects; histopathology; microbial agents and biological control.  
Pre: 372.

675 Biological Control of Pests (3) II (2 L, 1 Lb)  

680 Insect Toxicology (4) I (3 L, 1 Lb)  
Mode of action and metabolism of insecticides by insects, plants, and the higher animals. Pre: 372; Chem 243, 244, 245, 246. (Alt. yrs.; not offered 1970-71.)

686 Insect Transmission of Plant Pathogens (3) II (2 L-Lb)  

697 Entomology Seminar (1) I, II  
Current entomological literature. Reviews and reports. Required of graduate students in entomology.

699 Directed Research (arr.) I, II  
Directed research and critical reviews in various fields of entomology.

800 Thesis Research (arr.)

Food Science and Technology (FdSc)

Professors FRANK, MOSER; Associate Professors HING, YAMAMOTO;  
Assistant Professor MOY

301 Food Technology (2) I  
Introduction to field of food technology and survey of commercial food processing.

401 Food Processing (3) II (1 L, 2 Lb)  
Application of principles of canning, freezing, dehydration and chemical preservation to food processing. Laboratories on processing of fruit, vegetables, fish, meat, nuts and bakery products. Pre: Chem 116 and Phys 161 or consent of instructor.

601 Principles in Food Science and Technology (3) II  
Integration of physical, chemical, biological concepts to formulate basic principles in food science and technology; scientific basis of food preservation. Pre: general physics, biochemistry, microbiology. (Alt. yrs.; not offered 1970-71.)

603 Microbiology of Foods (3) I  
Description of micro-organisms encountered in foods; different types of food spoilage; various methods used for food preservation. Pre: Micro 351 and consent of instructor. (Alt. yrs.; offered 1970-71.)

604 Laboratory Methods for Food Microbiology (2) I (2 Lb)  
Laboratory methods for studying food spoilage, its control and prevention. Pre: Micro 351 and consent of instructor. (Alt. yrs.; not offered 1970-71.)
HORTICULTURE

610 Principles of Tropical Food Processing and
Preservation (3) I (2 L, 1 3-Hr Lb) Moy
Engineering principles of processing and preservation; unit operations in dehy·
dration, freezing, freeze-drying, irradiation, thermal processing, chemical preservation
of tropical foods; review of fluid mechanics, heat transfer, psychrometry. Pre: 1
year each of general physics, general chemistry, algebra.

611 Chemistry and Technology of Tropical
Food Products (3) II (2 L, 1 3-Hr Lb) Moy
Physical chemistry of food texture, color, flavor; instrumentation and chemical
analysis of tropical food products; experimental test methods and quality control
in new product development. Pre: consent of instructor.

620 Seminar in Food Science (1) I Frank
Special topics, reports, informal discussion of graduate student research. Pre:
consent of instructor.

640 Food Safety (2) II Yamamoto
Discussion of potential hazards in foods, e.g., natural, bacterial, and fungal
toxins, pesticide residues, food additives, and food irradiation. Practical means for
reducing or eliminating health hazards will also be considered. Pre: consent of
instructor.

699 Directed Research (arr.) I, II Moser
Pre: Consent of department chairman.

701 Seminar in Recent Advances in Food
Research (1) II Frank
Reports and discussions from current literature in food science and technology.

730 Biochemical Aspects of Food Science (3) II Yamamoto
Properties of natural compounds of importance to food processing including
application and control for selected enzyme systems. Pre: consent of instructor.

800 Thesis Research (arr.) I, II Staff

Horticulture (Hort)

Professors Akamine, Brewbaker, Gilbert, Hamilton, Kamemoto, Nakasone,
Sagawa, Warner, Watson; Assistant Professors Criley, Hartmann,
McLain, Murdoch, Nishimoto

101 Plants are for People (2) I (2 L) Watson
Impact of Hawaiian flowers, fruits, trees, shrubs, vegetables to life in tropics
and subtropics. (Not open to agricultural majors.)

262 Principles of Horticulture (4) I, II (3 L, 1 Lb) Criley, Warner
Relationships of plant structures, nutrients, environment, cultural methods to
plant growth. Pre: Bot 101; credit or concurrent registration in Chem 114.

350 Tropical Landscape Horticulture (3) II (2 L, 1 Lb) McLain
Concepts and techniques of landscape plant production, distribution, and utiliza­
tion in the tropics. Pre: 262.

450 Tropical Horticultural Crop Production (4) I (3 L, 1 Lb) Nakasone, Staff
Factors affecting the production of important horticultural crops in Hawaii.
Pre: 262.

318
453 Principles of Plant Breeding (3) II (2 L, 1 Lb) Hartmann, Staff
Application of genetics to crop improvement, breeding methods, breeding of plants in Hawaii. Pre: Genet 451.

471 Post-Harvest Handling (3) II (2 L, 1 Lb) Akamine
Handling and storage of horticultural crops. Pre: 262 or consent of instructor. (Alt. yrs.; not offered 1970–71.)

481 Weed Science (3) I (2 L, 1 Lb) Nishimoto
Weed classification and principles of control. Pre: 262 or Agron 201. (Alt. yrs.; offered 1970–71.)

499 Directed Study (arr.) I, II
Supervised individual instruction in field, laboratory and library. May be repeated. Pre: 262.

603 Experimental Design (3) I (2 L, 1 Lb) Brewbaker
Design of experiments and variance analyses in biological and agricultural research. Pre: Zool 631 or Ag Econ 434 or equivalent. Desirable: Zool 632.

611 Crop Improvement Systems and the Plant Breeding Profession (3) I (2 L, 1 Lb) Gilbert
Recent problems, methods, and organizations involved in the genetic improvement of crop varieties or cultivars. Breeding for disease resistance and other special effects. Pre: 453. (Alt. yrs.; not offered 1970–71.)

615 Advanced Plant Breeding (3) I (3 L) Hartmann
Principles of population and quantitative genetics as applied to increased yield in crop plants. Pre: 453. (Alt. yrs.; offered 1970–71.)

618 Cytogenetics (3) II (2 L, 1 Lb) Sagawa

650 Advanced Vegetable Crops (3) I (2 L, 1 Lb) Gilbert
Recent developments in vegetable technology, crop physiology, cultural methods and vegetable systematics. Pre: 262. (Alt. yrs.; offered 1970–71.)

662 Advanced Tropical Fruit Science (3) II (2 L, 1 Lb) Hamilton
Origin, taxonomic relationships, genetics, breeding, technical aspects of culture of fruit and nut crops commercially important in Hawaii. Pre: 450. (Alt. yrs.; not offered 1970–71.)

664 Orchidology (3) II (2 L, 1 Lb) Kamemoto
Classification, culture, cytogenetics, breeding of orchids. Pre: Bot 101; Genet 451. (Alt. yrs.; offered 1970–71.)

666 Radiation Biology (3) II (2 L, 1 Lb) Brewbaker
Types and sources of radiation; effects of irradiation on living organisms; applications in agricultural research. Pre: consent of instructor. (Alt. yrs.; offered 1970–71.)

667 Horticulture Seminar (1) I, II
Presentation of research reports; reviews of current literature in horticulture.

668 Growth Regulators in Horticulture (2) II (2 L) Criley
669 Laboratory in Plant Growth Regulators (1) II (1 Lb) Criley
Extraction, isolation, identification, and bioassay of endogenous plant growth substances; screening and field testing of chemical substances for growth regulator activity. Pre: Bot 470 and/or consent of instructor.

691 Crop Ecology (3) I (2 L, 1 Lb) Warner
Climatic, edaphic, and biotic factors influencing tropical and subtropical crops; instrumentation and data interpretation. Pre: 202 or consent of instructor. (Alt. yrs.; not offered 1970-71.)

699 Directed Research (arr.) I, II
Pre: consent of instructor.

711 Special Topics in Experimental Horticulture (arr.) I, II
Discussion of recent advances in horticultural research with detailed study of specific areas in this field. Pre: consent of instructor.

800 Thesis Research (arr.) I, II

Plant Pathology (PPath)

Professor Buddenhagen, Associate Professors Aragaki, Holtzmann, Isaiah, Martinez, Meredith, Patil, Trujillo; Assistant Professors Hunter, Ko, Laemmlein

410 Principles of Plant Pathology (4) I (2 L, 2 Lb) Holtzmann
Disease in plants, emphasis upon infection and development in relation to environment; epidemiology; methods of appraisal; control. Pre: Bot 101.

415 Soil Microbiology and Soil-Borne Diseases (3) II (2 L, 1 Lb) Ko
Concepts of soil microorganisms and their relations to crop culture and plant diseases. Pre: Micro 351, Soils 304 and PPath 410; or consent of instructor. (Alt. yrs.; not offered 1970-71.)

499 Directed Research (arr.) I, II, SS
Limited to undergraduate students qualified to carry on research problem in plant pathology. Pre: consent of instructor.

601 Tropical Plant Pathology (3) I (2 L, 1 Lb) Meredith
Diseases of tropical crops and their control, emphasis on phytopathological principles peculiar to plant diseases in the tropics. Includes fungi, bacteria, viruses, mycoplasma, and nematodes. (Alt. yrs.; not offered 1970-71.)

605 Clinical Plant Pathology (2) SS (2 Lb) Martinez
Recognition and familiarization with broad spectrum of tropical plant diseases. Evaluation of disease problems in the field; diagnosis and identification of plant pathogens in the laboratory. Pre: 410 and consent of instructor.

610 Principles of Plant Disease Control (3) II (2 L, 1 Lb) Aragaki
Methodology and application of plant disease control. Pre: 410. (Alt. yrs.; not offered 1970-71.)

615 Plant Nematology (3) II (2 L-Lb) Holtzmann
Collection, classification, morphology, biology, control of nematodes which attack economic crops. Pre: 410; Zool 101, or consent of instructor. (Alt. yrs.; offered 1970-71.)
PLANT PHYSIOLOGY

620 Plant Pathology Techniques (3) I (2 L-Lb) Trujillo
Laboratory and greenhouse methods for study of plant diseases; isolation, culture, inoculation; pathological histology and physiology, photography. Pre: 410, Micro 351; or consent of instructor.

625 Advanced Plant Pathology (2) II Buddenhagen
Analysis of basic concepts of plant diseases; emphasis on evolution and physiology of parasitism, etiology, epidemiological principles. Pre: 410, 610; or consent of instructor. (Alt. yrs.; offered 1970-71.)

630 Plant Virology (3) II (2 L, 1 Lb) Ishii
Plant viruses: diseases caused in economic plants, biological and physical properties. Pre: 410, or consent of instructor. (Alt. yrs., offered 1970-71.)

635 Epidemiology of Plant Diseases (3) I (3 L) Meredith
Epidemics of disease in plant communities; analysis of origin and development of epidemics, and how they are affected by biological and physiological factors. Pre: 410. (Alt. yrs. offered 1970-71.)

660 Seminar (1) I, II
Seminars in contemporary research. Reviews and reports.

699 Directed Research (arr.) I, II
Pre: candidacy for M.S. degree; consent of instructor.

705 Host-Parasite Physiology (3) II (2 L, 1 Lb) Patil
Physiology of disease and interaction between host and pathogen; resistance mechanisms. (Alt. yrs.; not offered 1970-71.)

800 Thesis Research (arr.)

Plant Physiology

Professors Akamine, Clements, Cooil, Friend, Kefferd, S. M. Siegel; Associate Professors Nakata, Putman

For course descriptions, see the following listings under the department of botany.

BOTANY

440 Environmental and Space Biology I (2) I (2 L)

470 Principles of Plant Physiology (4) II (3 L, 1 Lb)

612 Advanced Botanical Problems (arr.) I, II

640 Environmental and Space Biology II (2) I (1 L, 1 Lb) Alt. Yrs.

670 Plant Nutrition and Water Relations (3) I (3 L)

671 Energetics and Biosynthesis in the Plant Kingdom (3) II (3 L)

672 Techniques in Physiology (2) I (2 Lb)

673 Techniques in Physiology-Biochemistry (2) II (2 Lb)

675 Physiology Seminar (1) I, II

699 Directed Research (arr.) I, II

321
The Human Resources Development programs are designed to pro-
vide, through the facilities of the departments and the University, a
liberal education integrating the social and natural sciences, the humani-
ties and the arts, and to provide specialized instruction based upon
these disciplines as preparation for professional careers in which the
interest and well-being of the individual, the family, and the community
are paramount.

As the functions of the family are being shifted increasingly to the
larger community, there are expanded opportunities for related careers
for men and women in educational and social agencies, government,
business and industry, research laboratories, public and private institu-
tions and services.

In addition, the departments offer interdisciplinary courses designed
to serve other professional schools and as electives for members of the
general student body who wish to relate knowledge to social use.

The four departments within this division are:

- Fashion Design, Textiles & Merchandising
- Food and Nutritional Sciences
- Home Economics
- Human Development

Admission and Degree Requirements

Admission requirements are the same as those for the University. To
be entitled to a bachelor's degree a student must:

1. Complete the University's general education requirements;
2. Complete, in addition to the general education requirements, 60
   hours or more of non-introductory courses;
3. Offer the prescribed requirement for one of the curricula in
   Human Resources Development (may overlap 1 and 2);
4. Earn at least a 2.0 grade-point ratio (C average) for all registered
   credits.

Fashion Design, Textiles and Merchandising

The curricula in fashion design and fashion merchandising leads to
careers in business and industry.

The Fashion Design option offers qualified students the opportunity to
prepare for positions as designers, assistant designers, stylists, or fashion
executives. Starting positions are sample makers, graders, and pattern
makers.

The Fashion Merchandising option offers qualified students the
opportunity to prepare for fashion careers with retail and wholesale
organizations in buying, merchandising, fashion coordination, publicity, sales or marketing.

Within the established curricula of both options there is an opportunity to participate in field experience in business and industry.

A semester or a year in New York at the Fashion Institute of Technology may be arranged during the junior year for students in both options.

**FASHION DESIGN (FDM)**

**FIRST YEAR**

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**SECOND YEAR**

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**THIRD YEAR**

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S.S.—FDM 329, Field Experience, 2 cr. (optional)

**FOURTH YEAR**

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*See University requirements for bachelor's degrees. 60 credits in non-introductory courses required for graduation. 125 credits required for graduation.
# Fashion Merchandising (FDM)

## First Year

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## Second Year

### Second Semester

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### First Semester

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### Second Semester

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*See University requirements for bachelor's degrees.
60 credits in non-introductory courses required for graduation.
125 credits required for graduation.
Fashion Design, Textiles and Merchandising (FDM)

Associate Professors TROXELL, UMBEL; Assistant Professors FURER, HERRICK, WALKER; Lecturer AIKMAN; Assistant Professor McOMBER

111 Esthetics of Clothing (3) I, II (2 L, 1 Lb) Herrick
Factors involved in clothing selection. Principles of line, color, design for individual figures. Consumer buying of wardrobes. Open to freshmen and sophomore women.

113 Basic Clothing Construction (3) I, II (2 L, 1 Lb) Staff
Principles of basic techniques for garment construction in various types of textiles. Pre: 111 or consent of instructor.

125 Fashion Analysis (3) I, II (2 L, 1 Lb)
Dynamics of fashion; environmental factors influencing fashion demand; analysis of trends. History, structure and terminology of the fashion industry.

213 Textiles (3) I, II (2 L, 1 Lb) Walker
Fibers, yarns, fabric construction, finishes related to selection, use, care of textiles.

215 Block Pattern Designing (3) I (3 L) Umbel
Principles of pattern making for women's apparel through manipulation of quarter size pattern blocks. Pre: 113.

216 Fashion Design & Sketching (3) I, II (2 L, 1 Lb) Aikman
Development of apparel design through sketching the fashion figure. Pre: 111.

315 Draping (3) I (3-2 Hr L-Lb) Umbel
Principles of pattern making through draping muslin models on professional dress forms. Pre: 215.

316 Advanced Pattern Designing (3) II (2-3 Hr-Lb) Furer

324 Fashion Careers (1) II (1 L) Troxell
Preparation for fashion design and merchandising field work and career placement; analysis of personal qualifications, survey of job markets, preparation of resumes, directing of employment interviews, employment decision-making. FDM juniors and seniors only.

327 Fashion Merchandising (3) I, II (3 L) Troxell
Major considerations involved in buying and selling fashion merchandise. Organization for merchandising, sources of buying information, merchandising policies, resident buying offices, centralized buying and merchandising. Pre: 125, Mkt. 300.

328 Fashion Merchandise Planning & Control (3) II (2 L, 1 Lb) Troxell

329 Field Experience (2) S.S. Troxell, Furer
Eight weeks' full time supervised internship in the fashion industry; comprehensive terminal report required. Pre: consent of instructor.

401 Man and Clothing (3) I (1 L, 1 Lb) Walker
Sociological and psychological implications of clothing and adornment for the individual and society, as seen in historic and contemporary perspective. Discussion and readings. Pre: 6 cr. Soc. or Psy.

403 Case Studies in Fashion Merchandising (3) I (3 L-Lb) Troxell
Analysis of the decision-making utilized in arriving at solutions to typical fashion merchandising problems. Student analyses and presentations of true cases involving the weighing of factual data, disciplined thinking and arriving at rational conclusions. Pre: 327, 328.
FOOD AND NUTRITIONAL SCIENCES

415 Advanced Materials and Methods for Clothing Construction
(3) I, II (2 L, 1 Lb)  Staff
Principles of advanced techniques for garment construction with emphasis on difficult to handle fabrics. Student demonstrations are required in the course. Pre: 113 or consent of instructor.

416 Costumes of Northeast Asia (3) II (3 L)  Umbel
Historical development and characteristic features of traditional and folk costumes and fabrics of China, Vietnam, Korea, Japan, Okinawa. Relation to customs and culture; impact of Western influence on contemporary dress. Pre: Hist 151-152. (FDM 216—F.D. Majors only) (Not offered 1970-71.)

417 Costumes of the Western World (3) I (3 L)  Furer
Chronological study of costume as related to culture and customs in its historical and contemporary contexts. Pre: Hist 151-152 (FDM 216—F.D. majors only)

418 Costumes of South and Southeast Asia (3) I (3 L)  Umbel
Historical development and characteristic features of traditional and folk costumes and fabrics of India, Pakistan, Thailand, Cambodia, Malaysia, Indonesia, the Philippines. Relation to customs and culture; impact of Western influence on contemporary dress. Pre: Hist 151-152 (FDM 216—F.D. Majors only)

419-420 Apparel Design Studio (4-4) Yr. (2-4 Hr L-Lb)  Furer

425 Fashion Sales Promotion (3) II (3 L)
Principles and procedures in promoting the sale of fashion merchandise. Comprehensive analysis of fashion advertisements, displays, publicity and other sales presentations of retail and manufacturing firms. Pre: 125, 327.

499 Directed Reading & Research (arr.) I, II  Herrick

Food and Nutritional Sciences

The curriculum in Food and Nutritional Sciences is designed to prepare men and women for new and expanding opportunities arising from national and international concern for human nutritional welfare. The diversified programs (options) offered are briefly described. All meet the University core requirements:

1. Nutrition Research option: This option combines study in a large number of related natural science courses in preparation for positions in research or graduate study.

2. Community Nutrition option: This option, together with the natural and social science courses, helps the student to develop skills in communication. It prepares the graduate to interpret nutrition principles for guidance and informal instruction. This program meets the minimum academic requirements for American Dietetic Association (ADA) membership. A limited number of internships are available. The student may wish to do graduate study upon completion of this program.

3. Therapeutic Dietetics option: This option meets the minimum academic requirements of the ADA for a therapeutic dietetics intern-
ship. The student will be trained to design special diets for patients with various disease conditions.

4. **Foods in Industry and Research option**: This option is designed for training technicians and scientists in areas of foods research, product development, evaluation, quality control, etc. The student may wish to go on to graduate work.

5. **Consumer Services in Foods option**: This option prepares the student for positions in commercial foods, consumer relations, product promotion, and publicity. Persons with knowledge of many aspects of the food industry, combined with talent for communicating by various media, are sought by magazines, newspapers, radio-TV, other food related businesses, and government agencies.

6. **Food Service Management option**: This option meets the minimum academic requirements of the ADA for administrative internships. The students are trained for administrative positions in restaurants, industry dining rooms, university or hospital food services, etc.

All students majoring in Food and Nutritional Sciences will take the core courses and courses in one of the options. Electives will be selected to accumulate a minimum total of 130 credits for graduation.

Core Courses for all Food and Nutrition Majors: Chem 113, 114, 115, 116, 241, 242; Eng 100; Math 134; Hist 151, 152; Sp 145; FN 285; Micro 130, 140; HPE; Biol 220; Humanities (3 semester courses distributed among 2 or more of the 3 groups. Some courses in the Options also satisfy this requirement.); Social Sciences (3 semester courses, including at least one semester course from each of 2 groups. Some courses in the Options also satisfy this requirement.); Psy 100.

(a) **Nutrition Research option**: Math 205, 206; Phys 170, 171, 272, 273; Ag Bio 402, 402L; Soc Sc 301, 302; FN 476, 485, 486, 490, 499; Biol 250; Chem 133, 134, 351; Ag Ec 434; IS 132; Physl 301. Suggested electives: Eng 310, MT 458, FN 477, and GE 251.

(b) **Community Nutrition option**: Econ 120; Rel 150; Psy 113 or Ag Ec 434; Anth 200; FN 275 (or FSA 181), 476, 477, 485, 486, 490, 499; Ag Bio 402, 402L; IS 132; FSA 281; Ed EP 311; Ed CI 312; HD 343, 345; HE 357; Physl 301; Chem 133, 134. The student must select one of the following courses as an elective: HD 332, 341, 342, 430, or 441. Suggested electives: Ed EC 314, Sp 203 (Pre: SP 101), 362, Psy 320, Journ 325. This program meets the minimum academic requirements for ADA membership.

(c) **Therapeutic Dietetics option**: Art 101; Econ 120; FN 275, 376, 476, 485, 486, 490; Acc 201, 202; Zool 202; FSA 281, 383, 384, 482, 483; HD 345; Mgt 300; Ed Psy 311; Physl 301; PIR 300; Ag Bio 402, 402L or Bio-
FOOD AND NUTRITIONAL SCIENCES

chem 441, 442. This option meets the minimum academic requirements of the ADA for therapeutic dietetics internships.

(d) **Foods in Industry and Research option:** Art 101; Math 205, 206; Chem 133, 134; FN 275 (or FSA 181), 376, 476, 477, 492, 499; IS 132; Anth 200; Econ 120; Phys 170, 171, 272, 273; Ag Ec 434; Fd Sc 301; HE 357; Mkt 300; FSA 281; Chem 351. Suggested electives: Soc 201; Eng 310; Mkt 315, 331, 341, 381; Chem 352; GE 251.

(e) **Consumer Services in Foods option:** Art 101, 107; Chem 133, 134; FN 275 (or FSA 181), 375 (or FSA 281), 376, 476, 477, 492, 499; Econ 120; Anth 200; Phys 100, 101; IS 132; Soc 151; Ag Ec 434 or Psy 113; Fd Sc 301; Sp 362; HE 357; Mkt 300, one of the following: Mkt 315, 331, 341 or 381; Rel 150; Journ 111, 325. Suggested electives: Art 265–266, Ed EC 314.

(f) **Food Service Management option:** Art 101; FSA 181, 281, 283, 381, 383, 384, 482, 483; Acc 201, 202, 301; Econ 150; Mgt 300, 341; FN 376, 476; Bus Stat 301; PIR 300; Phys 301; Bus Law 300; Bus. Finance 300. This program meets the minimum academic requirements of the ADA for business administration internships.

**Food and Nutritional Sciences (FN)**

*Professors Lichton, Van Reen; Associate Professors Hilker, Standal, Young; Assistant Professors Ching, Hovchkin, Maretzki, Weddle, Wenkam, Instructors Hillier, Wagcott*

275 **Principles of Food Preparation (3) I, II (2 L, 2 Lb)** Weddle
Scientific principles underlying preparation of foods to yield products of standard quality.

285 **Introduction to Human Nutrition (3) I, II (3 L, 1 Lb)** Maretzki
Study of nutrition as a socio-biological science. Basic principles of normal nutrition with emphasis upon the application of these principles.

375 **Meal Management (4) I (2 L, 2 Lb)** Weddle
Planning and preparation of a nutritionally-balanced diet using a variety of food patterns. Consideration of time, energy, money, esthetics and etiquette. Advanced registration required. Pre: 275.

376 **Advanced Foods (3) II (2 L, 2 Lb)** Weddle
Comparative food studies with emphasis on physical and chemical variables. Pre: 275, Chem 113–114.

385 **Principles of Human Nutrition in Health and Disease (3) II (3 L)** Maretzki

476 **Cultural Aspects of Food (3) II (3 L)** Wenkam
Cultural, socio-psychological influences on food habits. Problems in changing food habits examined in terms of social and behavioral sciences.

477 **Food Composition (3) I (1 L, 2 Lb)** Wenkam
Proximate analyses of foods and their interpretation. Pre: Math 134 and Chem 133, 134, or equivalent; consent of instructor.

328
485-486 Advanced Human Nutrition (3-3) I, II (Yr.) Lichton
Biochemistry and physiology of nutrition; fundamental concepts of human nutrition. Pre: Ag Bio 402 or Bioch 441; FN 285 or 385; Physl 301; or equivalents.

490 Diet and Disease (3) II (2 L, 1 Lb) Maretzki
Modifications of normal diet for use in therapeutic conditions. Physiological bases for modifications. Field trips. Pre: 285 or 385; Ag Bio 402 or Bioch 441.

492 Product Evaluation (3) I (2 L, 1 Lb) Maretzki
Product evaluation as a tool in the development of food products from concept to consumer. Psycho-physical scaling, laboratory difference tests, descriptive analysis of food attributes of odor, flavor, color, and texture, correlation of subjective and objective test methods, consumer testing, and market research techniques. Pre: Basic psychology, statistics; consent of instructor.

499 Directed Reading and Research (arr.) I, II Staff

GRADUATE COURSES IN NUTRITION (Nutr)

676 Nutritional and Metabolic Diseases (2) II (2 L) Lichton
Survey of disease mechanisms in undernutrition, overnutrition, malabsorption, fluid imbalances; selected examples of disorders, or inborn errors of metabolism. Pre: 485-486 or consent of instructor.

677 Nutrition in Reproduction, Growth and Development (3) I (3 L) Standal
Nutritional requirements as altered by physiological stresses of pregnancy and periods of growth; emphasis on mechanisms. Pre: 485-486 or equivalent.

678 Nutrition in Aging (2) II (2 L) Hilker
Special nutritional considerations respecting geriatric population; nutrition and longevity. Pre: 485-486 or equivalent.

680 Research Methods in Nutrition (3) II Young
Lecture-laboratory demonstrating principles and applications of instrumentation and animal-handling techniques in nutrition research. Pre: consent of instructor.

681 Seminar (1) I Van Reen
Student presentations of literature reviews and research. Pre: consent of instructor. May be repeated.

682 Nutritional Status (3) II (1 L, 2 Lb) Standal
Nutrition survey techniques including biochemical assessment of nutritional status in man. Pre: 485-486 or consent of instructor.

684 Lipids in Health and Disease (2) I (2 L) Young
Lipid metabolism and nutrition with particular emphasis on cardiovascular diseases. Pre: 485-486 or consent of instructor.

685-686 Advanced Human Nutrition (1-1) I, II (Yr.) Lichton
Biochemistry and physiology of nutrition in relation to metabolism and function; fundamental concepts and applications of nutrition. Lecture-conference for graduate students registered concurrently in 485-486.

699 Directed Reading and Research (arr.) I, II Staff

800 Thesis (arr.) I, II Staff

Food Service Administration (FSA)

181 Basic Principles of Quantity Food Service Management (3) I, II (1 L, 2 Lb) Ching
Introduction to fundamentals of basic food preparation, stressing interrelationship of physical, biological, chemical changes in food caused by heat application.
HOME ECONOMICS

281 Quantity Food Production (3) I, II (2 L, 1 Lb) Hotchklin
Principles of menu planning, production control, work methods analysis, employee training, preparation techniques, elementary food cost controls, quality analysis of food processed in quantity. Pre: 181.

283 Classical Food and Beverage Management (3) I, II Hotchklin
Study of classical beverages; production characteristics in relation to food service planning and classical cuisine. Lab experience with gourmet and ethnic cookery. Pre: 281.

381 Food Cost Accounting (2) I Waggott
Accounting principles applied to food service operations, systems and controls, with emphasis on interpretation of financial statements. Budgeting and control of food, beverage and labor costs. Pre: Acc 201-202.

383 Selection and Procurement of Food and Supplies (3) I, II Waggott

384 Food Facilities System Planning (3) II Hotchklin
Analysis of work methods using time and motion study. Layout, design, procurement of furnishings for dining and kitchen facilities and auxiliary space. Pre: 383.

482 Seminar in Food Service Operation Problems (3) II Staff
Scientific methods of problem-solving and decision-making in analysis of case problems in public food service organizations. Senior standing in major field or consent of instructor.

483 Field Experience in Institutional Management (0-3) I, II Staff
Organized on-the-job learning experience in institutional food service supervised by employer and coordinating instructor.

484 Food Merchandising (3) I, II (2 L, 1 Lb) Staff
Principles of menu planning, interior lighting effects and atmosphere as it relates to food. Plate arrangement and size, garnishment, basic photographic principles, art skills as they relate to color combinations. Floral arranging, draping, etc., and basic printing information for menu layout. Pre: 281, or FN 375, or 376.

499 Directed Reading and Research (arr.) I, II Staff

699 Directed Reading and Research (arr.) I, II Staff

Home Economics

Students who select an option in this department may choose one of several educational approaches in which a knowledge of family life in our society and a general home economics background prepares them for teaching persons of various age levels in different organizations and agencies.

Option I. Preparation to meet certification requirements for teaching home economics in the secondary school. This option requires transfer to the College of Education beginning with the junior year with a GPA of 2.5. Bachelor of Education Degree—130 credits.

Option II. Preparation for home economics positions with the Cooperative Extension Service.

Option III. Preparation for positions in consumer services relating to housing, equipment, foods and clothing and textiles.
Option IV. Preparation for positions in community service organizations.

Requirements for options II, III & IV are worked out for each student in consultation with an advisor after careful exploration of the student’s aptitudes, interests and professional goals.

**OPTION I**

**HOME ECONOMICS EDUCATION: SECONDARY SCHOOL TEACHING**

**FIRST YEAR**

<table>
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**SECOND YEAR**

| *Zool 101            | 4       | *Phys 100       | 3       |
| *Eng 251 or 253 or 255 | 3     | Phys 101       | 1       |
| *Hist 151 or 161 or 351 | 3     | FDM 213       | 3       |
| *Anthro 150 or 200   | 3       | *Eng 252 or 254 or 256 | 3 |
| HD 231               | 3       | *Hist 152 or 162 or 352 | 3 |
| *Soc 151 or 201      | 3       | **Total**       | 16      |

**THIRD YEAR**

| HE 255               | 3       | HE 253          | 3       |
| FN 375               | 4       | HE 251          | 3       |
| *Micro 130           | 3       | Ed CI 312       | 3       |
| *Micro 140           | 1       | HE 357          | 3       |
| Ed EP 310            | 3       | Ed CI 371       | 3       |
| Ed EP 311            | 3       | Elective        | 3       |
| Elective             | 1       | **Total**       | 18      |

**FOURTH YEAR**

| HE 359               | 3       | Ed CI 390       | 12      |
| HD 341               | 3       | **Total**       | 12      |
| FN 285               | 3       | Elective (FDM)  | 3       |
| Elective             | 6       | **Total**       | 18      |

*UH Core
HUMAN DEVELOPMENT

Home Economics (HE)

Lecturer KIMURA

251 Household Equipment (3) I, II
Selection, optimum use, upkeep of household equipment. Emphasis on design, construction, materials, consumer use.

253 Management of Family Resources (3) I, II
Kimura
Management problems and processes involving human and material resources important for the effective functioning of the family. Emphasis on decision-making as affected by family variables including goals, values, resources, and general economic conditions.

255 Family Housing and Home Furnishings (3) I, II
Kimura
Socio-psychological, economical, legal, cultural and aesthetic factors involved in housing today's family. Selection, arrangement and coordination of furnishings, backgrounds, accessories, color and lighting for family living.

257 Family Economics (3) I, II
Staff
Role of family as consumer unit in the economy. Pre: Econ 150.

259 Home Management Seminar (3) I, II
Kimura
Readings, group discussion and application of managerial concepts such as decision-making, resource allocation and work simplification as they relate to the students' living situation and families in the community. Experiences in group decision making. Pre: 253.

461 Management of Personal and Family Finances (3) I
Staff
Application of management principles to major financial alternatives. Role of decision-making in financial management. Relationship of financial decisions to life cycle of individual and family.

475 Field Experience in Home Economics (3) I, II
Staff
Field experience carried out in connection with Cooperative Extension Service and other community projects dealing with family living. Readings, conferences, reports required. Pre: consent of instructor.

499 Directed Reading and Research (arr.) I, II
Staff

699 Directed Reading and Research (arr.) I, II
Staff

Human Development (HD)

Human development is the study of human behavior over the life span in existing life situations. The focus is upon three interrelated types of phenomena; the physical and psychological changes of the human organism, the interpersonal roles and relationships within the family and the operation of the family within the larger social structure. The processes and consequences of the interaction among these components make up the major foci of the field. Students may satisfy degree requirements in human development with emphasis on either Child Development or Family and Community Service. The child development option orients the students toward work with preschool children and their parents in group centers. Family and community service orients the students toward adult education, college student personnel, business, and work in various types of community agencies. Admission to upper division major status requires a minimum grade-point average of 2.0, successful completion of HD 231-232 and HD 341, and interview with the depart-
mental Faculty-Student Council. It is the purpose of the council to ensure that applicants fully understand the objectives of the department as well as the nature and scope of required academic and practical work.

Students wishing to be considered for admission should apply through the department chairman. Freshmen may be admitted provisionally to the department and are encouraged to take part in its affairs. Others should apply as early as possible in their sophomore year. Those applying after the beginning of the Fall semester in their junior year may need to attend an additional semester.

Professors Chantiny, Kraemer, Lampard, Weeks; Associate Professors Allen, Lenzner; Assistant Professors Meredith, Schwitters

207 Shifting Sex-Roles in Contemporary Societies (3) I, II
Biological and cultural bases of sex-role differentiation; political, economic, and professional implications; influence on self-concept.

231 Introduction to Human Development (3) I Schwitters, Meredith
Principles of development from conception to puberty. Emphasis on impact of family interaction; practical and social implications of existing knowledge from behavioral sciences. Observation of situations involving children.

232 Introduction to Human Development (3) II Schwitters, Meredith, Lenzner
Principles of development from puberty to death. Focus on the interrelation of physical, cognitive, and social-emotional aspects of the individual. Observations of situations involving older adults. HD 231 and HD 232 need not be taken in sequence.

332 Cultural Aspects of Child Rearing (3) II Staff
Cultural context of socialization; class and ethnic differentials. Cultural influences on individual and family, on child rearing practices and personality development. Pre: Anthro 200.

334 Group Work with Children (3) II Schwitters

341-342 Family Relationships (3-3) I, II (Yr.) Lampard
Study of courtship, marriage, and family relationships in the modern setting. Role confusion and conflict. Freedom and authority, and value of the family to the individual will be explored. (341 and consent of instructor are pre-requisite for 342.)

343 Human Needs and Community Resources (3) I, II
Cross-cultural and historical study of organization and implementation of community wide programs for meeting family needs. Role of individual and family in coordination of home and community resources. Pre: Soc 151 or 201.

345 Group Leadership (3) I, II Allen
Sociological and psychological concepts pertaining to individual motivation and internal and external group forces. Application of group techniques to planning and conducting activities related to human resources development.

430 Work with Parents (3) II Chantiny
Study of parental behavior as function of individual personality and cultural and social context. Interpretation of research in behavioral sciences with view to policy and practices of working with parents. Field experience with parent groups in local community. Pre: senior standing and consent of instructor.
HAWAII AGRICULTURAL EXPERIMENT STATION

431–432 Preschool Practicum (4-4) I, II (Yr.) Schwitters

Application of child development principles to early childhood education. Students will arrange morning hours 2 days each week for participation in preschool. Pre: consent of instructor.

441 Adolescence and Youth in Family and Community (3) I Kraemer

Multidisciplinary study of adolescence as stage of development within family life cycle.

442 Community Action (3) II Allen

Community analysis, mobilization, organization of human and community resources for social action. Focus on improvement of family living. Field studies. Pre: 343, 345.

444 Male-Female Subcultures (2) II Kraemer

Interdisciplinary approach to study of male and female roles in family and society. Consideration given to cross cultural variation and to impact of social change.

449 Field Experience in Human Development (0-3) I, II Allen

Application of human development principles emphasizing group participation and leadership development. Student internship(s) required. Assignments made in a variety of organizations and agencies by departmental field work coordinator. Emphasis is on learning through experience in association with professionals in the community. Repeatable for credit.

499 Directed Reading and Research (arr.) I, II Chantiny

641 Seminar in Human Development, Family Relationships (3) I, II Chantiny

Review and analysis of literature related to human development and interpersonal relationships within family. Projects carried out according to group interests. May be repeated for credit or may be followed by 699.

699 Directed Reading and Research (arr.) I, II Chantiny

HAWAII AGRICULTURAL EXPERIMENT STATION

The facilities of the station, including the research staff, the field laboratory, and the Agricultural Engineering Institute, are available in part for undergraduate and graduate instruction. Students are able to study the latest methods and results of agricultural research. Close collaboration is maintained with the stations of the Hawaiian Sugar Planters' Association and the Pineapple Research Institute of Hawaii.

The function of the station is "to promote scientific investigation and experiments respecting the principles and applications of agricultural science" (Hatch Act of 1887). Investigations cover the physiology of plants and animals; diseases, insects, and parasites; agronomy, soils, food science, food processing, agricultural engineering, biochemistry, human and animal nutrition; breeding and genetics; as well as other research in culture, production, and marketing.

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Facilities for carrying on this work are provided by the headquarters offices and laboratories located on the University campus; by research farms at Poamoho and Waimanalo, Oahu; and by branch stations on the neighbor islands with attached laboratories and experimental farms. These include the Kona Branch Station; the East Hawaii Branch Station with farms at Malama-Ki, Kulani, Waiakea, Volcano, and Hamakua and Waimea; the Maui Branch Station with the Haleakala Station; the Kauai Branch Station. Modern research facilities for poultry and animals are available at the Animal Research Center at Waialee, Oahu.

COOPERATIVE EXTENSION SERVICE IN AGRICULTURE AND HUMAN RESOURCES DEVELOPMENT

This program, conducted jointly by the College and the United States Department of Agriculture, is devoted to the advancement of agriculture in Hawaii and to the improvement of family living.

The Cooperative Extension Service maintains personal contacts with the rural and urban population through its field staff of county extension agents and county home economists, with the help of the specialists at the state headquarters on the University campus. The county staff operates out of offices located as follows:


Improved farm and home practices are taught by means of practical demonstrations before University extension clubs of men and women, commodity groups, special interest groups, and 4-H clubs of boys and girls. This group instruction in supplemented by farm and home visits and mass media communications. Each year various extension short courses and 4-H events are held on the University campus.

An important phase of extension work is to demonstrate in a practical manner the results of scientific experiments conducted by the Hawaii Agricultural Experiment Station, by state stations, and by the USDA.
Graduate Division

The Graduate Division provides opportunities for further study, research, and professional training to students who have earned a bachelor’s degree from an accredited institution of higher learning. The graduate program is not, however, merely an extension of work at the undergraduate level. More rigorous academic standards are applied and a greater degree of independence in the pursuit of knowledge is required. Special emphasis is placed on the cultivation of scholarly attitudes and methods of research.

The University offers graduate work leading to:

(1) The doctor of philosophy in agricultural economics, American studies, anthropology, Asian languages (Japanese), astronomy, biochemistry, biophysics, botany, chemistry, drama and theatre, economics, educational psychology, electrical engineering, entomology, genetics, geography, geosciences, history, horticulture, linguistics, microbiology, oceanography, pharmacology, philosophy (Western, Asian, and comparative), physics, physiology, political science, psychology, sociology, agronomy and soil science, and zoology.

(2) The master's degree in agricultural economics, agricultural engineering, agronomy, American studies, anatomy, animal sciences, anthropology, architecture, art, Asian languages (Japanese, Chinese), Asian studies, astronomy, biochemistry, biophysics, botany, business administration, chemistry, civil engineering, classics, drama and theatre, economics, educational administration, educational communications, educational foundations, educational psychology, electrical engineering, elementary education, English, entomology, food science, French, genetics, geography, geosciences, German, history, horticulture, information sciences, library studies, linguistics, mathematics, mechanical engineering, microbiology, music, nursing, nutrition, ocean engineering, oceanography, Pacific islands studies, pharmacology, philosophy, physics, physiology, plant pathology, political science, psychol-
ogy, public health, secondary education, social work, sociology, soil science, Spanish, speech-communication, speech pathology and audiology, teaching of English as a second language and zoology.

(3) The professional certificate for teachers in the employ of the state Department of Education. (See "College of Education.")

Students may likewise earn graduate credit at the University for transfer to other institutions.

To obtain the 1970-71 issue of the Graduate Bulletin, send your order and payment in coin or money order (40¢ surface mail, $1.00 airmail to Canada and the U.S.; to all other countries, 25¢ plus sufficient postal coupons to cover airmail cost of 6-ounce catalog) to: University Bookstore, 1760 Donaghho Road, University of Hawaii, Honolulu 96822. Available after June 1970.

*For these programs see the Graduate Bulletin or bulletins of the respective schools.
School of Library Studies

The Graduate School of Library Studies exists to prepare professional personnel for academic, public, school and special libraries, and to promote library service in general through research and field study. The School was established in 1965 and was accredited by the American Library Association in 1967.

Academic and placement advising is available in the office of the dean.

Requirements for Admission*

1. Graduation from an approved institution of higher learning with a bachelor's degree representing a broad cultural background plus a field of specialization.

2. Evidence in the college record of above-average scholastic ability and promise for successful graduate study, usually shown by graduation with a B average, or by a Graduate Record Examination Aptitude Test score to 500 in both parts of the test.

3. Ability to read at least one modern foreign language.

4. Evidence of professional promise as shown by reference reports and/or personal interviews.

Students may be admitted to the Graduate School of Library Studies as Regular Students, Probational Students, or Special Students, depending on qualifications, background, and purpose.

Requirements for the Degree. 30 to 36 credit hours of approved graduate study, depending upon previous education and library service, are required for the M.L.S. degree. The maximum course load is 15 credit hours per term, and 36 hours would therefore require two terms and a summer on a full-time basis. The program may be undertaken on a part-time schedule with the expectation that it will normally be completed within a two- to three-year period.

*For application forms or for more information write to: The Graduate School of Library Studies, University of Hawaii, Honolulu, Hawaii 96822.

338
Master of Library Studies Program. 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. The normal basic curriculum includes the following courses, to be taken generally in the order given: 610, 601, 605, 678, 647, 602, 650, 615. School librarians, in addition, will take 681, 682, and 683.

Academic Advisory Service. The office of the dean provides academic advice and placement counseling.

Library Studies (LS)

Professors Adams, Ayrault, DeAngelo, Nunn, Schofield, Stevens, Suzuki, Vann, West; Associate Professors Haas, Harris, Kanner; Lecturers Fristoe, Hunt, Kamida, Kane, McAlister, Myers, Saito, Tsui, Wheelwright

601 Bibliography and Reference Sources (3) Kanner, Tsui
   Analysis of means by which availability and content of graphic materials recorded; characteristics and problems of national and subject bibliography; function of librarian as bibliographer. Introduction to materials and methods for locating information in general reference sets, specific fact sources, periodical indexes, abstract series; analytical and searching procedures for simple inquiries.

602 Advanced Reference Sources (3) Kanner, Saito
   Continued discussion of various types of general reference tools. Introduction to subject approach in reference work through three major areas: sciences, social sciences, humanities. Each area analyzed in terms of characteristics of literature and of typical problems and methods of reference work; major works in each area studied as examples. Pre: 601.

605 Basic Cataloging and Classification (3) Ayrault, McAlister, Kamida
   Introduction to cataloging in research or large general library, terminal course in cataloging for school or small popular library. Principles and practice of descriptive cataloging, structure, application of Dewey Decimal Classification and Sears' List of Subject Headings; use of printed cards.

606 Advanced Cataloging and Classification (3) Ayrault
   Continue 605, using especially Library of Congress scheme to illustrate principles and practices of organization of materials and subject analysis in research and large general libraries. Considers problems peculiar to handling of certain forms of materials; provides opportunity for study of cataloging in collections specialized by subject. Pre: 605.

610 Social Functions of Libraries (3) Adams, Vann, West
   Introduction to librarianship: librarianship as a profession, history of books and libraries, survey of current programs and trends in American libraries, international aspects of librarianship.

615 Building Library Collections (3) Suzuki
   Criteria for evaluating and selecting library materials, devising and maintaining acquisition program, structure of book trade. Findings of studies of library use drawn upon where applicable.

618 Government Documents (3)
   Sources, types, uses of government documents, both state and federal; their acquisition and organization for use.
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regional, and state levels; impact of changes in curriculum and instruction on media centers; innovative and expanded collections of materials required to support changes surveyed and new or modified personnel requirements and new administrative approaches to service are analyzed and discussed.

685 Traditional Literature and Oral Narration (3) DeAngelo
   Analysis and evaluation of traditional literature of various countries emphasizing the Pacific Ocean area and Asia with attention to values and use as source material for storytelling. Instruction and practice in the selection, adaptation, and presentation of stories.

693 Special Topics in Librarianship (3)
   Course will reflect interests of visiting and permanent faculty and will concentrate on one major topic of current interest such as comparative librarianship, international librarianship, library service to disadvantaged, or library and information networks.

696 Field Seminar (3)
   Honors course which may be taken at end of professional program of study. Students in small groups apply all principles learned to analysis of their field experience. Designed to promote understanding of total library programs, and functions and inter-relations of its services. Serves as practice teaching course for school librarians.

701 Administration of Libraries in Asia (3) Nunn
   Governmental and fiscal policies and programs, personnel administration, policy making, buildings and equipment for libraries in Asian countries.

705 Asian Reference Sources (3) Nunn
   Bibliographical and reference tools and services in Asian countries with special attention to source materials in other than Western languages.

706 Technical Services for Far Eastern Collections (3) Suzuki

715 Seminar in Library Development (3) Nunn
   Each student will prepare report on state of development of library service in a particular country and will outline a program for library development to provide an optimum scheme for library services on all levels in that country. He will submit this plan with budget, personnel requirements, a scheme of feasible priorities for achieving the library program proposed. This will be subjected to class discussion, after which he will submit a revised plan.

716 International Publishing and Bibliography (3) Vann
   Survey of the problems of selecting and acquiring foreign materials for the collections of American and Asian libraries. Covers publishing programs of international organizations, such as the United Nations, international agreements affecting the acquisitions programs of libraries. Surveys the publishing and bookselling programs of various countries (excluding Britain, Canada, and the U.S.). Examines selected representative bibliographic sources of various countries.
THE DIVISION OF CONTINUING EDUCATION AND COMMUNITY SERVICE (formerly College of General Studies), established in 1956, is primarily concerned with meeting the continuing education needs of individuals and groups in the state. Programs designed for this purpose include conferences, institutes, informal courses, lyceums, lectures, and educational experiences designed for particular purposes or groups. These continuing education programs are available to all interested adults.

The Division also provides educational opportunities for students who cannot because of time or distance attend courses regularly scheduled on campus. Degree credit courses for these persons are scheduled in the evening on campus and at various other places and times on Oahu and the other islands. Such courses are open to all students who have been regularly admitted to the University.

In addition the Division administers the academic affairs of students who have been admitted to the University, but are not candidates for a degree at this institution. These students may attend full or part time in the day or evening. Inasmuch as they have no required program of study, such students have great latitude in the selection of their courses. They must, however, comply with other requirements and regulations of the University and must have completed any prerequisites required for the courses they choose.

The activities of the Division are organized under four major programs:

Courses and Curricula

To serve groups of students with varying needs and backgrounds, times, schedules, and formats of courses are similarly varied.

Credit Courses. A group of basic courses, including the general education courses required by all degree curricula, are offered both on and off campus. Advanced courses are offered when needed by a substantial number of evening students. Admission is governed by general University requirements, and regular residence credit is given, including graduate credit where applicable.
On-campus accelerated evening courses are scheduled four times a year. Off-campus accelerated programs are also offered four times a year at Fort Shafter, Hickam Air Force Base, Pearl Harbor Shipyard, Wheeler Air Force Base, and other off-campus locations.

To serve the needs of teachers, another program of courses is scheduled each fall and spring semester at public schools on Oahu, Hawaii, Maui, Kauai, Molokai, and Lanai. Advanced education courses and courses designed to upgrade the teachers' subject-area competence are offered. On Oahu these classes usually meet in the late afternoon; on other islands, they often meet on weekends with faculty members commuting from the Manoa campus.

In addition to its program within the state, the Division operates overseas centers at Kwajalein, Midway, and Wake Island. Selected courses, credit and non-credit, are given in an effort to meet the needs of personnel, both military and civilian, stationed in these areas.

Non-Credit Courses. Short courses covering selected college-level material in art, business, English, engineering, foreign languages, mathematics, general culture and other subjects are offered on and off campus. These and other special courses are offered when needed to provide training in specific professional or vocational areas, to prepare candidates for professional licensing examinations or to assist with special local problems. Non-credit courses are generally scheduled in the evening.

Any person with the equivalent of a high school education who can profit from these courses may enroll. Students who attend regularly receive certificates upon completion of their course of study.

Under federal contracts the Division schedules Adult Basic Education Institutes, credit courses in the Navy's PACE program for shipboard personnel, and non-credit courses at Air Force installations in the Far East.

Individual course offerings at times and places suited to special groups of students can be arranged, either on a credit or non-credit basis.

Special and Professional Programs

Included are a wide range of non-credit university continuing education programs, often co-sponsored by University or other professional groups.

The Conference Center was established in 1961. Its program serves community groups and University departments by providing planning and administrative services for conference, institute, and workshop programs. The staff works closely with University departments and with both public and private organizations on all levels of continuing education activity in the state.
Services include assistance in planning; preparation and administration of budgets; procurement of resources persons; arrangement of travel, living accommodations and facilities, including related services; preparation of final financial and proceedings reports. Flexible scheduling of activities makes it possible to accommodate requests as they arise.

The Summer Teacher Institutes, meeting throughout the state, offer teachers in the State Department of Education an opportunity to study new teaching methods and recent developments in content areas.

The Continuing Education for Women program, through individual and group advising and other special services, helps women return to education or find volunteer service or other employment appropriate to their interests and abilities. Discussion groups are organized to consider various public issues and community problems. Any woman, no matter what her background of schooling or experience, is welcome.

Community Service Programs

A variety of informal presentations in different media respond to cultural interests or the needs of special groups.

The Lyceum and Speakers' Bureau program provides informal ongoing education through lectures, discussions, concerts and other presentations throughout the state by: (1) a touring subscription series of dance, drama, literary and musical events presented annually; (2) single speakers offered to organizations as an adjunct to their meetings, upon request (a $10 fee for each engagement is charged for this service); (3) lecture series planned and administered with the military services and community colleges and Hilo Campus several times a year as needed; (4) a film-discussion series sponsored by the Division in areas where such a program is desired; (5) cultural events planned for and presented in culturally deprived areas.

Civil Defense Training Program. Under contract with the Department of Defense, the Division offers courses to train Shelter Management and Radiological Monitor instructors. Additional courses offered are Radiological Defense Officer, Civil Defense Management, Plans and Operations, and Emergency Operating Center Simulation Workshops. The program is also responsible for conducting conferences in civil defense for business and industry. Courses and conferences are offered on all islands.

Headstart Regional Training Program. Under federal funding, a Headstart Regional Training Program provides sub-professional training for workers in Headstart preschool programs in the state.
Manuscript Criticism Service. Writers of fiction, non-fiction, poetry, and drama may submit manuscripts for professional opinion and advice of qualified faculty members. Reading fees are available on request.

Mass Media Programming includes the production of special community service program series on videotape or film for educational television, classroom, or other distribution, particularly programs dealing with current community problems and issues.

Center for Governmental Development

The Center was authorized by the State Legislature to provide in-service training, scholarships, internships and other means to aid in the development of government officers and employees. The Center presents and coordinates courses, workshops, seminars and programs in public administration and serves as a clearing house for information and training in government-management practices, techniques and new technologies.

Announcements and other information concerning these varied programs will be made available by the Division upon request.
East-West Center

The East-West Center—formally known as The Center for Cultural and Technical Interchange Between East and West—was established by the U.S. Congress in 1960. The goal of the Center, as mandated by Congress which provides annual appropriations for its support, is to promote better understanding and relations among the peoples of Asia, the Pacific area and the United States through cooperative study, training and research.

In cooperation with Asian/Pacific countries and the University of Hawaii, the Center aims at the free interchange of information, ideas and beliefs in cultural and technological fields.

Each year about 1,000 students and Senior Specialists and technical training participants from more than 30 countries and territories come to the Center under federal scholarships and grants, supplemented in some fields by contributions from foreign governments and private foundations. Academic instruction is provided, and degrees are awarded to students in degree programs, by the University of Hawaii under a grant-in-aid agreement with the Department of State for operation of the Center. Non-degree programs and projects involving education, research and technological training are conducted by the Center in cooperation with the University, U.S. mainland and Asian/Pacific institutions, federal and state agencies, and private organizations.

Since 1968, the Center has moved to direct its resources into coordinated programs seeking solutions to problems of mutual concern to East and West.

Problem-Oriented Programs

Population. The East-West Population Institute, established within the Center in 1969, offers scholarships to qualified candidates for the M.A. or Ph.D. degrees in anthropology, economics, geography, sociology and public health, with specialization in population studies. The objective of the degree program is to enable students to acquire a thorough understanding of demographic structures and processes—fertility, mortality and migration—and their causes and consequences. The program emphasizes the social and economic aspects of population trends and examines the rationale and the ways by which societies attempt to modify these trends. Special attention is paid to training in techniques of demographic analysis appropriate for deficient and erroneous data. The Institute’s geographic focus is the Asian and Pacific area, reflecting Hawaii’s unique position at the crossroads of the Pacific and utilizing
the University's extensive research and library facilities in Asian and Pacific studies. The Institute is active in population research with an emphasis on Asian and Pacific populations. Under the supervision of faculty members who hold joint appointments with the East-West Center while also offering population studies courses in various University units, and under the supervision of other Center staff in population, graduate students have opportunities to participate in research projects conducted at the Institute. For more advanced students, particularly at the Ph.D. level, field work outside Hawaii is arranged and supported by the Institute on a team or an individual basis. The Institute also conducts a variety of short-term, non-degree training programs, maintains a specialized collection of books and reference materials, and engages in various research- and service-related activities.

Communication. The Developmental and Cross-Cultural Communication Program focuses on two aspects of the broad field of human communication: (a) the use of communication for the sharing of knowledge aimed at human betterment in general, and economic and social development in particular; and (b) the use of communication to share knowledge between cultures and thus contribute to more complete understanding and peaceful interaction. A limited number of grants are offered for non-degree seminars and training programs to meet well-defined and urgent needs not readily served by formal academic programs. The Program is building collections of materials, research findings, case studies and visual, auditory and written records. Under grants from private sources, the Center offers Jefferson Fellowships to six or seven mid-career journalists and other professionals in the communication field each year. The Jefferson Fellowships provide for one semester's study, on a non-credit basis, in University courses of the Fellow's choice, specialized seminars and a two-week trip to the U.S. mainland for professional interviews.

Food. The Food Program provides a wide variety of degree and non-degree scholarships and grants in projects of applied research, study and training. Emphasis is placed on a systems approach to maintaining and nurturing human life with quality. This approach requires the application not only of agricultural and ocean sciences, but also the social sciences. Opportunities are provided for graduate student research. A considerable part of the Center's resources in past years has been devoted to individual scholarships and grants for education, research and training on various aspects of the food problem and a coordinated program is being developed.

Culture. The Culture Learning Program is a newly-coordinated effort within the Center to find ways to help people cross cultural boundaries more easily and make culture less an obstacle to cross-cultural understanding. Grants are offered for research in building intercultural
learning theory and in analyzing experiences of those in other cross-cultural programs and of students and alumni of the East-West Center from varied cultural, national and religious backgrounds. Degree and non-degree scholarships and grants will gradually be made available. In cooperation with University departments, an attempt is being made to develop teaching materials to be used in the classroom, mass media and training projects.

Technological Development. The Institute for Technical Interchange has been the major source of problem-oriented activity within the Center in the past, mainly on a non-degree, short-term training basis. The Pacific Island and Pacific Rim countries look to the Center as a major source of cross-cultural technical training opportunities, and this emphasis will be continued. By carefully planned changes, the Institute for Technical Interchange will link more closely its problem-oriented program with other Center programs and change its name to reflect these developments. The program is aimed at helping individuals take on new roles in the human infrastructures required for development, with emphasis on mid-management and trainers-of-trainers roles in such areas as health and social welfare, tourism, and specialized programs in educational systems. Increasingly, grants will be given to students at sub-professional and professional levels to participate in cooperative training projects. Grants are offered to Senior Specialists to participate in training projects and do research on training projects. Instruction, where practicable, is carried out by Center staff and University faculty, as well as by professional experts recruited from state and federal agencies and from private organizations. The Center, through this program, also administers training and job observation in Hawaii for Agency for International Development (AID) participants and participants from other private or government agencies.

Special Projects and Study Opportunities

The East-West Center also awards scholarships and grants embracing projects and study opportunities not directly associated with its problem-oriented programs. In general, academic scholarships in this category are awarded on the basis of their relationship to the needs of the individual applicant's country and the resources of the University of Hawaii (other criteria are listed below under Scholarships and Grants).

For continuity and responsiveness to mutual needs of East and West not covered by problem-oriented programs, the Center provides Senior Specialist and student grants for short-term research projects and university study.

Grants also will be awarded from time to time to teams of Senior Specialists invited to study and test new programs and projects designed
by the Center in its continuing search for new educational and intercultural knowledge and methods as they relate to mutual problems of East and West.

**Scholarships and Grants**

Scholarships for study at the University of Hawaii, mainly at the graduate level, generally include round-trip air fare from the student's home, housing in the Center residence halls, tuition and books, medical insurance and a modest stipend for food and incidental expenses. If the student meets Center requirements, a grant may provide field education on the United States mainland for Asian/Pacific students and in Asia or the Pacific for American students.

Candidates for degrees must meet the academic standards of the University of Hawaii and at the same time must give evidence of interest and ability in contributing to intercultural communication. Scholarships are initially awarded for 17 or 19 months with provisions for extension to those who qualify. All degree program scholarships for Americans are at the graduate level. Some undergraduate scholarships are awarded to those students who come from countries where there are a limited number of higher educational institutions.

**Senior Specialists.** Grants, usually ranging from four to ten months in residence, are made to senior, professional level persons—such as professors, government administrators and authors—for participation in Center programs and seminars or for individual research and writing.

**Training Grants.** Housing, living expenses and training costs are provided, sometimes in cooperation with other cooperating agencies, on the same basis as provided in academic student grants. The cost of international transportation is usually paid by governments or agencies sponsoring participants. Training projects usually run from three to twelve months.

**Language Requirements.** Because the medium of instruction at the University of Hawaii is English, student grantees from Asia and the Pacific area are tested for English proficiency by the University's English Language Institute. Those requiring extra help are assigned to full-time or part-time training in English until they are ready for a full academic program. American students are required to complete at least two years of Asian or Pacific language study before the end of their grants.

**Intercultural Activities.** To help promote cultural interchange, academic scholarships are awarded to approximately two Asian/Pacific students for each American at the Center. Center-wide activities embracing all participants—students, Senior Specialists and technical trainees—are designed to develop intercultural understanding recognized as one of the basic goals of the Center.
Supporting Services

The East-West Center Press issues new publications originating in the Center, at the University of Hawaii and other East-West institutions. It has developed an import and export book program to promote cultural and technical interchange.

The East-West Center Library is building an outstanding collection of materials, including books, periodicals and microfilm, emphasizing the problems with which the Center programs are concerned. It fosters cooperative Asian library and bibliographic activities to assist in the growth of libraries and librarianship in the developing countries of Asia.

The Conferences and Seminars Office supports international meetings of senior-level experts dealing with problems of mutual concern to East and West, with emphasis on those involving Center programs.

Other support is provided by the Office of Participant Services, which deals with admissions, counseling and liaison with former participants; the Office of Public Affairs, which disseminates information on Center activities; and the Community Relations Office, which coordinates activities of the Center and its grantees with Hawaii’s residents, primarily through the Friends of the East-West Center (an organization of volunteers).

GENERAL INFORMATION

The East-West Center complex on the Manoa campus of the University includes Thomas Jefferson Hall, the administration building which houses 50 offices, a lounge, food center, conference rooms and the exhibition gallery; Abraham Lincoln Hall, which houses Senior Specialists, the East-West Center Library and the East-West Center Press; John F. Kennedy Hall, a theater-auditorium; Hale Manoa and Hale Kuahine, residence halls for men and women participants. East-West Center funds were used for the construction of Edmondson Hall and a wing of Moore Hall, University classroom buildings. A Japanese garden is adjacent to the administration building and a traditionally-styled Thai pavilion, dedicated by King Bhumibol Adulyadej in 1967, lies between Jefferson and Lincoln Halls.

The Chancellor of the East-West Center, through a grant-in-aid agreement which channels federal funds to the University, is responsible to the Board of Regents through the President of the University. The National Review Board, appointed by the U.S. Secretary of State and headed by the Governor of Hawaii, represents the national interest in the Center and advises the Secretary of State.

Further information concerning scholarships and grants may be obtained by writing to the Office of Admissions, East-West Center, 1777 East-West Road, Honolulu, Hawaii 96822.
Hilo Campus

The Hilo Campus of the University of Hawaii is a four-year college, offering courses in the liberal arts and two-year programs in tropical agriculture, business administration, and engineering. It began in 1947 as a part of the Extension Division of the University and functioned under the College of General Studies. In 1951 it was put under the dean of faculties and two years later it was given a new campus of some 58 acres by the legislature. A third year was begun in 1969.

The campus commands a view of the Pacific Ocean to the east and of the majestic, snow-capped peak of Mauna Kea (13,796 feet high) to the west. Its extensive grounds on the south side of Hilo, a quiet city of 28,800, provides an ideal location for serious study. The campus now has some eight buildings and three more are under construction. With completion of a new dormitory in 1970, there will be living accommodations for a total of 180 students. Also located on the campus are the facilities of the Cloud Physics Observatory and the East Hawaii Agricultural Station.

The Hilo Campus presently has an enrollment of over 1,000 students. Most of the students are from the state of Hawaii, but there are significant numbers from the U.S. mainland and eleven foreign countries. Located midway between the East and the West, the Hilo Campus welcomes students of all races and colors: "Above all nations is humanity."

Facilities

The campus consists of some 58 acres, with eight existing buildings. A major addition to the library, a new life science building and another dormitory will be completed by September 1970. A new auditorium currently under construction, will be in use by 1971. Also on campus are the laboratories and offices for the Cloud Physics Observatory, the Agricultural Experiment Station and the Mauna Kea Observatory.

Fields of Study

Freshmen may elect either courses required by the general education core or may choose the experimental, integrated freshman program, an interdisciplinary, problem-oriented approach to topics of special contemporary significance.

After completing the core requirements, students may choose one of the composite academic majors in the social sciences, the language arts, of the biological sciences, or single subject majors in English, speech, history, anthropology, and mathematics. Students who wish to
enter the teaching profession may pursue provisional teaching certification, while also taking courses leading to a bachelor's degree in academic areas. A degree program will be begun this year in international studies with special attention to the Asian and Pacific Basin areas.

In addition the Hilo Campus also offers two-year programs in business administration, tourist industry management, engineering, tropical agriculture, the degree program in nursing, and home economics. During the summer the Hilo Campus offers study tours with academic credit in Sweden and Japan.

Library Facilities

The Hilo Campus Library, built in 1962 and expanded in 1969, has a capacity of 101,000 volumes and provides seating for 300 students in reading rooms, individual carrels, and small group study rooms. Presently the library contains nearly 50,000 books, subscribes to over 700 periodicals, and is a federal documents depository. Trained librarians assist students in making effective, independent use of the library's resources.

Housing

The Hale Kanilehua dormitory provides housing for 28 women and 24 men students. Built in 1962, it has two major wings and a large central lounge. Another dormitory will be completed this year with housing for an additional 130 students.

Applications for dorm space must be accompanied by a $10 deposit. The cost of a semi-private room is $165 per semester and $185 in the new dormitory and is payable at the beginning of each semester. Christmas and Easter recesses are not included in the rental fee. Students are furnished with a bed, pillow, blanket, bedspread, desk, study chair, study lamp, lounge chair and wastebasket. Each student has his own built-in closet, built-in dresser, tackboard, bookshelf and draperies. Meals are provided five days per week in the college cafeteria. Students average $2.50 a day for meals.

Off Campus Housing

Additional housing is available off campus in accommodations listed at the Office of Student Services. All possible assistance is offered in locating suitable accommodations.

Applications and correspondence should be directed to:

Office of Student Services
University of Hawaii at Hilo
P. O. Box 1357
Hilo, Hawaii 96720

Applications must be received by July 1 for admission in the fall semester and by December 1 for the spring semester.
Community Colleges

A statewide system of community colleges is administered by the University of Hawaii. Authorized by the state legislature in 1964 and commencing operation in 1965, the community college system is comprised of six public community colleges:

Honolulu Community College, originally established in 1920 as the Territorial Trade School, located at 874 Dillingham Boulevard, Honolulu, Hawaii 96817.

Kapiolani Community College, established in 1957 as Kapiolani Technical School, located at 620 Pensacola Street, Honolulu, Hawaii 96814.

Leeward Community College, established in 1968, occupying a newly developed campus at 96-050 Farrington Highway, Pearl City, Hawaii 96782.

Hawaii Community College, established in 1941 as Hawaii Technical School, located at 1175 Manono Street, Hilo, Hawaii 96720. (Added to the System in 1969.).

Maui Community College, established in 1931 as Maui Vocational School, located at 310 Kaahumanu Avenue, Kahului, Maui, Hawaii 96732.

Kauai Community College, established in 1943 as the Kauai Vocational School, occupying a temporary campus at Lihue, Kauai, Hawaii 96766.

The several colleges provide occupational, transfer liberal arts, and general education. Admission is granted to all high school graduates and other individuals able to profit from the college offerings. Each institution offers a well developed guidance and counseling program. The associate in arts and the associate in science degrees are granted as are certificates of achievement. Each college has a financial aids program, provisions for student activities, and a student body government. In 1969 the colleges enrolled 8,197 credit and 2,563 apprenticeship and non-credit students.
The programs available at the various colleges are listed below. Inquiries should be directed to the registrars of the colleges.


Kapiolani Community College: Accounting, Commercial Food Service, Data Processing, Dental Assisting, Food Service Management, General Clerical, General Education, Medical Assisting, Mid-Management, Practical Nursing, Sales, Secretarial Science, Transfer.

Leeward Community College: Accounting, Computer Science, General Education, Library Technology, Management, Secretarial Science, Transfer.


Faculty and Staff
(March 1, 1970)

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East-West Center
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John A. Brownell, B.A., M.A., Ph.D., Deputy Chancellor for Academic Affairs
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Herbert D. Long, B.A., B.D., Th.D., Director, Institute for Student Interchange
Paul Demeny, B.A., M.A., Ph.D., Director, East-West Population Institute

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ADMINISTRATIVE OFFICERS

College Administration

David E. Contois, B.A., M.S., Ph.D.  Acting Dean, College of Arts and Sciences
Alfred J. Levy, B.A., M.A., Ph.D., Associate Dean
Roger L. Hadlich, B.A., M.A., Ph.D., Assistant Dean
Edwin A. Penn, B.S., M.A., Ed.D., Assistant Dean

Ralph C. Hook, Jr., B.A., M.A., Ph.D.  Dean, College of Business Administration
David Bess, B.S., M.B.A., Ph.D., Assistant Dean
Robert E. Baird, B.S., M.B.A., Ph.D., Assistant to the Dean
Kenneth West, B.S., Executive Director, Advanced Management Program and Assistant to the Dean

Ruth Brownell, B.A., M.A., Director, Small Business Management Program

DIRECTORS OF SPECIAL UNITS

Donald R. Fukuda, B.S., M.Ed.  Admissions and Records
Charles S. James, B.A.  Auxiliary Services
Spencer W. Tinker, B.S., M.S.  Aquarium
Yoneo Sagawa, B.A., M.A., Ph.D.  Arboretum
Kenji Sumida, B.B.A.  Budget and Planning
Keith S. Snyder, B.A.  Comptroller
V. Carl Bloede, A.B., LL.B., LL.M.  Contracts Office
C. Peairs Wilson, B.S., M.S., Ph.D.  Cooperative Extension Service
Dale N. Goodell, B.S., M.S., Associate Director
John Michel, B.A., M.A., Ph.D.  Counseling and Testing Center
Walter Miklius, B.A., M.A., Ph.D.  Economic Research Center
David G. Ryans, B.A., A.M., Ph.D.  Education Research and Development Center
SPECIAL UNITS, FORMER PRESIDENTS

Lark O. Daniel, B.A., M.A., Ph.D. .......................... Educational Television Broadcasting Service
Howard P. Harrenstein, B.S., M.S., Ph.D. .......................... Center for Engineering Research
Philip W. Koehler, B.A. .................................................. Facilities Management
C. Pearis Wilson .......................................................... Hawaii Agricultural Experiment Station
Wallace C. Mitchell, B.S., M.S., Ph.D., Associate Director (Acting)
Shinkichi Shimabukuro, B.Ed., M.Ed., D.Ed. .......................... Hawaii Curriculum Center
George P. Woolard, B.S., M.S., A.M., Ph.D. .......................... Hawaii Institute of Geophysics
Vernon E. Brock, A.B., A.M. ........................................... Hawaii Institute of Marine Biology
James R. Linn, B.A., M.A., M.F.A., Ph.D. .......................... Honors Programs and Selected Studies
John B. Ferguson, B.A., M.A., Ph.D. ................................... Industrial Relations Center (Acting)
John T. Jefferies, B.S., D.S., M.A. .................................... Institute for Astronomy
Earl R. Babbee, B.A., M.A., Ph.D. ..................................... Institutional Research Office
Paul D. Snipes, B.A., B.D., M.S., Ed.D. ............................... Instructional Resources Service Center
Theodore P. Woodin, B.A., M.A. ......................................... International Student Office
Guy T. Nunn, A.B., M.A. ................................................. Labor-Management Education Program
Harold L. Baker, B.S., M.S., Ph.D. ...................................... Land Study Bureau
Henry N. Kihara, B.A., J.D. ............................................ Legislative Reference Bureau
John T. O'Brien, B.S. ..................................................... Look Laboratory of Oceanographic Engineering
John M. Allison, B.A., LL.D. ............................................. Overseas Career Program
Terence A. Rogers, B.S., Ph.D. ......................................... Pacific Biomedical Research Center
Donald M. Topping, A.B., M.A., Ph.D. ............................... Pacific and Asian Linguistics Institute
Tom Dinell, B.A., M.P.A. .................................................. Pacific Urban Studies and Planning Program
Phillip B. Olsen, B.A., M.A. ............................................. Peace Corps Training for Hawaii
Thomas N. Arnett, B.S., LL.B., LL.M. ................................. Personnel
Thomas H. Creighton, B.A. ............................................. Planning Office
Newton E. Morton, B.A., M.S., Ph.D. .................................. Population Genetics Laboratory
Mary C. Austin, B.S., M.S., Ed.D. ....................................... Reading Clinic
Robert E. Cole, M.A., Ph.D. ............................................ Sensory Sciences Laboratory
Ruth Brownell, B.A., M.A. ............................................. Small Business Management Program
William P. Lebra, B.A., M.A., Ph.D. .................................. Social Science Research Institute
Jack T. Nagoshi, B.A., M.S.W. .......................................... Social Welfare Development and Research Center
Merle Ansberry, B.A., M.A., Ph.D. .................................... Speech and Hearing Clinic
W. Wesley Peterson, B.A., Ph.D. ....................................... Statistical and Computing Center (Acting)
Alfred L. Ellingson, B.A., B.S. .......................................... Statistical Bureau of Student Activities
Donald F. B. Char, M.D. .................................................. Student Health Service
James M. Burgoyne, B.S., M.B.A. ...................................... Student Housing Office
William M. Adams, B.A., M.S., Ph.D., M.B.A. .......................... University Laboratory School
H. Roy McArdle, B.S., M.B.A. ........................................... University Press
Robert W. Sparks, B.A., M.A. .......................................... University Relations and Development
Frederick Y. Smith, B.S., M.S. ........................................... Water Resources Research Center

FORMER PRESIDENTS

John W. Gilmore, 1908–1913 (Deceased); B.S.A. 1898, M.S.A. 1906, Cornell
John S. Donagho, 1913–1914 (Acting) (Deceased); A.B. 1889, A.M. 1897, Marietta
Arthur L. Dean, 1914–1927 (Deceased); B.A. 1900, Harvard; Ph.D. 1902, Yale; LL.D. 1947, Hawaii
David L. Crawford, 1927–1941; B.A. 1911, LL.D. 1933, Pomona; M.A. 1912, Stanford;
LL.D. 1957, Hawaii
Arthur R. Keller, 1941–1942 (Acting) (Deceased); LL.B. 1907, National University Law School;
M.S. 1916, M.I.T.
Columbia; LL.D. 1951, Ohio State; LL.D. 1955, California; H.H.D. 1956, Hawaii; D.Lit. 1960, Keio
Paul S. Bachman, 1955–1957 (Deceased); B.S. 1922, Ohio State; M.A. 1925, Ph.D. 1927,
Washington
Willard Wilson, 1957–1958 (Acting); B.A. 1929, LL.D. 1961, Occidental College; M.A. 1930;
Columbia; Ph.D. 1939, Southern California
Harvard; Sc.D. 1960, Ohio State; H.H.D. 1962, N. Carolina
EMERITI


Robert W. Hiatt, 1968-1969 (Acting); B.A. 1936, San Jose State; Ph.D. 1941, California

Richard S. Takasaki, 1969 (Acting); B.S. 1940, Hawaii; M.A. 1949, Columbia; M.P.A. 1960, Harvard

EMERITI

Andrews, Carl B., Emeritus Professor of Engineering; B.S. 1908, M.S. 1909, C.E. 1917, Rose Polytechnic Institute; M.S. 1928, M.I.T.

Bentley, Lucie F., Emeritus Associate Professor of Speech, Drama and Theatre; B.A. 1928, Stanford; M.A. 1933, Cornell

Bilger, Leonora N. (Mrs. Earl M.) Emeritus Senior Professor of Chemistry; B.A. 1913, M.A. 1914, Ph.D. 1916, LL.D. 1950, Cincinnati

Bootman, Elsie M. (Mrs.) Emeritus Professor of Home Economics; B.S. 1924, M.S. 1931, Iowa State

Brown, Hubert E., Emeritus Professor of Health and Physical Education; B.P.E. 1920, M.P.E. 1927, Springfield College; Ph.D. 1940, New York

Carr, Elizabeth B. (Mrs.) Emeritus Professor of Speech; B.A. 1924, M.A. 1940, Oklahoma; Ph.D. 1953, Louisiana State

Carter, Walter, Emeritus Professor of Entomology; B.S. 1923, Montana; M.S. 1924, Ph.D. 1928, Minnesota

Charlot, Jean, Emeritus Senior Professor of Art; D.F.A. 1946, Grinnell; LL.D. 1956, St. Mary's College

Clark, Francis E., Emeritus Professor of Education; B.S. 1930, Northern State Teachers College; M.S. 1937, Ed.D. 1948, Colorado

Clements, Harry J., Emeritus Senior Professor of Plant Physiology; B.S. 1924, M.S. 1926, Wisconsin; Ph.D. 1929, Chicago

Chapman, Robert W., Emeritus Senior Professor of Education; B.A. 1926, Maryville College; M.F.D. 1941, Hawaii; Ph.D. 1946, Northwestern

Daniel, L. Scott, Emeritus Professor of Engineering; B.S. 1945, Montana State

Day, A. Grove, Emeritus Senior Professor of English; B.A. 1926, M.A. 1943, Ph.D. 1944, Stanford

Ecke, Gustav E. W., Emeritus Professor of Art; Ph.D. 1922, Erlangen

Edmondson, Charles H., Emeritus Professor of Zoology; Ph.B. 1903, M.S. 1904, Ph.D. 1906, Iowa

Eller, Willard H., Emeritus Professor of Physics; B.S. 1914, Ph.D. 1928, California; M.S. 1925, Washington

Emory, Kenneth P., Emeritus Professor of Anthropology, B.A. 1920, Dartmouth; M.A. 1923, Harvard; Ph.D. 1946, Yale

Ewing, Claude H., Emeritus Professor of Education; Ph.B. 1933, Chicago; M.A. 1936, Colorado State College; Ph.D. 1946, Northwestern

George, Dorothy, Emeritus Professor of English; B.A. 1936, Louisiana State Normal; M.A. 1937, Ph.D. 1950, Louisiana State

Goto, Y. Baron, Emeritus Vice-Chancellor, East-West Center; B.S. 1924, Hawaii; Sc.D. (Hon.) 1959, Oregon

Gruelle, Katherine B. (Mrs. L. N.), Emeritus Professor of Home Economics; B.S. 1917, Ohio State; M.A. 1925, Columbia

Hamilton, Thomas H., Emeritus President and Senior Professor of Political Science; Degrees listed under "Former Presidents"

Handley, Katharine N., Emeritus Dean and Professor of Social Work; B.A. 1923, Pomona; M.A. 1928, Stanford; M.S.W. 1942, Southern California

Harloe, Bartley M., Emeritus Professor of Engineering; B.S. 1917, U.S. Military Academy; C.E. 1922, Rensselaer

Harrell, Gertrude P., Emeritus Specialist, Cooperative Extension Service; B.S. 1927, Georgia State College for Women; M.A. 1949, Columbia

Henke, Louis A., Emeritus Professor of Agriculture; B.S. 1912, M.S. 1923, Wisconsin

Herrick, Colin J., Emeritus Professor of Psychology; B.A. 1924, Haverford College; M.A. 1934, Ph.D. 1939, Pennsylvania

Hiatt, Robert W., Emeritus Vice-President and Senior Professor of Zoology; Degrees listed under "Former Presidents"
EMERITI

Holmes, Wilfred J., Emeritus Dean and Senior Professor of Engineering; B.S. 1922, U.S. Naval Academy; M.S. 1929, Columbia

Jones, Virginia A., Emeritus Dean and Professor of Nursing; R.N. 1920, Reid Memorial Hospital School of Nursing; B.S. 1933, Indiana; 1944, Hawaii

Kahananui, Dorothy (Mrs.), Emeritus Associate Professor of Music; B.S. 1931, New York; M.Ed. 1936, Hawaii

Korn, Alfonz L., Emeritus Professor of English; B.A. 1927, Oregon; B.A. 1930, Oxford; M.A. 1937, California (Berkeley); M.A. 1968, Oxford

Lee, Richard K. C., Emeritus Dean and Professor of Public Health; M.D. 1933, Tulane; Dr. P.H. 1938, Yale

Leebrick, Karl C., Emeritus Professor of Government; B.S. 1911, M.S. 1913, Ph.D. 1916, California

Leong, Yau Sing, Emeritus Professor of Business Economics & Quantitative Methods; B.A. 1924, Hawaii; M.A. 1925, Ph.D. 1933, Columbia

Lind, Andrew W., Emeritus Senior Professor of Sociology; B.A. 1924, M.A. 1925, Washington; Ph.D. 1931, Chicago

Livesay, Thayne M., Emeritus Dean of College of Arts and Sciences; B.A. 1917, Pacific University; M.A. 1921, Ph.D. 1931, Washington

Mason, Leonard E., Emeritus Professor of Anthropology; B.A. 1935, M.A. 1941, Minnesota, Ph.D. 1955, Yale


Miller, Carey D., Emeritus Professor of Nutrition; B.A. 1917, California; M.S. 1922, Columbia

Miyake, Iwao, Emeritus Professor of Physics; B.S. 1926, M.S. 1929, Hawaii

Mueller, Bertha, Emeritus Professor of European Languages; B.A. 1926, Northwestern; M.A. 1929, Ph.D. 1935, Wisconsin

Murphy, Thomas D., Emeritus Professor of History; B.A. 1933, M.A. 1934, Wesleyan; Ph.D. 1939, Yale

Nickerson, Thomas, Emeritus Director of University Press; A.B. 1925, Harvard

Pecker, Irving O., Emeritus Professor of Romance Languages; B.A. 1912, Boston

Poole, Charles F., Emeritus Senior Professor of Agriculture; B.S. 1920, M.S. 1926, Hawaii; Ph.D. 1930, California

Porter, M. Rosemonde, Emeritus Professor of Education; B.S. 1930, M.A. 1934, Ph.D. 1938, Ohio State

Porter, Stanley D., Emeritus Professor of Psychology; Sc.D. (Hon.) 1933, Hawaii

St. John, Harold, Emeritus Professor of Botany; B.A. 1914, M.A. 1915, Ph.D. 1917, Harvard

Saksena, Shri K., Emeritus Professor of Philosophy; B.A. 1925, M.A. 1927, Allahabad; Ph.D. 1939, London

Saunders, Allan F., Emeritus Senior Professor of Political Science; B.A. 1918, Amherst; M.A. 1920, Ph.D. 1927, Wisconsin

Sherman, G. D., Emeritus Professor of Soil Science; B.S. 1933, M.S. 1937, Minnesota; Ph.D. 1940, Michigan State

Sinclair, Gregg M., Emeritus President; Degrees listed under “Former Presidents”

Snyder, Laurence H., Emeritus President and Senior Professor of Genetics; Degrees listed under “Former Presidents”

Stormont, John, Emeritus Specialist Cooperative Extension Service; B.S. 1928, Illinois; M.Ed. 1943, Cornell

Stroven, Carl G., Emeritus Senior Professor of English and Librarian Emeritus; A.B. 1926, M.A. 1928, Stanford; Ph.D. 1939, Duke

Takahashi, Makoto, Emeritus Associate Professor of Agronomy; B.S. 1928, M.S. 1937, Hawaii

Townes, Stanmore B., Emeritus Professor of Mathematics; B.A. 1921, M.A. 1923, Oklahoma; Ph.D. 1930, Chicago

Vollrath, Harvey M., Emeritus Professor of Animal Husbandry; B.S. 1929, Colorado State; M.S. 1948, Minnesota

Warner, Howry H., Emeritus Director, Cooperative Extension Service in Agriculture and Home Economics; B.A. 1912, Pomona; B.S. 1913, California (Berkeley)

White, Bruce E., Emeritus Dean and Senior Professor of Education; B.A. 1923, Willamette; M.A. 1932, Ph.D. 1935, Washington

Wilson, William, Emeritus Secretary of the University and Senior Professor of English; Degrees listed under “Former Presidents”

Wiswell, Ella L., Emeritus Associate Professor of European Languages; Diploma 1931, Paris; B.A. 1941, Hawaii

Younge, Otto R., Emeritus Professor of Agronomy; B.S. 1924, M.S. 1929, Alberta; Ph.D. 1934, Minnesota
ACADEMIC CHAIRS: INSTRUCTION

ACADEMIC CHAIRS

The Citizens' Chair in English Literature, funded by the Hawaii State Legislature.
The Captain James Cook Chair in Oceanography, funded by The Honolulu Advertiser.
The Hawaiian Telephone Company Chair in Science, funded by the Hawaiian Telephone Company, Georg Von Bekesy.*
The Pacific Islands Chair in Anthropology, funded by the Hawaii State Legislature, Douglas L. Oliver.*
The Gerrit Parmile Wilder Chair in Botany, established by the will of the late Lillian Kimball Wilder (in memory of her husband), Albert C. Smith.*

*Degrees listed under "Instruction."

INSTRUCTION

Abbott, Agatin T., Professor of Geology
B.A. 1939, Minnesota; Ph.D. 1952, Washington

Abramson, Norman, Professor of Information Sciences and Electrical Engineering; A.B. 1953, Harvard; M.A. 1955, California (Los Angeles); Ph.D. 1958, Stanford

Abudu, Assibi O., Assistant Professor of Economics; B.A. 1962, Minnesota; M.A. 1964, Indiana; Ph.D. 1969, California (Los Angeles)

Ackerman, Charles D., Associate Professor of Sociology; A.B. 1961, California (Los Angeles); Ph.D. 1965, Harvard

Adams, Bruce G., Assistant Professor of Microbiology; B.A. 1964, Whitman College; Ph.D. 1968, Oregon State

Adams, Carl W., Assistant Professor of Meteorology; B.S. 1940, Naval Academy; M.S. 1951, Naval Postgraduate School

Adams, Charles M., Professor of Library Studies; A.B. 1931, Amherst; B.S.L.S. 1933, M.A. 1942, Columbia

Adams, William M., Professor of Geophysics A.B. 1951, Chicago; B.A. 1953, California (Berkeley); M.S. 1955, Ph.D. 1957, St. Louis; M.B.A. 1964, Santa Clara

Adkins, Dorothy C., Professor of Education B.S. 1931, Ph.D. 1937, Ohio

Adler, Jacob, Professor of Accounting and Finance; B.S. 1933, Chicago; M.S. 1956, Ph.D. 1959, Columbia; C.P.A. 1950

Ahlstrom, Carl Mark, Instructor in English B.A. 1968, Michigan; M.A. 1969, Wisconsin

Ah Moo, Earl W., Associate Professor in Dental Hygiene; D.D.S. 1961, M.S. 1964, Marquette

Ai, Cynthia B., Associate Professor of Nursing; B.S. 1956, M.S. 1961, California (Los Angeles)

Akamine, Ernest K., Professor of Plant Physiology; B.S. 1935, M.S. 1941, Hawaii

Akita, George, Professor of History B.A. 1951, Hawaii; M.A. 1953, Ph.D. 1960, Harvard

Alcantara, Ruben, Instructor in American Studies; B.A. 1961, Philippines; M.A. 1965, Hawaii

Alexander, John, Lecturer in Public Health B.A. 1934, North Carolina; M.S. 1936, LL.B. 1941, Columbia


Allen, James G., Associate Professor of Human Development; B.S. 1949, Wisconsin; M.S. 1954, Ph.D. 1960, Iowa State

Allen, Leslie R., Assistant Professor of Education; B.Sc. 1946, M.Sc. 1947, New Zealand; Ph.D. 1967, California (Berkeley)

Allen, Richard D., Associate Professor of Microbiology; B.A. 1957, Greeneville College; M.S. 1960, Illinois; Ph.D. 1964, Iowa State

Allison, John M., Director of Overseas Career Program; B.A. 1927, LL.D. 1959, Nebraska

Allton, Donald W., Lecturer in Music B.M. 1936, M.M. 1938, Eastman School of Music (Rochester)

Alm, Julia N., Assistant Professor of Education; B.S. 1943, M.A. 1947, Minnesota

Alm, Richard S., Professor of Education B.S. 1942, M.A. 1948, Ph.D. 1954, Minnesota
Aleshuler, Lawrence R., Assistant Professor of Political Science; B.A. 1963, Wesleyan; M.A. 1965, Ph.D. 1967; Northwestern
Alter, Jason B., Assistant Professor of English as Second Language; B.A. 1952, Harvard College; M.A. 1956, Michigan
Ames, Lawrence L., Assistant Professor of Psychology; A.B. 1958, A.M. 1962, George Washington; Ph.D. 1968, Maryland
Amioka, Shiro, Professor of Education; B.Ed. 1937, M.Ed. 1952, Hawaii; Ph.D. 1959, Illinois
Andermann, George, Associate Professor of Chemistry; B.S. 1949, California (Los Angeles); M.S. 1961, Ph.D. 1965, Southern California
Anderson, C. Webster, Professor of Art B.A. 1933, California; M.A. 1953, California (Los Angeles)
Anderson, Edith H., Professor of Nursing B.S. 1951, Manhattan; M.A. 1958, Ph.D. 1968, New York
Anderson, George L., Professor of English A.B. 1946, M.A. 1948, Ph.D. 1953, Pennsylvania
Anderson, Robert N., Assistant Professor of Agricultural Economics; B.S. 1965, M.A. 1966, Adams State; Ph.D. 1969, Colorado State
Anderson, Ronald S., Professor of Education B.A. 1929, M.A. 1946, Stanford; Ph.D. 1956, California
Andrews, James E., Assistant Professor of Oceanography; B.A. 1963, Amherst; Ph.D. 1967, Miami
Andrews, Merle, Professor of Speech Pathology and Audiology; B.A. 1929, M.A. 1931, California; Ph.D. 1937, Wisconsin
Anwar, Mahmood, Assistant Professor of Entomology; B.S. 1960, M.S. 1962, University of Punjab; M.S. 1968, Ph.D. 1968, Hawaii
Aoki, Mitsuo, Professor of Religion B.A. 1940, Drury; B.D. 1943, Chicago Theological Seminary; D.D. (Hon) 1968, Pacific School of Religion
Aptekar, Herbert H., Professor of Social Work; B.S., 1937, Columbia; M.S.W., 1939, D.S.W., 1955, Pennsylvania
Arakaki, Minoru, Associate Professor of Plant Pathology; B.S. 1950, M.S. 1954, Ph.D. 1963, Hawaii
Arai, Sueko, Lecturer in Music Natori Diploma, 1949, Hanayagi School (Japan)
Arai, Teruo, Lecturer in Music Natori Diploma 1955, Nishikawa School (Japan)
Araki, James T., Professor of Japanese B.A. 1954, UCLA; M.A. 1958, Ph.D. 1961, California (Berkeley)
Arapoff, Nancy, Assistant Professor of English as Second Language; B.A. 1952, California (Santa Barbara); M.A. 1963, Hawaii
Arkoff, Abe, Professor of Psychology B.A. 1946, M.A. 1948, Ph.D. 1951, Iowa
Armstrong, R. Warwick, Associate Professor of Geography and Public Health; B.A. 1957, M.A. 1959, Auckland; Ph.D. 1963, Illinois; M.P.H. 1964, Michigan
Asato, Herbert M., Associate Professor of Dental Hygiene; D.D.S. 1961, Marquette; M.S.D. 1969, Pittsburgh
Asato, James K., Assistant Professor of Health and Physical Education; B.S. 1952, Hawaii; M.S. 1956, Illinois
Asato, Katherine H., Assistant Professor of Social Work; B.A. 1955, M.S.S.A. 1960, Western Reserve
Ascher, Leonard W., Professor of Finance B.A. 1927, Ph.D. 1934, California (Berkeley)
Ashby, David, Assistant Professor of Economics; B.A. 1962, Ph.D. 1968, Oregon
Ashton, Geoffrey C., Professor of Genetics B.Sc. 1945, Ph.D. 1958, D.Sc. 1967, Liverpool
Ashworth, David E., Acting Assistant Professor of Japanese; B.A. 1964, George Washington; M.A. 1967, American
Aspinwall, Dorothy B., Professor of European Languages; B.A. 1933, M.A. 1939, Alberta; Ph.D. 1948, Washington
Austin, Mary C., Professor of Education B.S. 1944, M.S. 1945, Ed.D. 1949, Syracuse
Avery, Don E., Associate Professor of Engineering; B.S. 1937, M.E. 1950, Washington
Ayabe, Harold I., Assistant Professor of Education; B.A. 1957, Fort Wayne Bible College; M.S. Ed. 1968, Ph.D. 1969, Indiana
Ayrault, Margaret W., Professor of Library Studies; A.B. 1933, Oberlin; B.S. in L.S. 1934, Drexel; M.S. in L.S. 1941, Columbia

INSTRUCTION

Babbie, Earl R., Assistant Professor of Sociology; A.B. 1960, Harvard; M.A. 1966, Ph.D. 1969, California
Baber, Asa J., Jr., Instructor in English B.A. 1958, Princeton; M.A. 1963, Northwestern; M.F.A. 1967, Iowa
Bacalski, Robert R., Acting Assistant Professor of Spanish; B.A. 1964, M.A. 1967, New Mexico
Bach, Wilfrid, Associate Professor of Geography; Staatsexamen 1961, Marburg; Ph.D. 1965, Sheffield, England
Baciu, Mira, Assistant Professor of French Faculty of Pharmacy 1943, Bucharest; Pharmaceutical Permit 1948, Berne; M.A. 1967, Middlebury; Ph.D. 1970, Strasbourg

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INSTRUCTION

Baciu, Stefan, Associate Professor of Spanish; B.A. 1937, Liceu Andrei Saguna; M.A. 1941, Law Faculty, Bucharest

Backus, Joseph M., Associate Professor of English; B.A. 1949, Allegheny; M.S. 1954, Columbia; M.A. 1957, Ph.D. 1961, California (Berkeley)

Bail, Frederick T., Acting Assistant Professor of Education; A.B. 1965, Bowdoin College


Bailey, Joseph K., Professor of Management B.A., B.S. 1934, Salem; M.B.A. 1948, Ph.D. 1955, Texas

Baier, Robert E., Professor of Management and Travel Industry Management; B.S. 1940, Wichita; M.B.A. 1941, Northwestern; Ph.D. 1957, Cornell

Baker, Gladys F., Professor of Botany B.A. 1930, M.S. 1932, Iowa; Ph.D. 1935, Washington

Barker, Harold L., Lecturer in Agricultural Economics; B.S. 1939, Utah State; M.S. 1942, Ph.D. 1965, California (Berkeley)

Ball, Harry V., Professor of Sociology B.A. 1949, M.A. 1950, Washington; Ph.D. 1956, Minnesota

Barney, Albert H., Professor of Zoology B.S. 1935, Washington; M.S. 1940, Hawaii; Ph.D. 1943, Washington

Barham, Frank W., Instructor in English as Second Language; B.A. 1954, Virginia; M.A. 1967, American

Barna, Arpad A., Associate Professor of Electrical Engineering; Degree of Electrical Engineering 1956, Technical University of Budapest; Ph.D. 1968, Stanford

Barnet, Edward M., Professor of Marketing and Management; S.B. 1934, M.B.A. 1936, Harvard; Ph.D. 1954, Columbia

Barringer, Herbert R., Associate Professor of Sociology; A.B. 1959, San Diego State College; M.A. 1961, Ph.D. 1963, Northwestern

Bartfolomeu, Duane P., Assistant Professor of Agronomy; B.S. 1961, California Polytech.; Ph.D. 1965, Iowa State

Baumann, Paul, Assistant Professor of Microbiology; B.A. 1961, M.A. 1963, Ph.D. 1966, California

Baumer, Jack F., Assistant Professor of Asian Languages; B.A. 1953, Bowdoin; M.A. 1959, Madras

Beales, Peter F., Assistant Professor of Tropical Medicine and Medical Microbiology (Samoa); M.B., Ch.B., M.R.C.S., L.R.C.P., Liverpool

Beamer, Martha F., Assistant Professor of Health and Physical Education; B.Ed. 1952, M.Ed. 1960, Hawaii

Bear, Herbert S., Jr., Professor of Mathematics B.A. 1950, Ph.D. 1957, California (Berkeley)
INSTRUCTION

Buchele, Robert, Professor of Management A.B. 1938, Columbia; M.B.A. 1943, Harvard; Ph.D. 1952, Chicago

Buddenhagen, Ivan W., Professor of Plant Pathology; B.S. 1953, M.S. 1954, Ph.D. 1957, Oregon State College

Burbank, Nathan C., Jr., Professor of Public Health; B.A. 1938; M.S. 1940, Harvard; B.S.C.E. 1950, Oklahoma Institute of Technology; Sc.D. 1955, M.I.T.

Burcroff, Richard T., Acting Assistant Professor of Economics; B.S. 1961, Rensselaer Polytechnic Institute

Burgess, Hugh, Assistant Professor of Architecture; B.S. 1954, B.Arch. 1960, Idaho; M.S.Arch. 1969, Columbia

Burgess, John C., Professor of Mechanical Engineering; Sc.B. 1944, Brown; M.S. 1949, Ph.D. 1955, Stanford

Burns, Alfred, Associate Professor of Classics B.A. 1952, M.A. 1958, Ph.D. 1964, Washington


Bury, Douglas C., Assistant Professor of Business Law; LL.B. 1936, Alberta; Queen's Counsel (Hon.), Alberta. 1952

Bushnell, Kenneth W., Assistant Professor of Art; B.A. 1956, California (Los Angeles); M.F.A. 1961, Hawaii

Bushnell, Oswald A., Professor of Tropical Medicine, Medical Microbiology and Public Health; B.S. 1934, Hawaii; M.S. 1935, Ph.D. 1937, Wisconsin

Butler, Lucius A., Jr., Assistant Professor of Education; B.A. 1952, Ithel College and College of Puget Sound; M.R.F. 1954, Northern Baptist Seminary; M.A. 1955, Minnesota; B.Ed. 1955, Bethel Seminary; Ph.D. 1968, Minnesota

Byers, Burton H., Associate Professor of Speech-Communication; B.A. 1934, Iowa; M.A. 1940, Columbia; Ed.D. 1957, Mexico

Cahill, Robert S., Associate Professor of Political Science; B.A. 1954, Reed; M.A. 1961, Ph.D. 1962, Oregon

Campbell, Burnham O., Associate Professor of Economics; B.A. 1948, Ph.D. 1960, Stanford

Campbell, Robert L., Associate Professor of Education; B.S. 1950, Illinois Institute of Technology; M.Ed. 1951, Louisiana State

Canary, Robert H., Associate Professor of English; B.A. 1960, Denison; M.A. 1962, Ph.D. 1963, Chicago

Cannaday, Norma, Instructor in Spanish Licenciatura 1957, Universidad Pedagogical Nacional, Bogota; M.A. 1961, Indiana

Cannon, Glenn, Assistant Professor of Drama and Theatre; B.A. 1954, Temple

Caperon, John, Associate Professor of Oceanography; B.S. 1952, Utah; Ph.D. 1965, California (San Diego)

Carino, Constance M., Instructor of Nursing B.S. 1958, Skidmore; M.S. 1968, Catholic University

Carlson, John Gregory, Assistant Professor of Psychology; B.A. 1963, Ph.D. 1967, Minnesota

Carr, Albert B., Jr., Professor of Education B.S. 1950, Iona College; M.A. 1951, Ed.D. 1958, Columbia

Carroll, W. Dennis, Assistant Professor of Drama and Theatre; B.A. 1962, Sidney; M.F.A. 1964, Hawaii; M.A. 1966, Sidney; Ph.D. 1969, Northwestern

Carter, Steven M., Instructor in English B.A. 1966, California (Berkeley); M.A. 1968, Arizona

Casarett, Louis J., Associate Professor of Pharmacology; B.S. 1950, M.S. 1955, Ph.D. 1958, Rochester

Casellas, Elizabeth R., Assistant Professor of Library Studies; B.M. 1948, Chicago Music College; M.A. 1949, M.S. 1964, Columbia

Cattell, S. Allen, Assistant Professor of Oceanography; A.A. 1959, Menlo College; B.Sc. 1963, M.Sc. 1966, University of the Pacific; Ph.D. 1969, British Columbia

Caulfield, Marilyn W., Assistant Professor of Social Work; B.A. 1949, Ohio; M.S.W. 1963, Hawaii

Cence, Robert J., Associate Professor of Physics; A.B. 1952, Ph.D. 1959, California (Berkeley)

Chadwick, Richard W., Associate Professor of Political Science; B.S. 1962, Illinois Institute of Technology; Ph.D. 1966, Northwestern

Chadwick-Cullen, Charlene J., Associate Professor of Music; B.M. 1955, Eastern School of Music; M.M. 1961, Rochester

Chaffee, Margaret H., Lecturer in Psychology B.A. 1961, Washburnn (Topeka)

Chu, Dennis X., Assistant in Intramurals B.S. 1966, Hawaii

Chai, Hi Chang, Professor of Mechanical Engineering; B.S. 1953, Texas; M.S. 1954, Ph.D. 1957, Ohio State


Chan, Conway, Instructor in Civil Engineering B.S. 1961, M.S. 1962, California (Berkeley)

Chandler, David B., Associate Professor of Sociology; B.A. 1960, M.A. 1964, McMastcr

Chang, Chung-Yuan, Professor of Philosophy B.A. 1934, National Central; M.A. 1937, Michigan; Ph.D. 1943, Columbia

Chang, George W., Instructor in Education A.B. 1951, S.T.B. 1953, St. Mary's Seminary; M.Ed. 1964, Hawaii

Chang, Jen-hu, Professor of Geography B.A. 1949, CheKiang; M.A. 1952, Ph.D. 1954, Clark
Chang, Pauline, Instructor in Chinese 
B.S. 1940, National Tsing Hwa

Chang, Sen-dou, Associate Professor of Geography; B.A. 1949, Chin-nan
(Shanghai); M.A. 1955, Wisconsin; Ph.D. 1961, Washington

Chang, Thomas M. C., Associate Professor of Education; B.A. 1947, Hawaii; M.A. 1950, Columbia; Ph.D. 1957, Ohio State

Chantiny, John G., Professor of Human Development; B.A. 1942, Michigan State; M.A. 1947, Ed.D. 1956, Columbia

Chapman, Murray T., Assistant Professor of Geography; B.A. 1958, M.A. 1961, Auckland

Char, Donald F. B., Professor of Public Health and Pediatrics; M.D. 1950, Temple

Char, Walter F., Professor of Psychiatry; M.D. 1945, Temple

Chase, Lida, Assistant Professor of Nursing; B.S. 1960, California (Berkeley); B.S. M.S. 1966, California (San Francisco)

Chattopadhyay, Rahul, Assistant Professor of Electrical Engineering; B.E.E. 1962, Jadarpur Univ.; D.I.C. 1964, Imperial College; M.S. 1966, Ph.D. 1968, California (Los Angeles)

Chattopadhyay, Virgie O., Assistant Professor of Education; B.S. 1960, St. Theresa's College (Philippines); M.A. 1966, Ed.D. 1969, UCLA

Chau, Laurence, Assistant Professor of Economics; B.A. 1959, Chung Chi College; M.S. 1964, Ph.D. 1968, Wisconsin

Chave, Keith E., Professor of Oceanography; Ph.B. 1948, M.S. 1951, Ph.D. 1952, Chicago

Cheng, Ch'eng-K'un, Professor of Sociology; B.A. 1932, Yenching; M.A. 1937, Ph.D. 1945, Washington

Cheng, Chung-Ying, Associate Professor of Philosophy; B.A. 1956, National Taiwan; M.A. 1958, Washington; Ph.D. 1964, Harvard

Cheng, Hui-Chen Pai, Instructor in Chinese; B.A. 1943, Peking

Cho, Lee-Jay, Associate Professor of Sociology; B.A. 1959, Kookmin; M.A. 1962, Ph.D. 1965, Chicago

Chou, James C. S., Associate Professor of Mechanical Engineering; B.S. 1941, National Institute of Technology (China); M.S. 1949, Georgia Institute of Technology; Ph.D. 1968, Oklahoma State

Chou, Shao-Chia, Associate Professor of Pharmacology; B.S. 1943, West China Union; M.S. 1950, Nebraska; Ph.D. 1958, Stanford

Chui, Edward F., Professor of Health and Physical Education; B.S. 1947, M.A. 1948, Ph.D. 1964, Iowa

Chun, Dai Ho, Professor of Education; B.A. 1930, M.A. 1937, Hawaii; Ph.D. 1947, Ohio State

Chun, Joyce H. N., Instructor in Education; B.Ed. 1964, Hawaii

Chung, Chin S., Professor of Public Health and Genetics; B.S. 1951, Oregon State; M.S. 1953, Ph.D. 1957, Wisconsin

Chung, Mary N., Assistant Professor of Social Work; B.A. 1952, Michigan; M.S. 1954, Columbia

Chung, N. H. Paul, Associate Professor of Business Economics & Quantitative Methods; B.A. 1952, Chungung; M.A. 1956, Ball State; Ph.D. 1963, Michigan State

Cinnamon, Pamela, Assistant Professor of Food and Nutritional Sciences; B.H.Sc. 1965, Macdonald Institute; M.S. 1967, Western Ontario

Clark, Elizabeth W., Associate Professor of Public Health; B.S. 1950, Northwestern; M.P.H. 1954, Dr.P.H. 1969, California (Berkeley)

Clark, Richard H., Assistant Professor of Mathematics; B.S. 1940, Yale; M.A. 1949, Michigan

Clarke, Thomas A., Assistant Professor of Oceanography; B.S. 1962, Chicago; Ph.D. 1968, California (San Diego)

Clarke, William C., Associate Professor of Geography; B.A. 1952, M.A. 1959, Ph.D. 1968, California (Berkeley)

Cockrill, Velda, Instructor of Nursing; B.S. 1965, California State College (Long Beach); M.S. 1966, California (Los Angeles)

Cody, William J. T., Lecturer in Professional Nursing; M.D. 1951, Tufts

Coffman, Richard B., Acting Assistant Professor of Economics and Public Health; B.A. 1964, Washington; M.A. 1965, California (Berkeley)

Colby, Robert R., Associate Professor of Mathematics; B.S. 1960, M.A. 1963, Ph.D. 1965, Washington

Collier, Roy W., Assistant Professor of English as Second Language; B.S. 1950, Ohio State; M.A. 1958, Pacific
INSTRUCTION

Collins, Dwane R., Professor of Education
B.A. 1930, State College (Iowa); M.S. 1938, Iowa State; Ed.D. 1941, Columbia

Collins, Myrtle T., Instructor in Education
B.A. 1937, State College (Iowa); M.A. 1960, Colorado College

Comcowich, Jerome M., Assistant Professor of Education;
B.S. 1962, Holy Cross College; M.S. 1965, State Univ. of New York (Albany); Ph.D. 1969, Denver

Comitini, Salvatore, Associate Professor of Economics;
B.S. 1951, M.S. 1955, Alabama; Ph.D. 1960, Washington

Coudron, Charles F., Assistant Professor of Business Economics & Quantitative Methods;
B.S. 1934, Pa. State Teachers College (West Chester); M.Ed. 1940, Hawaii; M.B.A. 1953, Columbia

Connors, James J., Assistant Professor of History;
B.A. 1958, M.A. 1960, Hawaii; Ph.D. 1967, Yale

Contois, David E., Professor of Microbiology
B.A. 1950, California (Los Angeles); M.S. 1952, Hawaii; Ph.D. 1958, California

Conway, Ralph H., Associate Professor of Public Health;
B.A. 1954, Georgia Institute of Technology; M.P.H. 1962, California (Los Angeles); Dr.P.H. 1968, California (Berkeley)

Conul, Bruce J., Professor of Plant Physiology;
B.S. 1936, Washington State; M.S. 1939, Hawaii; Ph.D. 1947, California

Copi, Irving M., Professor of Philosophy
B.A. 1938, Michigan; M.A. 1939, Chicago; M.S. 1946, M.A. 1947, Ph.D. 1948, Michigan

Coraggio, Peter A., Assistant Professor of Music;
B.S. 1962, M.S. 1963, Juilliard School of Music

Corba, Nicholas B., Associate Professor of Engineering Graphics;
B.S. 1940, California State College (Pennsylvania); M.Ed. 1952, Pittsburgh

Corbin, Donald A., Professor of Accounting and Business Economics;
B.S. 1942, M.B.A. 1943, Ph.D. 1954, California (Berkeley); C.P.A. 1947

Cowling, Cedric B., Professor of History
B.A. 1948, M.A. 1950, Stanford; Ph.D. 1956, Wisconsin

Cox, Doak C., Professor of Geology
B.S. 1938, Hawaii; M.A. 1941, Ph.D. 1965, Harvard

Cox, J. Halley, Professor of Art
B.A. 1933, San Jose State; M.A. 1937, California

Cox, John R., Assistant Professor of Travel Industry Management;

Crabtree, Phillip, Acting Assistant Professor of Music;
A.B. 1959, Cornell; M.A. 1963, Iowa

Cramer, Harry Lee, Instructor in English as a Second Language;
B.A. 1962, Miami (Oxford); M.A. 1969, Houston

Crampton, L. J., Professor of Travel Industry Management;
B.A. 1939, Drake; M.B.A. 1941, Washington State

Crawford, S. Cromwell, Assistant Professor of Religion;
B.D. 1952, Serampore; M.A.T. 1959, Indiana; Th.D. 1965, Pacific School of Religion

Creed, Walter G., Assistant Professor of English;

Cripey, Richard A., Assistant Professor of Horticulture;
B.S. 1962, M.S. 1964, Pennsylvania; Ph.D. 1968, California

Cromley, Nora L., Assistant in Dental Hygiene;
B.S.Ed. 1966, Ohio State

Crossley, John B., Professor of Education;
B.S. 1951, M.A. 1940, Claremont; D.Litt. 1945, Howard; Ed.D. 1950, California (Los Angeles)

Crowell, David H., Professor of Psychology
B.A. 1941, Drew; Ph.D. 1950, Iowa

Crymes, Ruth H., Associate Professor of English;
B.A. 1945, M.A. 1948, Oregon; Ph.D. 1965, Columbia

Cordas, George E. E., Assistant Professor of Mathematics;
B.A. 1964, Toronto; M.S. 1966, Ph.D. 1969, Case Western Reserve

Cuberley, Ray E., Assistant Professor of History;
B.A. 1958, Whittier; M.A. 1960, Ph.D. 1967, Wisconsin (Madison)

Currie, Edward, Associate Professor of Accounting;
B.S. 1948, Iowa; M.S. 1965, Ph.D. 1967, Minnesota

Currier, Russell L., Instructor in English as a Second Language;
A.B. 1955, Rochester; M.A. 1969, Hawaii

Curtis, Delores M., Associate Professor of Education;

Cutting, Windsor C., Professor of Pharmacology;
B.A. 1928, M.D. 1932, Stanford

Daenifer, Carl J., Assistant Professor of Education;
B.S. 1953, Pa. State Teachers (Kutztown); M.Ed. 1955, Temple

Dame, Jacklyn H., Instructor in Speech
A.B. 1946, California; M.A. 1948, Stanford

Damon, Paulette S., Acting Assistant Professor of Education;
B.A. 1962, Marietta College; M.A. 1967, Iowa

Damon, Philip M., Instructor in English
B.A. 1959, Gettysburg College; M.A. 1968, M.F.A. 1968, Iowa

Dang, Charlotte, Lecturer in Library Studies
B.Ed. Prof. Cert. 1948, Hawaii; M.S. in L.S. 1952, Western Reserve

Dardjowidjojo, Soenjono, Assistant Professor of Indonesian;
B.A. 1950, English College (Indonesia); M.A. 1964, Hawaii; Ph.D. 1966, Georgetown

Dator, James, Associate Professor of Political Science;
A.B. Stetson Univ.; M.A. 1955, Pennsylvania; Ph.D. 1959, American

Dauer, Dorotha W., Professor of German
M.A. 1937, Paris; Ph.D. 1953, Texas (Austin)
Daugherty, Kenneth L., Associate Professor of Geophysics; B.S. 1957, Morehead; M.S. 1964, Ohio

Davenport, Doris L., Associate Professor of Public Health; A.B. 1942, Western Maryland College; M.P.H. 1944, Ed.S. 1968, Michigan

Dave, Richard D., Instructor of ObGyn
B.A. 1952, Portland

Davidson, Jack R., Professor of Agricultural Economics; B.S. 1953, Wyoming; M.S. 1956, Montana State; Ph.D. 1960, California

Davidson, Russell, Instructor in Art
M.F.A. 1968, Ohio

Davis, Orrel, Associate Professor of Education; B.A. 1927, M.A. 1941, Northwestern

Daw, A. Gavan, Associate Professor of History; B.A. 1955, Melbourne; M.A. 1960, Ph.D. 1966, Hawaii


DeAngelo, Rachael W., Professor of Library Studies; B.S. 1928, Washington College; B.S. in L.S. 1933, M.S. in L.S. 1951, Columbia

De Foe, Vincent J., Professor of Anatomy B.S. 1949, Juniata; M.S. 1951, Rutgers; Ph.D. 1954, Ohio State

DeFrancis, John, Professor of Chinese
B.A. 1933, Yale; M.A. 1941, Ph.D. 1948, Columbia

DeMello, Wayne, Lecturer in Music
B.A. 1957, Northwestern

Demeny, Paul, Professor of Economics
B.A. 1955, Univ. of Budapest; Ph.D. 1961, Princeton

Dennam, William L., Instructor in English B.A. 1963, Davidson College; M.A. 1967, California (Berkeley)

Denney, Reuel N., Professor of American Studies; B.A. 1932, Dartmouth

Derrick, John B., Instructor in English
B.A. 1959, Minnesota; M.A. 1961, California (Berkeley)

Desowitz, Robert S., Professor of Tropical Medicine, Medical Microbiology and Public Health; B.A. 1948, Buffalo; Ph.D. 1951; D.Sc. 1960, London

Deutsch, Elliot, Professor of Philosophy
B.S. 1952, Wisconsin; Ph.D. 1960, Columbia

DeVos, Winifred O., Assistant Professor of Social Work; B.A. 1945, M.A. 1947, Chicago

Dewey, Alice G., Associate Professor of Anthropology; B.A. 1950, M.A. 1954, Ph.D. 1959, Radcliffe

Diamond, A. Leonard, Professor of Psychology; B.A. 1947, Cincinnati; M.A. 1949, Ph.D. 1951, Columbia

Diamond, Milton, Associate Professor of Anatomy; B.S. 1955, City College of New York; Ph.D. 1962, Kansas

Dick, William H., Jr., Instructor in English
B.A. 1967, Univ. of the Pacific; M.A. 1969, San Francisco State


Digman, John M., Professor of Psychology
B.A. 1948, Ph.D. 1951, Ohio State

Dillard, Robert L., Assistant Professor of Speech; B.S. 1955, Southeast Missouri State; M.A. 1958, California (Los Angeles); Ph.D. 1965, Missouri


Diwan, Arwind R., Assistant Professor of Tropical Medicine, Medical Microbiology and Public Health; B.S. 1952, Bombay; Ph.D. 1965, London

Dobson, Peter N., Jr., Assistant Professor of Physics; Ph.D. 1965, Maryland

Dorn, John W., Instructor in English
B.A. 1965, St. John’s; M.A. 1968, Wisconsin

Dotts, Cecil K., Associate Professor of Education; A.B. 1928, Redlands; M.Ed. 1935, Hawaii; Ed.D. 1949, New York

Doty, Maxwell S., Professor of Botany
B.S. 1939, M.S. 1941, Oregon State; Ph.D. 1945, Stanford

Douglass, James W., Assistant Professor of Religion; B.A. 1960, Santa Clara; M.A. 1962, Notre Dame

Drake, Linda R., Instructor in General Engineering; B.S. 1965, M.S. 1967, Kansas

Droste, George H., Assistant Professor of Library Studies; Certificate 1955, Washington; Certificate 1958, Indiana

DuBroisky, William B., SFC, Instructor in Military Science

Dunn, Lloyd M., Professor of Education
B.Ed. 1949, M.Ed. 1950, Saskatchewan; Ph.D. 1953, Illinois

Dunn-Rankin, Peter, Associate Professor of Education; B.S. 1953, M.S. 1954, Florida State; M.A. 1963, Louisiana State; Ed.D. 1965, Florida

Dunwell, Jeannine, Instructor of Nursing
B.S. 1953, Kansas; M.A. 1967, Colorado State

Dunwell, Robert R., Professor of Education
B.S. Ed. 1952, M.S. Ed. 1956, Ed.D. 1961, Kansas (Lawrence)

Dunworth, John, Lecturer in Education
B.A. 1949, M.A. 1952, California (Berkeley); Ed.D. 1959, Southern California

Dupont, Henry J., Professor of Education
B.S. 1949, Lawrence College; M.S. 1950, Delaware; Ph.D. 1959, George Peabody College

Durbin, Paula J., Instructor in French
B.A. 1965, Hawaii; M.A.T. 1966, Yale

Dykstra, Gerald, Professor of Speech-Communication; B.A. 1948, M.A. 1948, Ph.D. 1955, Michigan

Ebel, Robert D., Acting Assistant Professor of Economics; B.A. 1964, Miami; M.S. 1966, Purdue

Ebert, Thomas A., Assistant Professor of Zoology; B.S. 1961, Wisconsin; M.S. 1963, Ph.D. 1966, Oregon

Ecke, Betty, Associate Professor of Art; M.A. 1966, Hawaii

Edelstein, Arnold S., Assistant Professor of English; A.B. 1959, Columbia College; M.A. 1962, Columbia; Ph.D. 1969, California (Berkeley)

Edge, Alfred, Acting Assistant Professor of Management; B.S. 1956, Rider College; M.B.A. 1962, Denver

Eker, Paul C., Jr., Professor of Agronomy and Soil Science; B.A. 1942, Westminster College; Ph.D. 1950, Wisconsin

Ekroth, Lauren E., Assistant Professor of Speech-Communication; B.S. 1956, M.A. 1958, Ph.D. 1967, Minnesota

Elbert, Samuel H., Professor of Pacific Languages and Linguistics; B.A. 1928, Grinnell; B.Lit. 1931, Columbia; Ph.D. 1950, Indiana

Hilligower, Huber W., Professor of Speech-Communication; B.A. 1949, Pacific (Oregon); M.A. 1950, Washington State; Ph.D. 1955, Florida State

Elliott, Donald F., Assistant Professor of Spanish; B.A. 1931, Monmouth; M.A. 1936, Florida

Ellis, Dean S., Assistant Professor of Management; B.S. 1960, M.S. 1963, Utah; Ph.D. 1965, Purdue

El-Ramy, Nabih, Acting Assistant Professor of Business Economics & Quant. Methods; B.Sc. 1958, Cairo Univ.; M.S. 1962, Illinois Institute of Technology

El-Swaify, Samir A., Assistant Professor of Agronomy and Soil Science; B.Sc. 1957, Faculty of Agriculture, Alexandria Univ., Egypt; Ph.D. 1964, California (Davis)

Emby, Charlton R., Instructor in English; B.A. 1962, M.A. 1965, Nevada

Endo, Calvin M., Assistant Professor of Sociology; B.A. 1965, M.A. 1967, Oregon

Ernest, Welden A., Associate Professor of History; B.A. 1953, Buffalo; M.A. 1954, Ph.D. 1967, Harvard

Ernst, Earle, Senior Professor of Drama and Theatre; B.A. 1933, Gettysburgh; M.A. 1938, Ph.D. 1940, Cornell

Espinoza, Renato, Acting Assistant Professor of Education; B.A. 1964, Chile (Santiago); M.A. 1968, Texas

Etherington, A. Bruce, Professor of Architecture; B.Arch. 1947, Cornell

Evans, John R., Professor of Engineering; B.S. 1941, M.S. 1947, Michigan State

Evans, William J. M. (Ian), Assistant Professor of Psychology; B.A. 1966, U. of Witwatersrand, Johannesburg; Ph.D. 1970, London

Evory, Hubert V., Professor of Education; B.Ed. 1934, M.Ed. 1938, Hawaii; Ph.D. 1946, Ohio State

Fairbanks, Gordon H., Professor of Linguistics; B.A. 1937, M.A. 1938, Alberta; Ph.D. 1947, Wisconsin

Faison, Edmund W. J., Associate Professor of Marketing; A.B. 1948, M.A. 1950, Ph.D. 1956, George Washington

Fakhruddin, Syed M., Assistant Professor of Mathematics; B.A. 1960, M.S. 1961, India (Madras); M.S. 1964, Canada (Windsor); Ph.D. 1969, Canada (Queen's)

Fan, Pow-Foong, Assistant Professor of Geosciences; B.S. 1955, Wheaton College; M.A. 1963, Ph.D. 1965, California

Fancher, Joanna E., Assistant Professor of Nursing; B.A. 1950, Houghton; M.N. 1953, Western Reserve; M.A. 1963, Columbia

Fand, Richard M., Professor of Mechanical Engineering; B.S. 1946, Rensselaer Polytechnic Institute; M.S. 1949, Columbia; Ph.D. 1959, Cornell

Fang, Gautier T., Assistant Professor of Electrical Engineering; B.S. 1955, National Taiwan University; M.S. 1962, Ph.D. 1966, Minnesota

Feisthanel, John, Acting Assistant Professor of Travel Industry Management; B.S. 1966, Florida State; M.B.A. 1968, Michigan State

Feldman, Reynold M., Assistant Professor of English; B.A. 1960, M.A. 1962, Ph.D. 1966, Yale

Fellmeth, Jane B., Instructor in English; B.A. 1939, B.A. 1941, Akron; M.A. 1943, Ohio State

Felton, Geraldine, Assistant Professor of Nursing; B.S.N. 1960, M.S.N. 1962, Wayne State; Ed.D. 1968, New York

Ferguson, John B., Professor of Management and Industrial Relations; B.A. 1933, M.B.A. 1935, Stanford; Ph.D. 1960, Cornell

Ferguson, Mavis B., Instructor in Speech-Communication; B.A. 1966, M.A. 1967, Hawaii

Fisher, Raymond, Professor of Social Work; A.B. 1934, M.Sc. 1939, Western Reserve

Fletcher, Sally, Lecturer in Art; B.A. 1955, California (Los Angeles)

Folsome, Clair E., Professor of Microbiology; B.A. 1956, M.A. 1959, Ph.D. 1960, Harvard

Fong, David, Assistant Professor of English; A.B. 1960, Stanford; M.A. 1962, Columbia; Ph.D. 1967, Stanford

Fong, Margaret, Instructor of Nursing; B.S. 1968, State Univ. of New York; M.S. 1969, California (San Francisco)
INSTRUCTION

Gellar, Ralph, Assistant Professor of Mathematics; B.A. 1962, Harvard; M.A. 1964, Ph.D. 1968, Columbia

Geritzen, Franciscus, Professor of Ocean Engineering; Candidaatsexamens, 1948, Ingenieursdiploma, 1950, Technological Univ.

Gething, Thomas W., Assistant Professor of Thai; B.A. 1961, M.A. 1963, Ph.D. 1966, Michigan

Gibbons, Ian R., Professor of Cytology B.A. 1954, Ph.D. 1957, Cambridge

Gilbert, Fred I., Jr., Professor of Public Health; B.S. 1942, California (Berkeley); M.D. 1945, Stanford

Gilbert, Helen, Instructor in Art B.A. 1943, Mills; M.F.A. 1968, Hawaii

Gilbert, James C., Professor of Horticulture B.A. 1931, Pomona; M.A. 1933, Southern California; M.S. 1952, Ph.D. 1959, Hawaii

Gillie, John W., Associate Professor of Chemistry; B.Chem. 1961, Minnesota; Ph.D. 1965, Michigan

Gillary, Howard L., Assistant Professor of Physiology; A.B. 1961, Oberlin; Ph.D. 1966, Johns Hopkins

Gillett, Dorothy K., Instructor in Music B.S. 1940, Ohio State

Gilmore, George, Lecturer in Music

Gilson, Thomas Q., Professor of Management B.A. 1938, Princeton; M.A. 1942, Columbia; Ph.D. 1954, M.I.T.

Glick, Clarence V., Professor of Sociology B.A. 1927, De Pauw; M.A. 1928, Ph.D. 1938, Chicago

Glick, Doris L., Assistant Professor of English B.A. 1929, M.A. 1930, Ph.D. 1932, Iowa

Go, Mateo L. P., Professor of Engineering B.C.E. 1942, Cornell; S.M.C.E. 1943, MIT; Ph.D. 1946, Cornell

Goldstein, Marshall N., Associate Professor of Political Science; B.A. 1955, Florida; Ph.D. 1964, North Carolina

Goo, Gendeniu B., Instructor of Nursing B.S. 1953, St. Mary College; M.S. 1958, Hawaii

Goos, Roger D., Associate Professor of Botany; B.A. 1950, M.S. 1955, Ph.D. 1958, State University of Iowa

Gopalakrishnan, Chennut, Associate Professor of Agricultural Economics; B.A. 1955, M.A. 1957, Kerala University, India; Ph.D. 1967, Montana State

Gordon, Donald C., Jr., Assistant Professor of Oceanography; A.B. 1962, Hamilton College; M.S. 1964, Rhode Island; Ph.D. 1968, Dalhousie

Gorter, Wytze, Professor of Economics A.A. 1933, Mario Jr. College; A.B. 1936, Ph.D. 1948, Stanford

Gosline, William A.; Professor of Zoology B.S. 1938, Harvard; Ph.D. 1941, Stanford

Gotanda, Yukio, Lecturer in Social Work B.A. 1950, Hawaii; M.S.W. 1952, Michigan; J.D. 1956, Wisconsin

Goto, George, Lecturer in Public Health M.D. 1951, Washington

Goto, Shogetsu, Associate Professor of Plant Pathology; B.S. 1941, M.S. 1943, Alberta; Ph.D. 1953, Minnesota

Grace, George W., Professor of Linguistics Lic. 1948, Geneva; Ph.D. 1958, Columbia

Grace, Robert A., Assistant Professor of Civil Engineering; B.E.S.C. 1960, Western Ontario; S.M. 1962, Ph.D. 1966, M.I.T.

Granberg, Bertil S. M., Associate Professor of Electrical Engineering; Civing. E.E. 1953, R. Inst. of Techn. (Stockholm); Ph.D. 1961, Wisconsin

Grant, Marcia L., Instructor of Nursing B.S.N. 1963, M.S.N. 1964, Wayne

Gray, Frederic, Assistant Professor of French B.A. 1941, M.A. 1964, Hawaii; Ph.D. 1970, Arizona

Gray, James M., Assistant Professor of English B.A. 1959, Carleton; M.A. 1961, Ph.D. 1966, Southern California

Gray, Mary, Assistant Professor of Religion B.A. 1948, Stanford; B.D. 1950, Pacific School of Religion; Ph.D. 1956, Hebrew Union

Grayson, Henry W., Professor of Business Economics; Quantitative Methods B.A. 1937, Saskatchewan; M.A. 1947, Ph.D. 1950, Toronto

Green, Richard E., Associate Professor of Soil Science; B.S. 1953, Colorado State; M.S. 1957, Nebraska; Ph.D. 1962, Iowa State

Green, Roger, Associate Professor of Anthropology; B.A. 1954, B.Sc. 1955, New Mexico; Ph.D. 1964, Harvard

Greenberg, Marvin, Associate Professor of Education; B.S. 1957, New York; M.A. 1958, Ed.D. 1962, Columbia

Greenwood, Frederick C., Professor of Biochemistry; B.S. 1950, King’s College (London); M.S. 1951, Ph.D. 1953, Univ. College of London

Greenwood, Ronald G., Acting Assistant Professor of Management; B.S. 1964, Ithaca College; M.B.A. 1966, Cornell

Gregory, Christopher, Professor of Mathematics; B.S. 1938, M.S. 1939, Ph.D. 1941, California Institute of Technology

Griffin, P. Bion, Acting Assistant Professor of Anthropology; B.A. 1963, Maine; Ph.D. 1969, Arizona

Grippin, Jean T., Instructor of Nursing B.S. 1954, Baldwin Wallace; M.S. 1968, Hawaii

Griswold, Robert G., Assistant Professor of Mathematics; B.S. 1960, M.S. 1963, Ph.D. 1964, Rensselaer Polytechnic Institute


Gross, Yukie T., Associate Professor of Nursing; B.A. 1947, Wells College; M.N. 1950, M.S. (M.H.N.) 1954, Yale

Grossman, Jerome, Professor of Public Health; B.A. 1945, M.P.H. 1946, Ph.D. 1954, California (Berkeley)
INSTRUCTION

Hashimoto, Mitsuo, Assistant Professor of Education; B.A. 1958, Aoyama Gakuin University, Tokyo; M.A. 1962, Hawaii; Ph.D. 1967, Georgetown

Hata, Moira, Instructor of Nursing B.S. 1964 Seattle; M.S. 1969, California (San Francisco)

Havaas, Marion, Assistant Professor of Art B.S. 1945, M.S. 1952, Wisconsin; M.F.A. 1959, Cranbrook Academy of Art

Hayakawa, John M., Assistant Professor of Public Health; B.S. 1951, California; M.P.H. 1954, California

Hayes, Charles F., Associate Professor of Physics; A.B. 1963, Wheaton College; M.S. 1965, Ph.D. 1967, Washington

Hayes, Eloise D., Associate Professor of Education; B.Ed. 1939, Minn. State Teachers College (St. Cloud); M.A. 1951, Ph.D. 1953, North Carolina

Hazama, Dorothy O., Assistant Professor of Education; B.Ed. 1952, Hawaii; M.A. 1955, New York


Heinberg, Paul J., Professor of Speech-Communication; B.S. 1949, M.A. 1950, Columbia; Ph.D. 1956, Iowa

Heine, Elizabeth M., Assistant Professor of English; A.B. 1960, Cornell; A.M. 1961, Radcliffe; Ph.D. 1965, Harvard

Helber, Deanna, Instructor in Food and Nutritional Sciences; B.S. 1962, Oregon; M.S. 1964, Washington


Hebling, Mark, Acting Assistant Professor of American Studies; B.A. 1961, California (Berkeley); M.A. 1964, San Francisco

Helmich, Andrew F., Assistant Professor of Education; B.A. 1955, Moravian College; B.D. 1961, Princeton Theological Seminary; M.A. 1965, Denver; Ph.D. 1969, Minnesota

Henke, Burton L., Professor of Physics A.B. 1944, Miami (Ohio); M.S. 1946, Ph.D. 1953, California Institute of Technology

Herman, Louis M., Associate Professor of Psychology; B.S.S. 1951, M.A. 1952, City College of N.Y.; Ph.D. 1961, Pennsylvania State

Herrick, Orpha E., Assistant Professor of Fashion Design and Merchandising, B.S. 1949, Northwestern State; M.S. 1954, Wisconsin

Herrick, Raymond B., Associate Professor of Poultry Science; B.S. 1950, Northwestern State; M.S. 1955, Ph.D. 1960, Wisconsin

Herzberg, Mendel, Professor of Microbiology B.S. 1948, M.A. 1950, Ph.D. 1953, California

Heye, Charles Frank, Assistant Professor of Management; B.B.A. 1943, Texas; M.B.A. 1947, Maryland

Higa, Harold T., Assistant Professor of Education; B.M. 1949, M.M. 1950, Cincinnati

Hight, Joseph E., Acting Assistant Professor of Economics; B.A. 1965, New Hampshire

Hilden, Hugh M., Assistant Professor of Mathematics; B.S. 1958, Rutgers; M.S. 1966, Ph.D. 1968, Stevens Institute of Tech.

Hilker, Doris M., Associate Professor of Foods and Nutrition; B.S. 1949, Chicago; M.S. 1955, Loyola; Ph.D. 1958, Tulane


Hing, Francisco S., Associate Professor of Food Science and Technology; B.S. 1956, National University (Manila); M.S. 1959, Ph.D. 1963, Wisconsin

Hirayama, Genkyu, Instructor in Japanese B.L.L. 1953, Chuo University

Hirscheid, Rudolf A., Professor of Mathematics; M.S. 1953, Amsterdam; Ph.D. 1960, Utrecht

Hooper, Bates L., Acting Assistant Professor of Japanese; B.A. 1962, Ph.D. 1967, Texas

Hokama, Yoshitsugi, Professor of Pathology A.B. 1951, M.A. 1953, Ph.D. 1957, California (Los Angeles)

Holderness, James S., Associate Professor of Agricultural Economics; B.S. 1950, Idaho; M.S. 1952, Cornell

Hollingshead, Virginia, Associate Professor of English; B.S. 1949, Pittsburgh; M.A. 1951, Hawaii; Ph.D. 1960, Washington

Holmes, John R., Professor of Physics A.B. 1938, M.A. 1941, Ph.D. 1942, California (Berkeley)

Holton, James S., Professor of Spanish B.A. 1948, San Diego State; M.A. 1951, Ph.D. 1956, California (Berkeley)

Holtzmann, Oliver V., Associate Professor of Plant Pathology; B.S. 1950, M.S. 1952, Colorado State; Ph.D. 1955, Washington State

Hong, Pill-Whoon, Professor of Surgery M.D. 1942, Severance Union, Seoul, Korea

Hong, Suk Ki, Professor of Physiology M.D. 1949, Yonsei; Ph.D. 1956, Rochester

Hook, Ralph C., Professor of Marketing B.A. 1947, M.A. 1948, Missouri; Ph.D. 1954, Texas

Hoover, Helen M., Assistant Professor of Social Work; B.S. 1926, North Dakota; M.A. 1948, Chicago

Hopkins, Mary E., Associate Professor of Management; B.A. 1940, Pittsburgh; M.A. 1958, Ph.D. 1963, Western Reserve

Horan, Claude F., Professor of Art B.A. 1942, San Jose State; M.A. 1946, Ohio State

Hormann, Bernhard L., Professor of Sociology; B.A. 1927, M.A. 1931, Hawaii; Ph.D. 1949, Chicago

Horton, Shelley L., Instructor of Nursing B.S. 1960, Oregon; M.S. 1965, California (San Francisco)
Hoshor, John P., Professor of Speech
B.A. 1938, M.A. 1940, Washington; Ph.D. 1947, Iowa

Hotchklin, Gary, Assistant Professor of Food Service Administration; B.S. 1962, M.B.A. 1964, Michigan

Howard, Irwin, Acting Assistant Professor of Linguistics; B.A. 1963, Hawaii

Hsiao, Sidney C., Professor of Zoology
B.A. 1928, Shanghai; M.A. 1933, Yenching; Ph.D. 1938, Harvard

Hun, Kwaw Moe, Assistant Professor of Mechanical Engineering; B.S. 1957, Lehigh; M.S. 1958, Ph.D. 1965, Wisconsin

Huang, Chi-chou, Visiting Associate Professor of Chinese; B.A. 1950, North China University

Hubbard, Arthur T., Assistant Professor of Chemistry; B.A. 1963, Westminster College; Ph.D. 1967, California Institute of Technology

Hubbard, Ralph B., Jr., Associate Professor of General Engineering; B.S. 1944, Colorado; M.S. 1963, Art Center School, California (Los Angeles); Ph.D. 1967, Wisconsin

Hugh, Williams I., Professor of Animal Science; B.A. 1949, British Columbia; M.S. 1951, Ph.D. 1955, Minnesota

Huhm, Halla, Lecturer in Music
B.S. 1942, Jitsen Women's College

Hull, Valerie, Instructor in Russian
B.A. 1967, M.A. 1968, State Univ. of New York

Hummel, Paul L., Assistant Professor of Civil Engineering; B.S. 1957, Hawaii; M.S. 1960, Nebraska

Hundtoft, Elgin, Associate Professor of Agricultural Engineering; B.S. 1960, Montana; M.S. 1962, Cornell; Ph.D. 1969, Wisconsin

Hung, Fred C., Professor of Economics
B.A. 1947, St. John's (China); Ph.D. 1955, Washington

Hunt, James, Lecturer in Library Studies
Ph.B. 1951, M.A. 1955, Detroit; M.A.L.S. 1959, Michigan

Hunt, John A., Associate Professor of Genetics; B.A. 1956, Ph.D. 1960, Cambridge

Huntsberry, William E., Professor of English
B.A. 1942, Michigan State Normal; M.A. 1949, Hawaii

Hutchinson, Louise A., Associate Professor of Medicine (Okinawa); B.A. 1937, Iowa; M.D. 1943, Tulane

Hutchinson, Robert H., Associate Professor of Orthopedics (Okinawa); B.S. 1935, B.M. 1938, M.D. 1939, Northwestern

Hwang, Hu Hsien, Professor of Electrical Engineering; B.Sc. 1949, National Chiao-Tung University; M.Sc. 1956, Ph.D. 1959, Lehigh

Hylin, John W., Associate Professor of Agricultural Biochemistry; B.A. 1950, Marietta; M.S. 1953, Purdue; Ph.D. 1957, Columbia

Ige, Thomas H., Professor of Business Economics & Quantitative Methods
B.A. 1940, Hawaii; M.A. 1942, Ph.D. 1950, Wisconsin

Ignatius, Mary Ann, Acting Assistant Professor of French; B.A. 1959, Miami; M.A. 1963, Stanford

Iha, Franklin T., Assistant Professor of Mathematics; B.A. 1961, M.A. 1963, Hawaii; Ph.D. 1969, California (Los Angeles)

Ihara, Tetsuro, Professor of Education
B.S. 1940, Hawaii; M.A. 1949, Ph.D. 1959, Ohio State

Ihrig, Judson L., Associate Professor of Chemistry; B.S. 1949, Haverford; M.A. 1951, Ph.D. 1952, Princeton

Ikawa, Haruyoshi, Assistant Professor of Soil Science; B.S. 1951, M.S. 1956, Hawaii; Ph.D. 1968, Pennsylvania State

Ikeda, Hiroko, Associate Professor of Japanese; B.A. 1936, Tokyo Joshi Daigaku; Ph.D. 1956, Indiana

In, Andrew W., Professor of Education
B.Ed. 1941, Hawaii; M.A. 1949, Ph.D. 1951, New York

Inglis, Chester R., Professor of Education
B.A. 1947, Pomona; M.A. 1956, Claremont; Ed.D. 1958, Stanford

Inn, Agnes M., Associate Professor of Elementary Education; B.Ed. 1940, Hawaii; M.A. 1952, New York; Ed.D. 1966, California (Berkeley)

Insko, Chester A., Professor of Psychology; A.B. 1957, Ph.D. 1963, California; M.A. 1958, Boston

Ishida, Jack T., Professor of Agricultural Economics; B.A. 1942, M.A. 1947, Hawaii; Ph.D. 1960, Purdue

Ishida, Janet K., Instructor of Nursing
B.S. 1968, Hawaii; M.S. 1969, California (San Francisco)

Ishii, Mamoru, Associate Professor of Plant Pathology; B.S. 1947, Hawaii; Ph.D. 1953, California

Ishimoto, Winifred H., Assistant Professor of Social Work; B.A. 1950, M.S.W. 1952, Hawaii

Iwata, Ruth Y., Assistant Professor of Nursing; B.S. 1959, Hawaii; M.S. 1962, St. John's

Jacang, Amelia R., Instructor of Pediatrics
M.D. 1963, Univ. of the East (Manila)

Jacks, Clyde E., Capt., Assistant Professor of Military Science; B.A. 1963, Sam Houston State

Jackson, Ernest A., Professor of European Languages; B.A. 1946, Boston; M.A. 1951, Yale; Ph.D. 1962, Michigan
INSTRUCTION

Jackson, Jean A., Instructor in English as a Second Language; B.A. 1956, Oberlin; M.A. 1962, Columbia
Jackson, Kenneth L., Assistant Professor of English as a Second Language; B.A. 1956, Hendrix; M.A. 1960, Ed.D. 1967, Columbia
Jackson, Lowell D., Professor of Education B.A. 1948, M.S. 1949, Ed.D. 1957, Southern California
Jacobs, Laurence W., Associate Professor of Management; B.S. 1961, Pennsylvania; M.B.A. 1963, Ph.D. 1966, Ohio State
Jacobsen, Lyle E., Professor of Accounting B.Sc. 1951, Dana College; M.A. 1955, Nebraska; Ph.D. 1958, Illinois; C.P.A. 1955
Jaeckel, Solomon P., Associate Professor of Education; B.S. 1938, Wayne State; M.A. 1963, Ed.D. 1965, California (Los Angeles)
Jambor, Harold A., Professor of Social Work B.A. 1935, Reed; M.A. 1939, Chicago; D.S.W. 1965, Southern California
James, Gary A., Instructor in English as a Second Language; B.S. 1961, Ohio State; M.A. 1968, Hawaii
Jeffries, John T., Astronomer and Professor of Physics; B.S. 1947, Western Australia; M.A. 1949, Cambridge; D.S. 1962, W. Australia
Jen, Ching-Hwa, Instructor in Chinese B.A. 1963, National Chengchi; M.A. 1965, National Taiwan
Jenkins, Esther C., Associate Professor of Education; B.A. 1931, Alderson-Broaddus; M.A. 1947, Ph.D. 1962, Ohio State
Jenner, Philip N., Assistant Professor of Asian and Pacific Languages; B.A. 1946, Washington; Ph.D. 1969, Hawaii
Johnson, Don E., Instructor in Hawaiian B.A. 1957, Washington
Johnson, Donald H., Professor of History B.A. 1938, California (Los Angeles); M.A. 1941, Ph.D. 1946, Southern California
Johnson, Gerald L., Assistant Professor of Mechanical Engineering; B.S. 1960, Alberta; M.S. 1963, Michigan; Ph.D. 1968, Brown
Johnson, Jacqueline B., Assistant Professor of Technical Nursing; B.S. 1949, Adelphi; M.S. 1962, St. John's
Johnson, James S., Assistant Professor of Mathematics; B.A. 1964, California (Berkeley); Ph.D. 1967, Colorado (Boulder)
Johnson, Jeanette, Instructor in English as a Second Language; B.A. 1961, M.A. 1966, Hawaii
Johnson, Jerry M., Assistant Professor of Public Health; B.A. 1965, M.S. 1966, Ph.D. 1969, Minnesota
Johnson, Rubellite, Instructor in Hawaiian B.A. 1954, Hawaii
Johnson, Walter, Professor of History B.A. 1937, Dartmouth; M.A. 1938, Ph.D. 1941, Chicago
Jones, Margaret D., Instructor in English B.A. 1937, Utah; M.A. 1942, Southern California
Jones, Richard H., Professor of Information Sciences; B.S. 1956, M.S. 1957, Pennsylvania State; Ph.D. 1961, Brown
Jonish, James, Assistant Professor of Business Economics and Quantitative Methods; B.A. 1963, M.A. 1964, Illinois; Ph.D. 1969, Michigan
Jordaan, Jan M., Jr., Associate Professor of Civil Engineering; B.S. 1952, Witwatersrand (South Africa); M.S. 1953, Wisconsin; C.E. 1955, Sc.D. 1958, M.I.T.
Jordan, Ralph E., Lecturer in Psychology M.A. 1950, California
Josephs, Lewis S., Acting Assistant Professor of Linguistics; B.A. 1965, Yale

Kagawa, Grace, Instructor in Medical Technology; B.A. 1941, Kansas
Kahananui, Dorothy, Lecturer in Hawaiian B.S. 1931, New York; M.Ed. 1936, Hawaii
Kaina, Lorraine M., Instructor in Health and Physical Education; B.S. 1951, M.Ed. 1965, Hawaii
Kamemoto, Fred I., Associate Professor of Zoology; A.B. 1950, M.S. 1951, George Washington; Ph.D. 1954, Purdue
Kamemoto, Haruyuki, Professor of Horticulture; B.S. 1944, M.S. 1947, Hawaii; Ph.D. 1950, Cornell
Kamida, Alan, Lecturer in Library Studies B.A. 1954, Michigan State; M.L.S. 1959, Rutgers
Kamins, Robert M., Professor of Economics B.A. 1940, M.A. 1948, Ph.D. 1950, Chicago
Kamins, Shirley R., Instructor in English B.A. 1940, M.A. 1965, Hawaii
Kane, Robert E., Associate Professor of Anatomy; B.S. 1953, M.I.T.; Ph.D. 1957, Johns Hopkins
Kanehiro, Yoshinori, Associate Professor of Soils; B.S. 1942, M.S. 1948, Ph.D. 1964, Hawaii
Kang, Hugh H. W., Assistant Professor of Asian Studies and History; B.A. 1956, Berea College; M.A. 1958, Chicago; Ph.D. 1964, Washington
Kanner, Elliott E., Associate Professor of Library Studies; B.S. 1954, M.S. in L.S. 1955, Columbia; Ph.D. 1970, Wisconsin
Kanno, Jerry K., Instructor in Mathematics B.A. 1963, Hawaii; M.A. 1965, Missouri
Kariel, Henry S., Professor of Political Science; B.A. 1950, Stanford; Ph.D. 1954, California (Berkeley)
Kassebaum, Gene, Professor of Sociology A.B. 1951, Missouri; M.A. 1956, Ph.D. 1958, Harvard
Katz, Zvi, Instructor in Art B.Arch. 1968, California (Berkeley)
INSTRUCTION

Kozuma, Harold K., Assistant Professor of Education; B.A. 1951, Hawaii; M.S. 1958, D.Ed. 1963, Oregon

Kozuma, Maj. Harry T., Assistant Professor of Aerospace Studies; B.S. 1955, Hawaii; M.S. 1963, Oregon

Kraemer, Hazel V., Professor of Human Development; A.B. 1934, M.A. 1938, Ph.D. 1945, California (Berkeley)

Krahenbuhl, Gary S., Assistant Professor of Health and Physical Education; B.S. 1965, M.S. 1966, Northern Illinois; Ed.D. 1969, Colorado State College

Kramer, Hugh E., Associate Professor of Marketing; B.A. 1949, City College; M.B.A. 1952, J. Wolfgang Goethe; Ph.D. 1960, Karl Franzens

Krantz, LaVar, Assistant Professor of Music; B.A. 1955, M.M. 1964, Utah

Krause, Ervin D., Assistant Professor of English; B.S. 1953, Iowa State; M.A. 1957, Nebraska

Krause, Loretta, Assistant Professor of Speech-Communication; B.A. 1960, Minnesota; M.A. 1961, Nebraska; Ed.D. 1969, South Dakota

Krueger, John A., Assistant Professor of OhGyn; M.D. 1951, New York

Krishberg, Jane, Associate Professor of Social Work; B.A. 1937, Grinnell; M.A.S.A. 1948, Ohio

Kubo, Winifred R., Instructor in Nursing; B.S. 1961, Northwestern; M.S. 1964, California (San Francisco)

Kucera, Geoffrey Z., Associate Professor of Education; B.S. 1959, M.A. 1960, Florida; Ph.D. 1968, Michigan State

Kumabe, Kazuye T., Assistant Professor of Social Work; A.B. 1943, Utah; M.S.W. 1960, Hawaii

Kunimoto, Elizabeth N., Instructor in Speech-Communication; B.A. 1951, Michigan; M.A. 1965, Hawaii

Kunishima, Minako, Instructor in Japanese; B.A. 1962, Tsuda College; M.A. 1964, Michigan

Kuo, Franklin F., Professor of Electrical Engineering; B.S. 1955, M.S. 1956, Ph.D. 1958, Illinois

Kuroda, Yasumasa, Associate Professor of Political Science; B.A. 1956, M.A. 1959, Ph.D. 1962, Oregon

Kuri, Gaile M., Instructor in Social Work A.B. 1946, Chicago; M.S.W. 1949, Pittsburgh

Kurren, Oscar, Professor of Social Work; B.A. 1943, M.S.W. 1948, Pittsburgh; Ph.D. 1967, Brandeis

Kusanagi, Yutaka, Acting Assistant Professor of Japanese; B.A. 1960, Sophia Univ.

Kwan, Julia, Instructor in Chinese; B.A. 1961, National Taiwan Univ.; M.A. 1966, Washington

Kwok, D. Wynn-Ye, Professor of History; B.A. 1954, Brown; M.A. 1956, Ph.D. 1959, Yale

Kyselka, Will, Assistant Professor of Education; B.S. 1947, M.S. 1949, M.A. 1951, Michigan

Ladd, Doris M., Assistant Professor of History; A.B. 1955, M.A. 1956, Ph.D. 1970, Stanford

Laemmle, Franklin F., Assistant Professor of Plant Pathology; B.S. 1960, California (Davis); M.S. 1967, Purdue

Lamley, Harry J., Associate Professor of History; B.A. 1953, Reed; M.A. 1960, Ph.D. 1964, Washington

Lamoureux, Charles H., Associate Professor of Botany; B.S. 1953, Rhode Island; M.S. 1955, Hawaii; Ph.D. 1961, California

Lampard, William D., Professor of Human Development; B.A. 1941, Chicago; M.A. 1947, Ed.D. 1952, Columbia

Lang, Melvin, Professor of Education; B.S. 1953, State Univ. College at New Paltz; M.A. 1956, Columbia; Ed.D. 1962, New York

Langford, Stephen A., Lecturer in Geology; B.A. 1963, Amherst

Langhans, Edward A., Associate Professor of Drama; B.A. 1948, M.A. 1949, Rochester; M.A. 1951, Hawaii; Ph.D. 1955, Yale

Laouras, Leona A., Instructor in English A.B. 1964, College of St. Francis (Illinois); M.A. 1966, Illinois

Larrabee, Sumi, Instructor in Japanese; B.A. 1948, Tokyo Joshi Daigaku

Lariva, Jim, Instructor in Education; B.A. 1967, Arizona

Larsen-Badse, Jorgen, Associate Professor of Mechanical Engineering; M.S. 1958, Ph.D. 1961, Royal Danish Technical University

Larson, Arnold B., Professor of Agricultural Economics; B.S. 1949, M.S. 1951, Minnesota; Ph.D. 1960, Stanford

Larson, Harold O., Associate Professor of Chemistry; B.S. 1943, Wisconsin; M.S. 1947, Purdue; Ph.D. 1950, Harvard


Larson, Valentine K., Assistant Professor of Speech-Communication; B.A. 1935, Fresno State; M.A. 1942, Southern California

Lau, L. Stephen, Professor of Civil Engineering; B.S. 1953, M.S. 1955, Ph.D. 1959, California

Laurila, Simo L., Professor of Geodesy B.Sc. 1946, M.Sc. 1948, Ph.D. 1953, Finland’s Institute of Technology

Laursen, Carolyn J., Instructor of Nursing B.S. 1959, Pacific Lutheran; M.N. 1967, Washington

Lebra, William P., Professor of Anthropology and Asian Studies; B.A. 1948, M.A. 1949, Minnesota; Ph.D. 1958, Harvard
Lo, Ching-Tang, Associate Professor of Chinese; B.A. 1952, M.A. 1956, National Univ. of Taiwan; D.Litt. 1961, Ministry of Education, Taiwan

Lo, Mei-Li, Assistant Professor of Nursing; B.S. 1954, Hawaii; M.A. 1965, Teachers College, Columbia

Loh, Philip C. S., Professor of Microbiology; B.S. 1950, M.P.H. 1954, Ph.D. 1958, Michigan State University; M.S. 1953, Iowa State University; Professor of Biology; Ph.D. 1956, Michigan State University

Love, Lucile L., Assistant Professor of Nursing; B.S. N.E. 1955, M.S.N. 1961, Catholic University

Lowe, Howard D., Professor of Accounting and Finance; B.S. 1945, M.S. 1948, Brigham Young; D.B.A. 1957, Indiana; C.F.A. 1949

Lowers, James K., Professor of English; B.A. 1935, M.A. 1937, Ph.D. 1950, California (Los Angeles)

Lum, Bert K. B., Professor of Pharmacology; B.S. 1951, Ph.D. 1956, Michigan; M.S. 1960, Kansas

Lum, Cheong, Assistant Professor of Education; B.Ed. 1952, Hawaii; M.A. 1958, New York

Lum, Lillian A., Assistant Professor of Education; B.A. 1935, M.Ed. 1960, Hawaii

Lum, Richard S., Assistant Professor of Music; B.Ed. 1951, Hawaii; M.Mus.Ed. 1953, Northwestern University

Lum, Thomas C. H., Lecturer in Civil Engineering; B.S. 1951, Washington; M.S. 1959, Illinois

Luomala, Katharine, Professor of Anthropology; B.A. 1931, M.A. 1933, Ph.D. 1936, California

Lusseyran, Jacques P., Professor of French Licence es Lettres, Licence de Phil. 1946, Univ. of Paris, Sorbonne

Lutsky, Seymour E., Professor of American Studies; B.A., B.J. 1942, Missouri; M.A. 1948, Ph.D. 1951, Iowa

Lynch, Mary Ann B., Instructor in English B.A. 1946, Cornell; M.A. 1967, California (Berkeley)

Lysvin, Anatole V., Acting Assistant Professor of Linguistics; A.B. 1904, Princeton

MacDonald, Gordon A., Senior Professor of Geology and Geophysics; B.A. 1933, M.A. 1934, California (Los Angeles); Ph.D. 1938, California

MacGregor, Beatrice B., Assistant Professor of Education; B.S. 1945, M.S. 1952, Trenton State College

MacMillan, Ian T., Instructor in English B.S. 1963, State University College (Oneonta, N.Y.); M.F.A. 1965, M.A. 1966, Iowa

Mader, Adolf G., Associate Professor of Mathematics; M.S. 1961, Tubingen (Germany); Ph.D. 1964, New Mexico State

Maeshiro, Masao, Associate Professor of Surgery (Okinawa); M.D. 1956, Kyushu

Mahoney, Carl, Assistant Professor of Architecture; A.A. Diploma 1959, Arch. Assn. Schl. of Arch. (London)

Mahony, Frank, Associate Professor of Anthropology; B.A. 1948, Hobart College; M.A. 1950, Chicago; Ph.D. 1968, Stanford

Mak, James, Assistant Professor of Economics B.S. 1964, Miami (Ohio); Ph.D. 1969, Purdue

Malahof, Alexander, Associate Professor of Geophysics; B.Sc. 1961, New Zealand; M.Sc. 1962, Wellington (New Zealand); Ph.D. 1965, Hawaii

Maltby, Joseph, Associate Professor of English; B.A. 1952, M.A. 1957, Stanford; Ph.D. 1963, Wisconsin

Mamiya, Richard T., Associate Professor of Surgery; B.S. 1950, Hawaii; M.D. 1954, St. Louis

Manchester, Curtis A., Jr., Professor of Geography; B.A. 1935, M.A. 1938, Ph.D. 1946, Michigan

Mandel, Morton, Professor of Biophysics B.C.E. 1944, City College of N.Y.; M.S. 1949, Ph.D. 1957, Columbia

Maney, Florence A., Assistant Professor of English; B.A. 1947, M.A. 1951, Hawaii

Manghanni, Murli, Associate Professor of Geophysics; B.Sc. 1957, M.Sc. 1958, Indian School of Mines and Applied Geology (India); A.I.S.M. 1958, Ph.D. 1962, Montana State

Mann, J. Adin, Associate Professor of Chemistry and Biophysics; B.S. 1954, Ph.D. 1962, Iowa State

Mansson, Helge H., Associate Professor of Psychology; B.A. 1960, California (Los Angeles); Ph.D. 1965, New York

Marders, William G., Professor of Agricultural Economics; B.S. 1929, California; M.S. 1954, Chicago; Ph.D. 1964, California

Maretki, Audrey, Assistant Professor of Foods and Nutrition; B.S. 1957, M.S. 1960, Pennsylvania State

Maretki, Thomas W., Professor of Anthropology; B.A. 1951, Hawaii; Ph.D. 1957, Yale

Margulies, Herbert F., Professor of History B.A. 1950, Reed; M.A. 1951, Ph.D. 1955, Wisconsin

Mark, Shelley, Lecturer in Economics B.A. 1943, Ph.D. 1956, Washington; M.S. 1944, Columbia

Marsh, James B., Assistant Professor of Business Economics & Quantitative Methods B.A. 1961, M.A. 1967, Chicago

Martin, Robert M., Professor of Education B.S. 1937, Linfield College; M.A. 1946, Ph.D. 1949, Washington

Martinez, Albert P., Associate Professor of Plant Pathology; B.S. 1955, Florida

Mason, Carl B., Instructor in Surgery B.A. 1947, M.D. 1953, Stanford
INSTRUCTION

Mason, Charles W., Assistant Professor in English as Second Language; B.A. 1949, Roosevelt; M.Ed. 1951, Colorado; Ph.D. 1968, Southern Illinois

Mason, Richard G., Assistant Professor of Drama and Theatre; B.A. 1950, Swarthmore; M.F.A. 1953, Yale

Masuda, Robert Y., Assistant Professor of Social Work; B.A. 1950, M.S.W. 1958, Hawaii

Masuda, Terry T., Associate Professor of Public Health; A.B. 1948, New York; M.P.H. 1957, Dr.P.H. 1965, California (Berkeley)

Matson, Floyd W., Professor of American Studies; A.B. 1950, M.A. 1953, Ph.D. 1960, California (Berkeley)

Matsumoto, Hiromu, Professor of Agricultural Biochemistry; B.S. 1944, M.S. 1945, Hawaii; Ph.D. 1955, Purdue

Matsumoto, Y. Scott, Associate Professor of Public Health; B.S. 1949, M.A. 1945, Ph.D. 1957, American

Matsumura, Sinya, Associate Professor of Radiology (Okinawa); M.D. 1960, Nagasaki University, Japan

Matthews, Donald C., Professor of Zoology B.A. 1931, Ph.D. 1935, Wisconsin

Maukele, Patricia A., Instructor in Hawaiian B.Ed. 1966, Hawaii

Maurer, Walter H., Professor of History and Sanskrit; B.A. 1943, Vermont; Ph.D. 1962, Pennsylvania

May, Michael Z., Assistant Professor of Speech Pathology and Audiology; B.A. 1962, City College of New York; M.A. 1963, Ohio; Ph.D. 1967, Stanford

McAllister, Howard C., Associate Professor of Physics; B.S. 1948, M.S. 1950, Wyoming; Ph.D. 1959, Colorado

McCabe, Sumie F., Assistant Dean, Graduate Division; B.Ed. 1946, M.A. 1949, Hawaii

McCarthy, Harold E., Professor of Philosophy B.A. 1937, M.A. 1942, Ph.D. 1947, California (Berkeley)

McConn, James D., Assistant Professor of Biochemistry; B.S. 1960, West Liberty State College; Ph.D. 1965, Hawaii

McConnell, Bruce, Assistant Professor of Biochemistry; B.S. 1954, Grove City College; Ph.D. 1966, Vermont

McCorriston, Colin C., Assistant Professor of Obstetrics and Gynecology; A.B. 1936, Stanford; M.D. 1939, Harvard

McCutcheon, Elizabeth N., Associate Professor of English; B.A. 1954, William Smith; M.A. 1956, Ph.D. 1961, Wisconsin

McCutcheon, James M., Associate Professor of History and American Studies B.A. 1954, Hobart; M.S. 1955, Ph.D. 1959, Wisconsin

McDermott, John F., Jr., Professor of Psychiatry; A.B. 1951, Cornell; M.D. 1955, N.Y. Medical College

McDonald, Ray L., Associate Professor of Chemistry; A.B. 1955, San Diego State; Ph.D. 1960, Oregon State

McGloine, Robert E., Acting Assistant Professor of History; B.A. 1954, California (Los Angeles)

McHenry, Robert W., Jr., Assistant Professor of English; B.A. 1965, M.A. 1967, Boston; Ph.D. 1970, Michigan

McIntosh, Dean K., Assistant Professor of Education; B.S. 1959, Colorado; M.A. 1964, Ed.D. 1966, California (Los Angeles)

McKaugan, Howard P., Professor of Linguistics; B.A. 1945, California (Los Angeles); M.Th. 1946, Dallas Theological Seminary; M.A. 1952, Ph.D. 1957, Cornell

McKay, R. Neil, Professor of Music B.A. 1953, Western Ontario; M.A. 1955, Ph.D. 1956, Eastman School of Music

McKay, Robert H., Associate Professor of Biochemistry; B.S. 1953, Washington; Ph.D. 1959, California (Berkeley)

McKnight, Brian E., Associate Professor of History; A.B. 1960, M.A. 1964, Ph.D. 1968, Chicago

McLain, Dennis A., Assistant Specialist in Horticulture; B.S. 1964, California State Polytechnic; M.S. 1966, Michigan State

McManus, Maurice, Professor of Economics B.Com. 1950, Ph.D. 1959, Birmingham

McNeil, Don W., Assistant Professor of Library Studies; B.A. 1957, Buena Vista College; M.S. in L.S. 1959, Kentucky

McPherson, D. Frank, Associate Professor of Speech Pathology and Audiology B.S. 1961, Indiana State College (Pennsylvania); M.A. 1963, Hawaii; Ph.D. 1966, Purdue

McVay, Harue O., Associate Professor of Art; B.A. 1950, Hawaii; M.A. 1951, Ohio State

Mednick, Leonard, Lecturer in Real Estate B.A. 1967, San Francisco State; M.B.A. 1969, Hawaii

Meeske, Milan D., Assistant Professor of Speech Communication; B.A. 1960, Nebraska; M.A. 1965, Ph.D. 1968, Denver

Mehta, Jarava Lal, Professor of Philosophy M.A. 1934, Banaras Hindu Univ.; B.T. 1937; Ph.D. 1964

Melendy, H. Brett, Professor of History A.B. 1946, M.A. 1948, Ph.D. 1952, Stanford

Meller, Norman, Professor of Political Science; LL.B. 1936, California (Hastings); B.A. 1942, California (Berkeley); M.A. 1951, Ph.D. 1955, Chicago

Mendelson, Garry D., Assistant Professor of Education; B.S. 1955, M.A. 1960, New York; Ed.D. 1967, Indiana

Menikoff, Barry, Assistant Professor of English; B.A. 1960, Brooklyn; M.S. 1962, Ph.D. 1966, Wisconsin

Meredith, Connie, Assistant Professor of Human Development; B.S. 1963, Hawaii; M.A. 1965, Illinois

Meredith, Donald S., Associate Professor of Plant Pathology; B.A. 1955, M.A. 1958, Ph.D. 1958, Cambridge
INSTRUCTION

Merritt, Fred C., Associate Professor of Social Work; B.A. 1941, Montana; M.S.W. 1949, Denver

Metelka, Charles J., Acting Assistant Professor of Travel Industry Management B.S. 1964, Loyola; M.B.A. 1967, Hawaii

Mi, Ming-Pi, Associate Professor of Genetics B.S. 1954, National Taiwan; M.S. 1959, Ph.D. 1963, Wisconsin


Mikami, Kay K., Lecturer in Music Shihan, 1939, Miyagi Koto (Japan)

Mikasa, Henry Y., Assistant Professor of Civil Engineering; B.S. 1956, Hawaii; M.S. 1961, Southern California

Miklaus, Walter, Associate Professor of Economics; B.A. 1958, California State (Los Angeles); M.A. 1960, Ph.D. 1964, California (Los Angeles)

Miller, B. Jaye, Acting Assistant Professor of History; B.A. 1964, Stanford; M.A. 1966, Yale

Miller, Frank L., Associate Professor of Medicine; M.D. 1946, George Washington


Miller, John C., Professor of History S.B. 1930, Harvard College; M.A. 1932, Ph.D. 1939, Harvard

Miller, Steven, Acting Assistant Professor of German; B.A. 1962, M.A. 1965, California (Davis)

Minke, Karl A., Jr., Assistant Professor of Psychology; B.S. 1961, Arizona State, Ph.D. 1968, Wisconsin

Mitchell, Wallace C., Professor of Entomology; B.S. 1942, M.S. 1949, Ph.D. 1955, Iowa State

Mitsuda, Tetsuchi, Professor of Civil Engineering; B.S. 1949, Rose Polytechnic Institute; M.S. 1952, Ph.D. 1965, Illinois

Miwa, Ralph M., Professor of Political Science; B.A. 1948, M.A. 1950, Hawaii; Ph.D. 1953, Johns Hopkins

Miyahara, Allen, Associate Professor in Animal Science; D.V.M. 1954, M.S. 1960, Iowa State

Miyamasu, Maj. Paul K., Assistant Professor of Military Science; B.Ed. 1959, Hawaii

Miyamura, Henry, Lecturer in Music B.M. 1960, Eastman School of Music

Moberly, Ralph M., Jr., Associate Professor of Geology; B.A. 1950, Ph.D. 1956, Princeton

Moely, Barbara E., Assistant Professor of Psychology; B.A. 1962, M.A. 1964, Wisconsin; Ph.D. 1968, Minnesota

Moh, Za-Lee, Associate Professor of Civil Engineering; B.S.C.E. 1950, National Taiwan; M.S.C.E. 1953, Ph.D. 1960, Purdue

Moikeha, Sanae N., Assistant Researcher in Pathology; B.S. 1958, M.S. 1964, Ph.D. 1968, Hawaii

Moncur, James, Acting Assistant Professor of Economics; B.A. 1964, M.A. 1965, Wyoming

Montes, Matias, Associate Professor of Spanish; B.A. 1948, Havana Institute; Ph.D. 1952, Havana

Montes, Yara, Assistant Professor of Spanish Ph.D. 1952, Havana

Mookini, Edwin H., Professor of Mathematics B.S. 1947, M.S. 1948, Chicago; Ph.D. 1964, California (Los Angeles)

Moore, Anneliese W., Assistant Professor of European Languages; B.A. 1958, Hawaii; M.A. 1959, California (Berkeley)

Moore, Richard D., Assistant Professor of Radiology; B.A. 1940, Virginia; M.D. 1944, Jefferson Medical College

Moore, Richard E., Assistant Professor of Chemistry; B.S. 1957, San Francisco; M.S. 1959, Ph.D. 1962, California (Berkeley)

Moore, Ronald M., Assistant Professor of Philosophy; A.B. 1964, Stanford

Moore, Terence O., Assistant Professor of Physiology; A.B. 1961, A.M. 1963, Ph.D. 1966, Missouri

Morris, James D., Associate Professor of Education; B.S. 1955, Northern State College; M.A. 1957, Ed.D. 1961, North Dakota

Morris, Marjorie G., Assistant Professor in Social Work; A.B. 1934, Ohio; M.S.W. 1947, George Warren Brown

Morris, V. Dixon, Assistant Professor of History; 1958, Centenary College of Louisiana; Ph.D. 1970, Washington

Morrison, James C., Jr., Instructor in English B.A. 1968, Dartmouth; M.A. 1969, Columbia

Morton, Bruce E., Assistant Professor of Biochemistry; B.A. 1960, La Sierra College; M.S. 1963, Ph.D. 1965, Wisconsin

Mosor, Roy E., Professor of Food Science and Technology; B.S. 1944, M.S. 1947, Massachusetts

Mower, Howard F., Professor of Biochemistry; B.S. 1951, Ph.D. 1955, California Institute of Technology

Moy, James H., Assistant Professor of Food Science and Technology; B.S. 1957, M.S. 1958, Wisconsin; Ph.D. 1965, Rutgers

Mueller-Dombois, Dieter, Assistant Professor of Botany; Diplom Landwirt 1951, Stuttgart-Hohenheim; B.Sc. 1955, Ph.D. 1960, British Columbia

Munchmeyer, Frederick C., Associate Professor of Mechanical Engineering; B.S. 1942, Coast Guard Academy; M.S. 1948, M.I.T.

Murakami, Takio, Professor of Meteorology D.Sc. 1960, Tokyo

Murdock, Charles L., Assistant Professor of Horticulture; B.S. 1959, M.S. 1960, Arkansas; Ph.D. 1966, Illinois

Murphy, Garth L., Professor of Oceanography B.A. 1943, M.A. 1948, California (Berkeley); Ph.D. 1965, California (San Diego)
INSTRUCTION

Murrill, Linda M., Instructor of Nursing  
B.S. 1963, Montana State College;  
M.S. 1969, Montana State

Murton, Brian J., Assistant Professor of Geography; B.A. 1961, M.A. 1962, Canterbury

Myers, Patrick, Assistant Professor of Art  
B. S. 1966, M. A. 1968, San Jose State College;  
M.F.A. 1969, California College of Arts & Crafts

Mytinger, Robert E., Professor of Public Health;  
B.S. 1948, UCLA; M.P.H. 1950, California (Berkeley); Dr.P.H. 1965, UCLA

Nadel, Richard Barry, Instructor in English  
B.A. 1967, Albion College; M.A. 1968, Michigan

Nagley, Winfield E., Professor of Philosophy  
B.A. 1940, Ph.D. 1947, Southern California; B.D. 1943, San Francisco Theological Seminary

Nagoshi, Jack T., Associate Professor of Social Work; B.A. 1951, M.S.W. 1953, Hawaii

Nagy, Ronald S., Lecturer in Business Economics and Quantitative Methods  
B.A. 1964, California (Berkeley); M.B.A. 1966, Hawaii

Naita, Kazutoshi, Assistant Professor of Electrical Engineering; B.S. 1953, Illinois Institute of Technology; M.S. 1955, Brown; Ph.D. 1969, Hawaii

Nakaguma, Fred E., Assistant Professor of Aerospace Studies; B.S. 1963, Hawaii;  
M.A. Southern California

Nakasone, Harry, Lecturer in Music

Nakasone, Henry Y., Professor of Horticulture; B.A. 1943, M.S. 1952, Ph.D. 1960, Hawaii

Nakasone, Yoshino, Lecturer in Music  
Majikina Honryu 1950 (Okinawa)

Nam, Sunwoo, Assistant Professor of Journalism; B.A. 1961, Hankuk University of Foreign Studies; M.A. 1965, 1967, Stanford; Ph.D. 1969, Wisconsin

Namba, Ryoji, Professor of Entomology  
B.S. 1948, M.S. 1950, Michigan State; Ph.D. 1953, Minnesota

Nash, David H.G., Assistant Professor of Mathematics; B.A. 1965, California (Riverside); M.A. 1967, Ph.D. 1969, California (Berkeley)

Nash, Donald R., Assistant Professor of Tropical Medicine, Medical Microbiology and Public Health; B.A. 1961, American International College; M.S. 1963, Boston College; Ph.D. 1967, North Carolina

Natori, William I., Assistant Professor of Obstetrics and Gynecology; B.A. 1943, Toronto; M.D. 1946, Rochester

Naughton, John J., Professor of Chemistry  
B.S. 1936, College of the City of N.Y.;  
M.S. 1940, Ph.D. 1942, New York

Naya, Seiji, Associate Professor of Economics  

Neff, Charles B., Associate Professor of Political Science; B.A. 1954, Pomona; M.A. 1959, Ph.D. 1961, Yale

Nell, J. Meredith, Assistant Professor of American Studies; B.A. 1959, Yale; M.S. 1963, Wisconsin; Ph.D. 1966, Washington State

Nelson, Peter E., Instructor in English; B.A. 1964, Occidental College; M.F.A. 1968, California (Irvine)

Nelson, Torleif, Professor of Education; B.S. 1942, M.S. 1947, Oregon; Ed.D. 1952 Washington

Nelson, Victoria, Instructor in English; B.A. 1965, California (Berkeley); M.A. 1966, Toronto

Neogy, Prithwish, Professor of Art; B.A. 1940, Calcutta; M.A. 1948, Harvard

Newby, Idus A., Associate Professor of History; B.S. 1951, Georgia Southern College; M.A. 1957, South Carolina; Ph.D. 1962, California (Los Angeles)

Newhouse, W. Jan, Associate Professor of General Science; B.S. 1949, Dartmouth; M.S. 1952, New Hampshire; Ph.D. 1967, Hawaii

Newman, Carlyne A., Associate Professor of Radiology (Okinawa); B.S. 1948, M.D. 1951, Cincinnati

Newton, Olive C., Instructor in English  
B.A. 1931, Adrian College; M.A. 1942, Ohio State

Niedzielski, Henri, Associate Professor of French; B.A. 1959, M.A. 1963, Ph.D. 1964, Connecticut

Nishida, Toshiyuki, Professor of Entomology  
B.S. 1941, M.S. 1947, Hawaii; Ph.D. 1953, California

Nishimoto, Roy K., Assistant Professor of Horticulture; B.S. 1966, M.S. 1967, Oregon

Nishimura, Edwin T., Professor of Pathology  
A.B. 1940, M.D. 1945, Wayne State

Nishiyama, Kazuo, Assistant Professor of Speech-Communication; B.A. 1965, M.A. 1968, Hawaii

Nitz, Lawrence H., Assistant Professor of Political Science; B.A. 1962, Michigan; M.A. 1965, Ph.D. 1969, Michigan State

Nobuhara, Walter S., Associate Professor of Dental Hygiene; D.D.S. 1958, Michigan

Nobusawa, Nobuo, Associate Professor of Mathematics; B.S. 1953, M.Sc. 1955, Ph.D. 1958, Osaka

Noda, Daniel S., Professor of Education  
B.Ed. 1941, Hawaii; Ph.D. 1952, Ohio State

Nordyke, Eleanor C., Instructor of ObGyn  
B.S. 1950, Stanford; M.P.H. 1969, Hawaii

Norem, Jon G., Assistant Professor of Accounting; B.S.B.A. 1962, M.S. 1965, North Dakota; C.P.A. 1965

Norris, Ben, Professor of Art; B.A. 1931, Pomona

Norton, Ted, R., Professor of Pharmacology (Medicinal Chemistry); A.B. 1940, College of the Pacific; Ph.D. 1943, Northwestern

Nose, Katashi, Assistant Professor of Physics  
B.S. 1937, University of Hawaii; Ed.D. 1961, Harvard

Noves, Robert W., Professor of Anatomy and ObGyn; A.B. 1941, M.D. 1943, California (Berkeley)
INSTRUCTION

Nunn, G. Raymond, Professor of History and Asian Studies; B.A. 1950, London; M.A. 1954, Ph.D. 1957, Michigan

Nunokawa, Walter, Associate Professor of Education; B.S. 1950, M.S. 1952, Portland State; Ph.D. 1965, Oregon

Nutter, David E., Acting Assistant Professor of Accounting; B.A. 1954, West Virginia; M.B.A. 1958, Indiana

O'Brien, Ethel M., Associate Professor of Health and Physical Education; B.A. 1937, California; M.Ed. 1950, Hawaii; Ed.D. 1958, Oregon

O'Brien, John T., Researcher in Ocean Engineering; B.S. 1935, Minnesota

Oda, June, Lecturer in Social Work; B.S. 1952; 5th Yr. Cert. 1953, Hawaii; M.S.S. 1960, Smith

Ogawa, Dennis M., Assistant Professor of Speech Communication; A.B. 1960, M.A. 1967, Ph.D. 1969, California (Los Angeles)

O'Harrow, Stephen, Assistant Professor of Vietnamese; B.A. 1962, Michigan; M.A. 1965, London

Okazaki, George K., Instructor in Social Work; B.A. 1960, M.S.W. 1962, Hawaii

Oliver, Douglas, Pacific Islands Chair in Anthropology; B.A. 1934, Harvard; Ph.D. 1935, University of Vienna, Austria

O'Mulley, J. Michael, Assistant Professor of Education; A.A. 1956, Diablo Valley College; B.A. 1960, M.A. 1965, San Jose State College; Ph.D. 1969, George Peabody College

Omps, James R., Professor of Accounting B.S. 1951, Brigham Young; M.Litt. 1957, Ph.D. 1961, Pittsburgh; C.F.A. 1958

Ooghe, Arthur T., Associate Professor of Pediatrics (Okinawa); A.B. 1944, Stanford; M.D. 1947, California

O'Rourke, Edward, Professor of Public Health; A.B. 1944, M.D. 1946, M.P.H. 1951, Harvard

Orrall, Frank Q., Professor of Physics and Astronomy; B.S. 1950, Massachusetts; A.M. 1954, Ph.D. 1956, Harvard

Oshima, Harry T., Professor of Economics B.A. 1940, Hawaii; Ph.D. 1955, Columbia

Overmeyer, Karen L., Instructor in Nursing B.S. 1966, M.Ed. 1968, Columbia

Owen, James L., Assistant Professor of Speech Communication; B.A. 1956, M.A. 1960, Ph.D. 1967, Denver

Owens, Thomas R., Assistant Professor of Education; B.S. 1960, Fordham; M.Ed. 1964, Ohio; Ph.D. 1968, Ohio State

Oxford, Wayne H., Assistant Professor of Speech Communication; B.A. 1954, M.A. 1960, Ph.D. 1969, California (Los Angeles)

Ozaki, Flora T., Assistant Professor of Nursing; B.S. 1948, Hawaii; M.A. 1954, Columbia

Page, David, Professor of Information Sciences; B.Sc. 1956, Cape Town; Ph.D. 1967, London

Paige, Glenn D., Professor of Political Science; B.A. 1955, Princeton; M.A. 1957, Harvard; Ph.D. 1959, Northwestern

Palk, Yong Kyun, Professor of Genetics; B.S. 1950, Seoul National University; D.Sc. 1959, Osaka University

Pakvasa, Sandip, Assistant Professor of Physics; B.S. 1954, M.S. 1957, University of Baroda, India; Ph.D. 1965, Purdue

Palafox, Anastacio L., Assistant Professor of Poultry Science; B.S. 1940, M.S. 1941, Washington State

Palmer, Daniel D., Assistant Professor of Pharmacology; B.S. 1952, Michigan; M.D. 1956, Minnesota

Palmere, James A., Associate Professor of Microbiology; A.B. 1962, Antioch College; A.M. 1964; Ph.D. 1966, Chicago

Palumbo, Nicholas E., Associate Professor of Comparative Medicine; B.S. 1952, D.V.M. 1959, Missouri

Pang, Morris S. Y., Associate Professor of Education; B.Ed. 1950, M.Ed. 1962, Hawaii; Ed.D. 1968, Colorado State

Pang-Ching, Glenn K., Assistant Professor of Speech Pathology and Audiology; B.S. 1957, Los Angeles State; M.S. 1958, Purdue, Ph.D. 1966, Southern California

Pankiwskyj, Kost Andriy, Assistant Professor of Geology; B.S. 1959, M.I.T.; Ph.D. 1964, Harvard

Park, Chai Bin, Associate Professor of Public Health; M.D. 1949, Seoul National; M.P.H. 1956, Dr.P.H. 1959, California (Berkeley)

Park, Seung-Bin, Instructor in Chinese; B.A. 1959, Hankuk University of Foreign Studies; M.A. 1968, Georgetown

Parker, Gary J., Assistant Professor of Linguistics; B.A. 1959, Harpur; Ph.D. 1964, Cornell

Pavuluescu, Antares, Professor of Ocean Engineering; B.Sc. 1939, College Peter and Paul, Ploesti; Rumania Licentiate in Mathematical Sciences, 1943, University of Bucharest

Passler, Jutta, Instructor in German; B.A. 1960, M.A. 1964, California (Berkeley)

Paul, Allen, Professor of Agricultural Economics; B.S. 1940, M.S. 1941, Ph.D. 1947, Illinois

Pearson, John W., Associate Professor of Anesthesiology (Okinawa); B.A. 1951, B.M., B.Ch. 1953, M.A. and D.M. 1966, Oxford (England)

Pearson, Richard J., Assistant Professor of Anthropology; B.A. 1960, Toronto; Ph.D. 1966, Yale

Pendleton, Edwin C., Professor of Business Economics and Industrial Relations; B.S. 1932, M.S. 1934, Ph.D. 1950, California (Berkeley)

Pendley, Robert E., Assistant Professor of Political Science; B.A. 1960, California (Berkeley); M.S. 1963, Oregon; Ph.D. 1968, Northwestern

Peters, Michael W., Assistant Professor of Physics; B.S. 1959, California Institute of Technology; Ph.D. 1964, Wisconsin
<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Field</th>
<th>Institution, Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peterson, Frank I.</td>
<td>Assistant Professor of Hydrology</td>
<td>B.A. 1963, Cornell; M.A. 1965, Ph.D. 1967, Stanford</td>
<td></td>
</tr>
<tr>
<td>Peterson, Richard E.</td>
<td>Assistant Professor of Business Economics and Quantitative Methods</td>
<td>A.B. 1954, Stanford; M.A. 1966, California</td>
<td></td>
</tr>
<tr>
<td>Peterson, Vincent Z.</td>
<td>Professor of Physics</td>
<td>B.A. 1943, Pomona; Ph.D. 1950, California</td>
<td></td>
</tr>
<tr>
<td>Peterson, W. Wesley</td>
<td>Professor of Electrical Engineering</td>
<td>A.B. 1948, B.S.E. 1949</td>
<td></td>
</tr>
<tr>
<td>Pfeiffer, Ruth</td>
<td>Lecturer in Music</td>
<td>B.A. 1952, Silliman (Philippines); M.A. 1957, Union Theological Seminary (N.Y.)</td>
<td></td>
</tr>
<tr>
<td>Pfeiffer, William R.</td>
<td>Assistant Professor of Music</td>
<td>B.Mus. 1932, Chicago Musical College; B.A. 1939, Hastings; M.A. 1965, Hawaii</td>
<td></td>
</tr>
<tr>
<td>Philipp, Perry F.</td>
<td>Professor of Agricultural Economics</td>
<td>B.S. 1940, Ph.D. 1951, California</td>
<td></td>
</tr>
<tr>
<td>Picard, Anthony J.</td>
<td>Associate Professor of Education</td>
<td>B.S. 1960, W. Chester State College; M.A. 1962, Villanova; Ph.D. 1967, Ohio State</td>
<td></td>
</tr>
<tr>
<td>Pickens, Alex L.</td>
<td>Professor of Education</td>
<td>B.A. 1950, Southern Methodist; M.A. 1952, North Texas State; Ed.D. 1954, Columbia</td>
<td></td>
</tr>
<tr>
<td>Pickett, John C.</td>
<td>Acting Assistant Professor of Business Economics and Quantitative Methods</td>
<td>B.A. 1963, Hendrix College; M.A. 1965, Missouri</td>
<td></td>
</tr>
<tr>
<td>Pickett, Richard S.</td>
<td>Professor of Mathematics</td>
<td>B.S. 1950, Ph.D. 1952, CIT</td>
<td></td>
</tr>
<tr>
<td>Pietrusewsky, Michael</td>
<td>Acting Assistant Professor of Anthropology</td>
<td>B.A. 1966, State Univ. of New York (Buffalo); M.A. 1967, Toronto</td>
<td></td>
</tr>
<tr>
<td>Piette, Lawrence H.</td>
<td>Professor of Biophysics</td>
<td>B.S. 1953, M.S. 1954, Northwestern; Ph.D. 1957, Stanford</td>
<td></td>
</tr>
<tr>
<td>Pilania, Abraham</td>
<td>Lecturer in Geography</td>
<td>B.A. 1953, Hawaii</td>
<td></td>
</tr>
<tr>
<td>Pirie, Peter N. D.</td>
<td>Associate Professor of Geography</td>
<td>B.A. 1953, M.A. 1954, Auckland; Ph.D. 1964, National (Australia)</td>
<td></td>
</tr>
<tr>
<td>Pitcher, Tom S.</td>
<td>Professor of Mathematics</td>
<td>B.A. 1949, Washington; Ph.D. 1953, MIT</td>
<td></td>
</tr>
<tr>
<td>Pitts, Forrest R.</td>
<td>Professor of Geography</td>
<td>B.A. 1948, M.A. 1949, Ph.D. 1955, Michigan</td>
<td></td>
</tr>
<tr>
<td>Plaister, Theodore H.</td>
<td>Associate Professor in English as Second Language</td>
<td>B.S. 1950, Michigan; M.A. 1960, Michigan</td>
<td></td>
</tr>
<tr>
<td>Pleyte, Suzanne</td>
<td>Lecturer in Art</td>
<td>B.A. 1965, M.F.A. 1966, Hawaii</td>
<td></td>
</tr>
<tr>
<td>Plucknett, Donald L.</td>
<td>Associate Professor of Agronomy</td>
<td>B.S. 1953, M.S. 1957, Nebraska; Ph.D. 1961, Hawaii</td>
<td></td>
</tr>
<tr>
<td>Polemis, Bernice M.</td>
<td>Professor of Social Work</td>
<td>A.B. 1940, Whitman; A.M. 1941, Ph.D. 1943, Illinois</td>
<td></td>
</tr>
<tr>
<td>Pollock, Richard</td>
<td>Assistant Professor of Economics</td>
<td>B.A. 1955, M.A. 1956, Washington; Ph.D. 1967, Wisconsin</td>
<td></td>
</tr>
<tr>
<td>Pong, William</td>
<td>Professor of Physics</td>
<td>B.S. 1951, M.S. 1952, Ph.D. 1954, Cincinnati</td>
<td></td>
</tr>
<tr>
<td>Popper, Arthur N.</td>
<td>Assistant Professor of Zoology</td>
<td>B.A. 1964, New York; Ph.D. 1969, City University of New York</td>
<td></td>
</tr>
<tr>
<td>Potter, Francis M.</td>
<td>Assistant Professor of Education</td>
<td>B.S. 1951, Otterbein; M.Ed. 1957, Xavier; M.S. 1954, New Mexico; Ph.D. 1969, Claremont Graduate School</td>
<td></td>
</tr>
<tr>
<td>Powerman, Charles</td>
<td>Instructor in English</td>
<td>B.A. 1966, Yale; M.F.A. 1969, Iowa</td>
<td></td>
</tr>
<tr>
<td>Powell, Richard O.</td>
<td>Assistant Professor of General Engineering</td>
<td>B.S. 1938, North Dakota; M.A. 1948, Colorado State College of Education; Ed.D. 1954, Bradley</td>
<td></td>
</tr>
<tr>
<td>Preble, Duane</td>
<td>Assistant Professor of Art</td>
<td>B.A. 1959, California (Los Angeles); M.F.A. 1963, Hawaii</td>
<td></td>
</tr>
<tr>
<td>Psacharopoulos, George</td>
<td>Assistant Professor of Economics</td>
<td>B.A. 1960, College of Business and Economics (Athens); M.A. 1966, Ph.D. 1968, Chicago; (on leave 1970-71)</td>
<td></td>
</tr>
<tr>
<td>Pugarela, Nobuko</td>
<td>Instructor in Japanese</td>
<td>B.A. 1957, Waseda University; M.A. 1967, Hawaii</td>
<td></td>
</tr>
<tr>
<td>Putman, Edison W.</td>
<td>Associate Professor of Plant Physiology</td>
<td>B.A. 1942, Ph.D. 1952, California (Berkeley)</td>
<td></td>
</tr>
<tr>
<td>Quinn, James Joseph</td>
<td>Instructor in English</td>
<td>B.A. 1968, M.A. 1969, San Jose State</td>
<td></td>
</tr>
<tr>
<td>Ramage, Colin S.</td>
<td>Professor of Meteorology</td>
<td>B.S. 1940, Victoria University College (New Zealand); Sc.D. 1961, New Zealand</td>
<td></td>
</tr>
<tr>
<td>Rapson, Richard L.</td>
<td>Associate Professor of History</td>
<td>B.A. 1958, Amherst; Ph.D. 1966, Columbia</td>
<td></td>
</tr>
<tr>
<td>Rashad, Mohamed Nabil</td>
<td>Associate Professor of Genetics</td>
<td>M.B., B.Ch. 1958, Cairo U.; U.A.R.; Ph.D. 1968, Queen's U., Belfast, Northern Ireland</td>
<td></td>
</tr>
<tr>
<td>Rayner, Martin D.</td>
<td>Associate Professor of Physiology</td>
<td>B.A. 1958, Ph.D. 1962, Cambridge</td>
<td></td>
</tr>
<tr>
<td>Read, George</td>
<td>Assistant Professor of Pharmacology</td>
<td>A.B. 1959, M.S. 1962, Stanford; Ph.D. 1968, Hawaii</td>
<td></td>
</tr>
<tr>
<td>Reddin, Mary E.</td>
<td>Associate Professor of Education</td>
<td>B.A. 1939, National College of Education; M.A. 1943, Northwestern; Ed.D. 1967, Indiana</td>
<td></td>
</tr>
<tr>
<td>Reed, Helen C.</td>
<td>Instructor in Education</td>
<td>B.Ed. 1931, National College of Education; M.A. 1947, Columbia</td>
<td></td>
</tr>
</tbody>
</table>

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INSTRUCTION

Reed, S. Arthur, Associate Professor of Zoology; B.S. 1951, Kent State; M.A. 1953, Ph.D. 1962, Michigan State

Reese, Ernst S., Associate Professor of Zoology; B.A. 1953, Princeton; Ph.D. 1960, California (Los Angeles)

Reeser, H. Clayton, Associate Professor of Management; B.S. 1941, Southern California; M.B.A. 1957, UCLA; D.B.A. 1968, Washington

Reid, Ian E., Associate Professor of Education B.S. 1957, M.S. 1960, Ph.D. 1964, Utah

Reid, J. Stephen, Lecturer in Insurance; B.A. 1962, Dartmouth College; M.B.A. 1964, Michigan

Reiter, Harold B., Assistant Professor of Mathematics; B.S. 1964, Louisiana State; M.S. 1965, Ph.D. 1969, Clemson

Renaud, Bertrand M., Assistant Professor of Agricultural Economics; M.S. 1964, Ph.D. 1966, California (Berkeley)

Resig, Johanna, Assistant Professor of Geology; B.S. 1954, M.S. 1956, Southern California; Dr. rer. nat. 1965, Kiel (Germany)

Rian, Norman D., Professor of Music; B.A. 1935, St. Olaf College; M.A. 1939, Eastman School of Music; Ed.D. 1960, Columbia

Richards, Zaneta, Lecturer in Music; B.Ed. 1954, Hawaii; M. Mus. 1958, Eastman School of Music


Richstad, Jim A., Assistant Professor of Journalism; B.A. 1954, Washington; Ph.D. 1967, Minnesota

Rickard, David T., Instructor in English as Second Language; B.A. 1951, Cascade College; B.D. 1953, Ashbury Seminary; M.A. 1967, Michigan State

Rider, Richard L., Professor of Speech-Communication; A.B. 1937, Nebraska; M.F.A. 1947, Yale; Ph.D. 1958, Illinois

Riggs, Fred W., Professor of Political Science B.A. 1938, Illinois; M.A. 1941, Fletcher School; Ph.D. 1948, Columbia

Roberts, Thomas H., Assistant Professor of Linguistics; A.B. 1951, M.A. 1956, Wheaton; Ph.D. 1968, Hawaii

Robin, Louis, Lecturer in Education; B.A. 1950, M.A. 1961, Fresno State

Robinson, Hester A., Professor of Art; B.A. 1931, Miami; M.A. 1939, Ohio State

Roblee, Richard N., Lecturer in Music; B.A. 1967, Washington

Rockey, Jack L., Acting Assistant Professor of Health and Physical Education; A.B. 1947, California (Berkeley); M.A. 1966, San Francisco State College

Rodewald, Rosemary, Assistant Professor of Nursing; B.S. 1965, Hawaii; M.S. 1966, California (San Francisco)

Roecklein, Margaret Lynn, Instructor in English; A.B. 1966, Rosary College; A.M. 1967, Chicago

Roelofs, Thomas H., Associate Professor of Electrical Engineering; B.E.E. 1960, M.E.E. 1961, Ph.D. 1964, Cornell

Roffe, Toshiko, Instructor in Japanese; B.A. 1958, Rikkyo

Rogers, Kenneth, Associate Professor of Mathematics; B.A. 1951, Trinity College, Cambridge; Ph.D. 1954, Cambridge

Rogers, Terence A., Professor of Physiology B.S. 1952, British Columbia; Ph.D. 1955, California

Rohter, Ira S., Assistant Professor of Political Science; B.S. 1960, Illinois Institute of Technology; M.A. 1964, Ph.D. 1967, Michigan State

Roldan, Juana, Assistant Professor of Spanish B.A. 1944, Zaragoza University; M.A. 1964, Ph.D. 1968, Southern California

Ronke, Robert C., Instructor in French; B.A. 1960, Williams College; M.A. 1964, California (Berkeley)

Rose, John C., Professor of Geophysics; B.S. 1948, M.S. 1950, Ph.D. 1955, Wisconsin

Rose, Louis, Assistant Professor of Economics; B.S. 1964, Oklahoma (Norman); M.A. 1964, California (Berkeley); Ph.D. 1970, California (Los Angeles)

Rosen, Sidney M., Assistant Professor of Social Work; A.B. 1958, M.S.W. 1961, Wayne

Rosenberg, Morton M., Senior Professor of Poultry Science; B.S. 1938, Rutgers; M.S. 1940, Texas A. & M.; Ph.D. 1948, Wisconsin

Ross, Edward, Professor of Food Science B.S. 1932, Pennsylvania State; Ph.D. 1937, California

Rotar, Peter P., Associate Professor of Agronomy; B.S. 1955, M.S. 1957, Washington State; Ph.D. 1960, Nebraska

Rowell, Annette J., Lecturer in Music; B.M. 1955, Eastman School of Music

Rowell, Lewis E., Professor of Music; B.M. 1955, Ph.D. 1958, Eastman School of Music

Roy, Kenneth, Assistant Professor of Oceanography; B.A.Sc. 1960, British Columbia; Ph.D. 1968, Northwestern

Rummel, Rudolph J., Professor of Political Science; B.A. 1959, M.A. 1961, Hawaii; Ph.D. 1963, Northwestern

Russell, Armand K., Professor of Music; B.A. 1953, M.A. 1954, Washington; D.M.A. 1958, Eastman School of Music

Russell, Lois R., Lecturer in Music

Ryan, T. Antoinette, Professor of Education B.A. 1948, Stanford; M.A. 1952, Sacramento State; Ph.D. 1963, Stanford

Ryans, David G., Professor of Education; B.A. 1932, DePauw; A.M. 1933, Ph.D. 1937, Minnesota
INSTRUCTION

Savoza, Alvin C., Professor of Health and Physical Education; B.S. 1937, Ithaca College; M.A. 1946, Ed.D. 1954, New York

Sachs, Ralph R., Professor of Public Health; M.D. 1936, Wayne; A.B. 1932, M.P.H. 1942, Michigan

Sadler, James C., Associate Professor of Geosciences; B.S. 1941, Tennessee Polytechnic Institute; M.A. 1947, California (Los Angeles)

Sagawa, Yoneo, Professor of Horticulture; B.A. 1950, M.A. 1952, Washington University; Ph.D. 1956, Connecticut

Sage, Anne, Instructor in English; B.A. 1965, Hawaii; M.A. 1967, Washington

St. Denis, Manley, Professor of Ocean Engineering; B.S. 1932, M.I.T.; M.S. 1940, Pennsylvania; D. Eng., 1956, Catholic Univ. of America

Sakai, Robert K., Professor of History and Asian Studies; B.A. 1941, California (Berkeley); M.A. 1949, Ph.D. 1953, Harvard

Sakamaki, Leigh, Assistant Professor of Pediatrics and Psychiatry; B.S. 1955, M.D. 1959, Michigan

Sakamaki, Shunzo, Professor of History; B.A. 1927, M.A. 1928, Hawaii; Ph.D. 1939, Columbia

Sakamoto, Soichi, Assistant Professor of Health and Physical Education; B.Ed. 1948, Hawaii

Sakina, S.K., Professor of Philosophy; B.A. 1925, M.A. 1927, Allahabad; Ph.D. 1939, London

Sakumoto, Raymond E., Associate Professor of Sociology; B.A. 1955, M.A. 1957, Hawaii; Ph.D. 1965, Northwestern

Sakurai, Isamu, Assistant Researcher in Pathology; M.D. 1959, D.Sc. 1964, Nihon University, Tokyo

Sakai, Frank, Instructor in Art; M.F.A. 1968, Ohio

Samuelson, Donald J., Assistant Professor of Mathematics; B.A. 1962, Cornell; M.A. 1965, Ph.D. 1969, California (Berkeley)

Sanborn, Donald A., Associate Professor of Education; B.A. 1957, Pomona; M.S. 1959, Indiana; Ph.D. 1967, Claremont Graduate School

Sanford, Wallace G., Professor of Agronomy B.A. 1947, Pomona; M.S. 1949, Maryland; Ph.D. 1952, California (Los Angeles)

Sasa, Yasuki, Assistant Professor of Drama and Theatre

Sato, Estrela M. T., Assistant Professor of Education; B.A. 1938, William Jewell College; M.A. 1939, Columbia; M.A. 1966, Hawaii

Sato, Jessie J., Assistant Professor of Education B.S. 1944, Hawaii; M.A. 1950, Columbia

Sato, Mamoru, Instructor in Art; B.A. 1963, M.F.A. 1965, Colorado


Sato, Yaeko, Instructor in Japanese; B.A. 1953, Waseda

Savard, William G., Professor of Education; B.A. 1951, Massachusetts; M.A. 1954, Springfield; Ed.D. 1960, Stanford

Saville, Allison W., Associate Professor of History; B.A. 1953, Ph.D. 1963, Washington; M.A. 1954, Columbia

Savio, Rudy B., Lecturer in Insurance; B.S. 1939, Michigan State

Schaafsm, Henry M., Jr., Assistant Professor of English as Second Language; B.A. 1958, Michigan; M.A. 1965, Leeds

Schaleger, Larry L., Associate Professor of Chemistry; B.A. 1957, Grinnell; Ph.D. 1961, Minnesota

Schein, Suzanne, Assistant Professor of Education; B.S. 1949, Stanford; M.S.W. 1952, California (Berkeley); Ph.D. 1968, California (Los Angeles)

Scherer, William F., Assistant Professor of German; B.A. 1961, Colorado; M.A. 1962, Ph.D. 1967, Southern California

Scheuer, Paul J., Professor of Chemistry; B.S. 1943, Northeastern; M.A. 1947, Ph.D. 1950, Harvard


Schutz, Albert J., Associate Professor of Linguistics; B.S. 1958, Purdue; Ph.D. 1962, Cornell

Schwanekep, Mary S., Instructor in English B.S. 1965, Cincinnati; M.A. 1967, Arkansas

Schwartz, Arnold D., Professor of Public Health; A.B. 1947, California (Berkeley); M.D. 1950, California (San Francisco); M.P.H. 1956, Harvard

Schweizer, Niklaus R., Assistant Professor of German; M.A. 1966, Ph.D. 1968, California (Davis)

Schwind, Paul J., Assistant Professor of Geography; B.A. 1964, Antioch College; M.A. 1966, Chicago

Schwitters, Sylvia, Assistant Professor of Human Development; B.S. 1964, Hawaii; M.S. 1965, Illinois

Scott, Frank S., Professor of Agricultural Economics; B.S. 1943, Oregon State; M.A. 1947, Missouri; Ph.D. 1953, Illinois

Scott, Jonathan, Instructor in Art; M.A. 1967, Kansas

Scott, Robert L., Associate Professor of English; B.A. 1950, Willamette; M.A. 1953, Hawaii

Seiff, Karl, Assistant Professor of Chemistry B.S. 1959, California (Berkeley); Ph.D. 1964, M.I.T.

Seichi, George M., Instructor in Health and Physical Education; B.Ed. 1961, Hawaii; M.S. 1964, Indiana

Seidl, Ludwik, Assistant Researcher in Ocean Engineering; D.Sc. 1970, Vienna University of Technology

Seidler, Jerzy A., Visiting Professor of Information Sciences; M.S. 1952, Poznan; Ph.D. 1956, Polish Academy

Seifert, Friedrich, Associate Professor of Religion; Th.D. 1959, Pacific School of Religion
INSTRUCTION

Seo, Kap-Kyung, Associate Professor of Business Economics and Quantitative Methods; B.A. 1956, South Carolina; M.B.A. 1957, Xavier; Ph.D. 1960, Cincinnati

Seto, Millard S. L., Assistant Professor of ObGyn; B.A. 1951, Michigan; M.S. 1952, Columbia; M.D. 1957, Hahnemann

Seymour, Richard K., Professor of German B.A. 1951, M.A. 1952, Michigan; Ph.D. 1956, Pennsylvania

Shapiro, Michael J., Assistant Professor of Political Science; B.A. 1962, Tufts; M.A. 1964, Hawaii; Ph.D. 1966, Northwestern

Shapiro, Patricia F., Assistant Professor of Psychology: A.B. 1960, Cornell; M.S. 1964, Ph.D. 1966, Pennsylvania State


Sharma, Jagdish P., Associate Professor of Home 

Shimoto, Yoshiko, Instructor of Nursing B.S. 1958, M.P.H. 1960, Minnesota

Shimaoka, Helene R., Assistant in Research B.B.A. 1954, Hawaii

Shimomura, David S., Assistant Professor of Social Work; B.A. 1952, M.S.W. 1954, Hawaii

Shimoda, Minoru, Professor of History: B.A. 1937, Hawaii; Ph.D. 1957, Columbia

Shipwright, Edward, Assistant Professor of Music; B.S. 1959, M.S. 1961, Juilliard School of Music

Shirkey, Harry C., Professor of Pediatrics B.S. 1939; M.D. 1945, Cincinnati

Shoemaker, John R., Assistant Professor of Music; B.M.E. 1957, Drake; M.M. 1961, Northwestern; Ed.D. 1968, Washington

Shoji, Kakuko, Instructor in Japanese; B.A. 1958, International Christian University; B.A. 1962, University of Tokyo

Shukla, Anjan, Assistant Professor of Mathematics; B.A. 1959, M.A. 1961, Calcutta (India); M.S. 1966, Ph.D. 1967, Notre Dame

Shupe, John W., Professor of Civil Engineering; B.S. 1948, Kansas State; M.S. 1951, California; Ph.D. 1958, Purdue

Shyu, Wei-Mei, Assistant Professor of Physics B.S. 1960, National Taiwan University; M.S. 1962, South Carolina (Columbia); Ph.D. 1966, California (Riverside)

Siddiqui, Wasim A., Associate Professor of Tropical Medicine and Medical Microbiology and Public Health; B.S. 1952, M.S. 1954, Aligarh Muslim University, India; Ph.D. 1961, California (Berkeley)

Siegel, Barbara Z., Assistant Professor of Microbiology; B.A. 1960, Chicago; M.A. 1963, Columbia; Ph.D. 1966, Yale

Siegel, Sanford M., Professor of Botany; M.S. 1950, Ph.D. 1953, Chicago

Siegenthaler, Carla, Lecturer in Geography B.A. 1964, Western Reserve

Sikkema, Mildred, Professor of Social Work M.S.S. 1939, Smith; B.S. 1937, Ph.D. 1964, Chicago

Silva, James A., Assistant Soil Scientist; B.S. 1951, M.S. 1959, Hawaii; Ph.D. 1964, Iowa State

Silver, David L., Col. Professor of Military Science; B.S. 1944, U.S.M.A., West Point; M.B.A. 1960, Southern California

Simson, Thomas, Associate Professor of Medicine (Okinawa); B.S. 1940, Southwestern; M.D. 1943, Johns Hopkins

Simson, George K., Assistant Professor of English; A.B. 1952, Whitman; M.A. 1957, Washington State; Ph.D. 1963, Minnesota

Sinclair, Marjorie P., Assistant Professor of English; B.A. 1935, M.A. 1937, Mills

Sinton, William M., Professor of Physics and Astronomy; A.B. 1949, Ph.D. 1953, Johns Hopkins

Sitaram, Kondavagil S., Assistant Professor of Speech-Communication; B.S. 1952, Univ. of Mysore; M.S. 1965, Ph.D. 1969, Oregon

Siu, James K. M., Assistant Professor of Mathematics; B.A. 1953, M.A. 1956, Hawaii

Siverly, William E., Instructor in English; B.A. 1966, M.A. 1968, San Francisco State

Skinnnes, Olaf, Professor of Pathology; B.A. 1939, St. Olaf; M.S. 1946, M.D. 1947, Ph.D. 1947, Chicago

Smith, Albert C., Gerrit Parmile Wilder Chair in Botany; B.A. 1926, Columbia College; Ph.D. 1933, Columbia

Smith, Barbara B., Professor of Music: B.A. 1942, Barnard; M.M. 1943, Eastman School of Music

Smith, Clifford W., Assistant Professor of Botany; B. Sc. (Hon.) 1962 College of North Wales; M.Sc. 1963, Ph.D. 1965, Manchester

Smith, Elsie R., Associate Professor of Nursing; B.S. 1940, M.S. 1942, Idaho

Smith, Harry A., Lecturer in Law; B.S. 1929, J.D. 1932, New York; M.A. 1962, Michigan State

Smith, James R., Jr., Instructor in Education B.A. 1957, M.A. 1959, Wyoming

Smith, Max B., Lecturer in Animal Science D.V.M. 1946, Colorado State

Smith, R. Edward, Instructor in Japanese B.A. 1931, Texas; M.A. 1969, Hawaii

Smith, Ray M., Associate Professor of Agricultural Engineering; B.S. 1958, Oklahoma; M.S. 1959, Illinois; Ph.D. 1965, Iowa State
INSTRUCTION

Smith, Roy G., Associate Professor of Public Health; B.S. 1952, California (Berkeley); M.D. 1961, New York Medical College; M.P.H. 1965, California (Berkeley)

Snyder, Capt. Albert J., Assistant Professor of Military Science; B.A. 1966, Maryland

Solheim II, Wilhelm G., Professor of Anthropology; B.A. 1947, Wyoming; M.A. 1949, California; Ph.D. 1959, Arizona

Solomon, Margaret C., Associate Professor of English; B.A. 1960, Hawaii; M.A. 1961, California (Berkeley); Ph.D. 1967, Claremont

Sommarstrom, Allan R., Assistant Professor of Geography; B.A. 1963, Chico State; M.A. 1966, Washington


Sonoda, Phyllis, Instructor in Medical Technology; B.S. 1952, Hawaii; M.S. 1952, Northwestern

Speer, Blanche, Instructor in Chinese; B.A. 1943, Howard Payne College; M.A. 1967, Colorado

Speidel, Michael P., Associate Professor of History; Ph.D. 1962, Freiburg (West Germany)

Spencer, Charles H., Professor of Accounting B.S. 1936, Indiana State; M.S. 1941, D.B.A. 1953, Indiana

Spencer, Margaret I., Assistant Professor of Chinese; B.A. 1952, Minnesota; M.A. 1961, Michigan

Spielman, Earl V., Assistant Professor of Music; B.A., B.M. 1965, Oberlin College; M.A. 1968, Wisconsin

Spielmann, Heinz, Associate Professor of Agricultural Economics; B.A. 1949, M.A. 1954, Washington; Ph.D. 1962, Washington State

Spielvogel, Ellen, Assistant Professor of Mathematics; B.S. 1961, M.S. 1964, Ph.D. 1969, New York

Sprague, Clare, Instructor of OB&Gyn and Pathology; B.M.S. 1951, M.D. 1955, Stanford

Staats, Arthur W., Professor of Psychology and Educational Psychology; B.A. 1949, M.A. 1953, Ph.D. 1956, California (Los Angeles)

Stalker, John N., Professor of History; B.A. 1943, Wooster; M.A. 1948, Ph.D. 1950, Wisconsin

Standal, Bluebell R., Associate Professor of Foods and Nutrition; B.S. 1942, Calcutta; M.S. 1948, Ph.D. 1952, California

Stanley, Richard W., Associate Professor of Animal Science; B.S. 1956, M.S. 1958, Ph.D. 1961, Pennsylvania State

Stanley, William E., Lecturer in Environmental Health and Sanitary Engineering; B.S. 1912, Kansas State; M.S. 1916, Purdue

Starosta, Stanley, Assistant Professor of Linguistics; B.A. 1961, Ph.D. 1967, Wisconsin

Stasack, Edward A., Associate Professor of Art; B.F.A. 1955, M.F.A. 1956, Illinois

Stauffer, Robert B., Professor of Political Science; B.S. 1942, Pa. State Teachers College (West Chester); M.A. 1947, Oklahoma; Ph.D. 1954, Minnesota

Steif, Robert J. J., Instructor in Military Science

Steiger, Walter R., Professor of Physics; B.S. 1948, M.I.T.; M.S. 1950, Hawaii; Ph.D. 1953, Cincinnati

Stein, Burton, Professor of History; B.A. 1948, Illinois; M.A. 1953, Ph.D. 1958, Chicago

Steinberg, Danny D., Assistant Professor of Speech-Communication; B.A. 1960, British Columbia; M.A. 1966, Ph.D. 1966, Hawaii

Steinhoff, Patricia, Assistant Professor of Sociology; B.A. 1963, Michigan; M.A. 1966, Harvard

Stellmacher, Herbert B., Assistant Professor of Marketing; B.A. 1935, Texas; M.B.A. 1952, Southern Methodist

Stempel, Daniel, Professor of English; B.A. 1941, College of the City of N.Y.; M.A. 1942, Ph.D. 1949, Harvard

Stenger, Victor J., Associate Professor of Physics; B.S. 1956, Newark; M.S. 1959, Ph.D. 1963, California (Los Angeles)

Stephan, John J., Assistant Professor of History; B.A. 1963, Harvard College; M.A. 1964, Harvard; Ph.D. 1969, Univ. of London

Stephens, Arthur B., Assistant Professor of Mathematics; B.A. 1964, Colorado; Ph.D. 1969, Maryland

Stevens, E. Donald, Assistant Professor of Zoology; B.Sc. 1963, M.Sc. 1965, Ph.D. 1968, Univ. of British Columbia (Victoria)

Stevens, Robert D., Professor of Library Studies; A.B. 1942, Syracuse; B.S. 1947, Columbia; M.A. 1954, Ph.D. 1965, American

Stevenson, Michael J., Acting Assistant Professor of Health and Physical Education and Director of Intramurals; B.S. 1962, Central Michigan; M.A. 1965, Minnesota

Stewart, Donald L., Assistant Professor of Philosophy; B.A. 1951, Temple; M.A. 1962, California (Berkeley); Ph.D. 1969, Hawaii

Stillians, Bruce M., Associate Professor of English; B.A. 1952, M.A. 1955, Ph.D. 1962, Iowa

Stokes, James, Instructor in English; B.A. 1968, M.A. 1969, San Francisco State

Stoner, Geraldine, Assistant Professor of Foods and Nutrition; B.S. 1960, M.S. 1963, Iowa

Stout, William T., Jr., Assistant Professor of Mathematics; B.S. 1961, Southwest Missouri State; M.S. 1963, Ph.D. 1968, Illinois

Street, John M., Associate Professor of Geography; B.A. 1948, Ph.D. 1960, California (Berkeley)

Stringfellow, Lorraine C., Assistant Professor of Public Health; B.S. 1958, Washington; M.P.H. 1967, Hawaii
INSTRUCTION

Stroup, Edward D., Associate Professor of Oceanography: B.A. 1956, M.A. 1958, Ph.D. 1969, Johns Hopkins

Stuebe, Carol, Instructor in German: B.A. 1966, M.A. 1968, Wisconsin

Stueber, Ralph K., Associate Professor of Education; B.S. 1950, M.S. 1955, Ph.D. 1964, Wisconsin

Stuiver, Willem, Professor of Mechanical Engineering: Ir. 1951, Delft; Ph.D. 1960, Stanford

Sudrann, Robert B., Associate Professor of Medicine (Okinawa); A.B. 1943, Duke; M.D. 1946, Long Island College of Medicine

Suehiro, Ineko, Instructor in Japanese: B.A. 1941, Tokyo Women's Christian College

Suehiro, Richard Y., Assistant Professor of Public Health; B.A. 1949, Hawaii; M.A. 1951, Indiana; M.P.H. 1962, Michigan


Summergill, Travis L., Professor of English B.A. 1939, Bucknell; M.A. 1940, Ph.D. 1948, Harvard

Sutton, George H., Professor of Geophysics B.S. 1950, Muhlenberg; M.A. 1953, Ph.D. 1957, Columbia


Swift, David W., Assistant Professor of Sociology; A.B. 1950, M.A. 1960, Ph.D. 1967, California

Swindale, Leslie D., Professor of Soil Science B.S. 1948, M.S. 1950, Victoria University College; Ph.D. 1955, Wisconsin

Szillard, Rudolph S., Professor of Civil Engineering: Grad. C.F. 1942, Dipl.-Ing. (M.S.) 1943, Royal Tech. University, Budapest; Dr. Ing. 1962, Technical Univ. of Stuttgart

Tabb, David, Assistant Professor of Political Science; B.A. 1962, Antioch; M.A. 1963, Massachusetts; Ph.D. 1969, N. Carolina

Tacke, Charlotte, Assistant Professor of Nursing; B.S.M.F. 1947, M.S.N.S.A. 1960, Minnesota

Tahara, Mildred M., Assistant Professor of Japanese: B.A. 1963, M.A. 1965, Hawaii; Ph.D. 1969, Columbia

Tait, Malcolm J., Associate Professor of Education; B.A. 1955, Victoria Univ. of Wellington; M.A. 1956, Canterbury; Ed.D. 1963, Columbia

Takagaki, Tetsuo, Instructor in Japanese B.A. 1957, Wakahama College; M.A. 1966, San Francisco State

Takahashi, Charlene, Instructor in Home Economics; B.S. 1962, Westmar College (Iowa); M.S. 1966, Nebraska

Takahashi, Yoshi, Instructor in Japanese B.A. 1938, Tokyo Musical Academy; M.A. 1952, San Francisco Theology Seminary

Takasaki, Richard S., Professor of Social Work; B.S. 1940, Hawaii; M.A. 1949, Columbia; M.P.A. 1960, Harvard

Takase, Ayako M., Assistant Professor of Social Work; B.A. 1934, Hawaii; M.S. 1941, Columbia

Takeguchi-Feldman, Sumie L., Assistant Professor of Education; B.S. 1958, Michigan State Normal College; M.S. 1961, Ed.D. 1964, Syracuse

Takeuchi, Keiko, Instructor in Japanese B.A. 1957, Ochanomizu Women's University; M.A. 1965, San Francisco State College

Tamashiro, Minoru, Associate Professor of Entomology; B.S. 1951, M.S. 1954, Hawaii; Ph.D. 1960, California

Tanabe, Gilfred, Assistant Professor of Psychology; B.A. 1960, Hamline; M.S. 1966, Ph.D. 1968, Purdue

Tang, Chung-Shhih, Assistant Professor of Agricultural Biochemistry; B.S. 1960, M.S. 1962, Taiwan; Ph.D. 1967, California

Tao, Tien-Yi, Acting Assistant Professor of History; B.A. 1953, M.A. 1956, National Taiwan University

Taoka, George T., Assistant Professor of Civil Engineering; B.S. 1958, Oregon State; M.S. 1960, Ph.D. 1964, Illinois

Tateishi, Hoover Y., Instructor in Japanese B.A. 1957, Hawaii

Taylor, Eric F., Assistant Professor of English; B.A. 1960, Bowdoin College; M.A. 1966, Ph.D. 1970, Duke

Taylor, Patricia L., Instructor in Medical Technology; B.S. 1958, Indiana; M.S. 1969, Hawaii

Taylor, Ronald C., Assistant Professor of Meteorology; B.S. 1959, UCLA; Ph.D. 1968, Hawaii

Tawill, Jack, Acting Assistant Professor of Economics; A.B. 1960, Harvard

Tevean, T. Foster, Assistant Professor of English; B.A. 1936, Puget Sound; M.A. 1949, Ph.D. 1957, Washington

Teichman, Robert J., Assistant Professor of Anatomy; B.S. 1961, Ph.D. 1969, Wayne State

Terada, Francis M., Assistant Professor of Obstetrics; B.S. 1951, M.D. 1956, Cincinnati

Terazaki, T. David, Professor of Architecture Equiv to B.A. 1944, Equiv. to M.E. 1947, Tokyo

Tester, Albert L., Senior Professor of Zoology B.A. 1931, M.A. 1932, Ph.D. 1936, Toronto

Tharp, Roland G., Associate Professor of Psychology; B.A. 1957, Houston; M.A. 1958, Ph.D. 1961, Michigan

Thompson, David H., Assistant Professor of Health and Physical Education; B.S. 1955, M.S. 1959, George Williams College; Ed.D. 1967, Colorado State College

Thompson, Laurence C., Professor of Linguistics; B.A. 1949, Middlebury; M.A. 1950, Ph.D. 1954, Yale

Thompson, Phyllis H., Associate Professor of English; B.A. 1948, Connecticut College; M.A. 1949, Duke; Ph.D. 1958, Wisconsin
INSTRUCTION

Thompson, Susan Lynn, Instructor in English
B.A. 1967, Miami (Ohio); M.A. 1968, Michigan

Tinker, Spencer W., Associate Researcher in Education;
B.S. 1931, Washington; M.S. 1934, Hawaii

Tinniswood, William W., Professor of Engineering;
B.S. 1938, California; M.S. 1948, Idaho

Tokuyama, George H., Lecturer in Public Health;
B.A. 1947, Hawaii; M.P.H. 1956, California

Tom, Albert Q.Y., Lecturer in Environmental Health and Sanitary Engineering;
B.S. 1944, Hawaii; M.S. 1948, Sc.D. 1951, M.I.T.

Tominaga, Henry K., Assistant Professor of Health and Physical Education;
B.S. 1953, Springfield; M.S. 1954, Pennsylvania State;
Ed.D. 1964, Colorado State College

Topham, Helen A., Assistant Professor of English;
B.A. 1935, Rutgers; M.A. 1950, M.F.A. 1956, Hawaii

Topping, Donald M., Associate Professor of Linguistics;
A.B. 1954, M.A. 1956, Kentucky; Ph.D. 1963, Michigan State

Townesly, Sidney J., Professor of Marine Zoology;
B.A. 1948, California; M.S. 1950, Hawaii; Ph.D. 1954, Yale

Toyama, Jean M., Instructor in Education
B.A. 1964, Hawaii; M.A. 1967, Purdue

Trapido, Joel, Professor of Drama and Theatre;
B.A. 1935, Ph.D. 1942, Cornell; M.A. 1936, New York

Trimmillos, Ricardo, Assistant Professor of Music;
A.B. 1962, San Jose; M.A. 1965, Hawaii

Trine, J. Arden, Assistant Professor of Accounting;

Troxell, Mary, Associate Professor of Fashion Design and Merchandising;
B.S. 1931, Iowa; M.S. 1962, New York

Trubitt, Allen R., Associate Professor of Medicine;
B.S. 1953, M.M.B. 1954, Roosevelt; D.Mus. 1964, Indiana

Trujillo, Eduardo E., Associate Professor of Plant Pathology;
B.S.A. 1956, M.S. 1957, Arkansas; Ph.D. 1962, California

Trump, Gary N., Assistant Professor of Genetics
B.A. 1962, California (Santa Barbara); Ph.D. 1967, California (Los Angeles)

Tsuzaki, Stanley M., Associate Professor of Linguistics;

Tuan, San Fu, Professor of Physics;
B.A. 1954, M.A. 1958, Oxford (England); Ph.D. 1958, California (Berkeley)

Tucker, Charles W., Acting Assistant Professor of Classics;
B.A. 1960, Randolph-Macon; M.A. 1966, Virginia

Tuggle, David T., Acting Assistant Professor of Anthropology;
B.A. 1962, Transylvania College; M.A. 1966, Arizona

Tull, Christine L., Associate Professor of Home Economics Education;
B.S. 1928, William and Mary; M.A. 1949, New York

Tung, Tze-Kuei, Associate Professor of Civil Engineering;
B.S. 1946, MIT; M.S. 1948, California (Berkeley); Ph.D. 1964, California (Los Angeles)

Turnbull, Murray, Professor of Art;
B.F.A. 1941, Nebraska; M.A. 1949, Denver

Tyler, James, Assistant Professor of Classics
B.A. 1962, Yale College; M.A. 1965, Ph.D. 1969, Cornell

Tyson, Katherine C., Assistant Professor of Social Work;
B.A. 1938, Hawaii; M.S. 1946, Pittsburgh

Uchima, Floyd Y., Assistant Professor of Music
B.Ed. 1950, Hawaii; M.Mus.Ed. 1951, Northwestern

Uehara, Betty K., Assistant Professor of Education;
B.Ed. 1947, Hawaii; M.A. 1958, New York

Uehara, Goro, Associate Professor of Soils;
B.S. 1951, M.S. 1955, Ph.D. 1959, Michigan State

Uemura, Herbert S., Assistant Professor of Pathology;
A.B. 1953, Washington; M.D. 1960, Nebraska

Umbel, Oma, Associate Professor of Fashion Design and Merchandising;
B.S. 1932, West Virginia; M.S. 1933, New York

Upadhyaya, Kashi Nath, Professor of Philosophy
B.A. 1951, Patna Univ.; M.A. 1953, Ph.D. 1964, Univ. of Ceylon

Urata, Ukio, Assistant Professor of Agronomy
B.S. 1951, M.S. 1953, Hawaii; Ph.D. 1959, Cornell

Uyehara, Yukuo, Professor of Japanese
B.A. 1931, M.A. 1936, Hawaii

Valentin, Pat, Lecturer in Music

Valentine, Capt. Ralph E., Assistant Professor of Military Science;
B.B.A. 1962, W. Michigan

Van Degrift, Paul D., Associate Professor of Health and Physical Education;
D.O. 1939, College of Osteopathic Physicians and Surgeons; M.D. 1962, California College of Medicine

Van Niel, Robert, Professor of History
Chairman, Southeast Asia Area Committee
B.A. 1947, M.A. 1948, Ohio State; Ph.D. 1954, Cornell

Van Reen, Robert, Professor of Food and Nutritional Sciences;
A.B. 1943, New Jersey State; Ph.D. 1949, Rutgers

Van Weel, Pieter B., Professor of Zoology
Ph.D. 1937, State University of Utrecht.

Van Zeyl, Cornelis J., Assistant Professor of Sociology;
B.A. 1965; M.A. 1967, California (Los Angeles)

Vann, Sarah K., Professor of Library Studies
A.B. 1936, Georgia; A.B.L.S. 1939, N. Carolina; M.L.S. 1944, Michigan; Ph.D. 1958, Chicago
Varela-Ibarra, Jose, Acting Assistant Professor of Spanish; B.A. 1964, M.A. 1966, Hawaii
Vernon, Henry B., Associate Professor of Health and Physical Education; B.A. 1941, M.A. 1959, San Jose State
Vaught, Raymond, Professor of Music; B.A. 1938, M.A. 1940, Idaho; M.M. 1946, Eastman School of Music; Ph.D. 1959, Stanford
Vella, Dorothy B., Instructor in English; B.A. 1941, Western Reserve; M.A. 1942, Radcliffe
Vella, Walter F., Professor of History; B.A. 1947, M.A. 1950, Ph.D. 1954, California
Venezian, Giulio, Assistant Professor of Ocean Engineering; B. Eng. 1960, McGill Univ.; Ph.D. 1965, Calif. Institute of Technology
Verdeyen, Helen C., Assistant Professor of Social Work; B.A. 1948, Indiana; M.S.S.W. 1951, Fordham
Vigilimo, Valdo H., Professor of Japanese; B.A. 1948, M.A. 1952, Ph.D. 1956, Harvard
Vine, Richard W., Professor of Music; B.M. 1936, St. Olaf College; M.M. 1938, MacPhail College of Music
Vlachos, Peter G., Assistant Professor of Business Economics & Quantitative Methods A.B. 1966, M.A. 1967, Ph.D. 1969, Cincinnati
Vogt, Dale, Associate Professor of Animal Science; B.S. 1956, Southern Illinois; M.S. 1957, Ph.D. 1961, Minnesota
von Bekesy, Georg, Hawaiian Telephone Company Chair in Science; Ph.D. 1923, Budapest; M.D. (Hon.) 1955, Wilhem; M.D. (Hon.) 1959, Berne; D.Sc. (Hon.) 1965, Pennsylvania
Voulgaropoulos, Emmanuel, Professor of Public Health; B.S. 1952, Tufts; M.D. 1957, Louvain; M.P.H. 1962, Johns Hopkins

Walton, Gary, Associate Professor of Economics; A.B. 1963, California (Berkeley); M.A. 1964
Walz, Barbara K., Assistant Professor of Music B.M. 1965, M.M. 1966, Michigan; M.Sci. 1967, Kansas State College
Wang, Jaw-Kai, Professor of Agricultural Engineering; B.S. 1953, National Taiwan; M.S. 1956, Ph.D. 1958, Michigan State
Ward, Jack H., Acting Assistant Professor of Linguistics; B.A. 1951, Kansas; M.A. 1962, Hawaii
Wargo, Robert J., Acting Assistant Professor of Philosophy; B.A. 1962, California (Los Angeles); M.A. 1963, Michigan
Warner, Robert M., Professor of Horticulture B.A. 1930, Ohio Wesleyan; M.S. 1937, Ph.D. 1940, Iowa State
Watanabe, Kenichi, Senior Professor of Physics; B.S. 1936, Ph.D. 1940, California Institute of Technology
Watanabe, Michael S., Professor of Physics and Professor of Information Sciences B.S. 1933, Dr.Sc. 1940, Tokyo; Dr.Sc. 1935, Paris
Watkins, Sara V., Lecturer in Music; B.M. 1967, Oberlin College
Watson, David L., Associate Professor of Psychology; B.A. 1959, Vanderbilt; M.S. 1961, Ph.D. 1963, Yale
Watson, Donald P., Professor of Horticulture B.S.A. 1934, Toronto; M.S. 1937, London; Ph.D. 1948, Cornell
Watson, Michael, Instructor in Architectural Design; B.Arch. 1965, New Mexico; M.Arch. 1969, California (Berkeley)
Wayman, Oliver, Professor of Animal Science B.S. 1947, Utah State; Ph.D. 1951, Cornell
Weaver, Herbet B., Professor of Psychology B.A. 1933, M.A. 1934, Ph.D. 1942, Pennsylvania
Weaver, Paul F., Jr., Associate Professor of Electrical Engineering; B.S.E.E. 1946, M.E.E. 1952, Ph.D. 1959, Cornell
Weddle, Laurel E., Assistant Professor of Foods and Nutrition; B.S. 1939, Texas Tech. College; M.S. 1954, Texas
Weeks, Shirley, Specialist in Human Development and Human Relations; B.S. 1939, Massachusetts State; M.S. 1944, Cornell; Ph.D. 1964, Wisconsin
Weinbaum, Carl M., Associate Professor of Mathematics; B.S. 1958, Queens College; A.M. 1960, Harvard; Ph.D. 1963, New York
Weinberg, Jerry L., Assistant Professor of Astrophysics; B.A. 1958, St. Lawrence; Ph.D. 1963, Colorado
Weinstein, Michael G., Assistant Professor of Sociology; Ph.B. 1963, Wayne State; M.A. 1966, Ph.D. 1968, Harvard
Welden, Terry A., Associate Professor of Speech-Communication; B.A. 1954, West Virginia; M.A. 1957, Pittsburgh; Ph.D. 1961, Michigan State
INSTRUCTION

Weldon, Edward J., Jr., Associate Professor of Electrical Engineering; B.S.E.E. 1958, Manhattan College; M.S.E.E. 1960, Ph.D. 1963, Florida

Wellein, Lawrence T., Associate Professor of English; B.A. 1949, M.A. 1950, Ph.D. 1959, Washington

Wenkam, Nao, Assistant Professor of Home Economics; B.S. 1948, M.S. 1950, Chicago

Werner, Ralph J., Instructor in English; B.A. 1966, Pennsylvania State; M.A. 1969, San Francisco State

West, Linda P., Lecturer in Business Economics and Statistics; B.S.Ed. 1961, Central State College; M.S. 1966, Oklahoma State

West, Stanley, Professor of Library Studies A.B. 1933, California (Berkeley); L.L.B. 1938, Florida; B.S.L.S. 1942, Columbia; J.D. 1968, Florida

Westcott, Nina A., Assistant Professor of Education; B.A. 1958, St. Mary's College; M.A. 1969, De Paul; Ph.D. 1970, Arizona

Weston, Donna M., Instructor of Nursing B.S. 1954, Utah; M.N. 1965, Washington

Wetters, Doris E., Assistant Director, Human Resource Development and Professor of Family Economics and Home Management B.S. 1951, Bull State; M.S. 1958, Ohio; Ph.D. 1967, Pennsylvania

Wheelwright, Jessie, Lecturer in Library Studies; B.A. 1934, California (Berkeley); M.S.L.S. 1950, Simmons

White, George, Assistant Professor in Nursing B.S. 1950, M.Ed. 1950, Texas

White, John A., Professor of History; B.A. 1933, California; M.A. 1940, Columbia; Ph.D. 1947, Stanford

White, Russell E., Lecturer in Music; B.A. 1960, Portland State

Whitehill, Arthur M., Professor of International Management; B.S. 1942, M.A. 1944, Ph.D. 1945, Virginia

Whitesell, Philip A., Acting Assistant Professor of Education; A.B. 1957, Harvard; M.A.T. 1964, Indiana

Whitlock, Roger D., Assistant Professor of English; B.A. 1963, Whitman College; M.A. 1964, Chicago; Ph.D. 1970, Washington


Whittow, G. Causey, Professor of Physiology B.Sc. 1952, England; M.I.Biol. 1953, London; Ph.D. 1957, Malaya

Wiederholt, Ned B., Lecturer in Public Health B.A. 1950, B.Arch. 1952, Minnesota; M.Arch. 1954, Harvard

Wiens, Errol J., Professor of Geography and Asian Studies; B.A. 1935, California; M.A. 1947, Ph.D. 1949, Michigan

Wiese, Lowell, Associate Professor of Pediatrics; B.A. 1948, Valparaiso (Indiana); M.D. 1950, A.M. 1959, Tennessee


Wiley, Bonnie, Associate Professor of English and Journalism; B.A. 1948, Washington; M.S. 1957, Columbia; Ph.D. 1965, Southern Illinois

Wilkins, Frederick J., Acting Assistant Professor of Spanish; B.A. 1959, Redlands; M.A. 1965, California (Los Angeles)

Will, Richard Y., Assistant Professor of Education; B.A. 1952, Minnesota; B.Ed. 1957, M.Ed. 1960, Hawaii

Williams, Dorothy D., Instructor of Nursing B.S. 1955, New York; M.S.N. 1961, Catholic

Williams, Jean, Lecturer in Art

Williams, John A., Associate Professor of Civil Engineering; B.S. 1952, M.S. 1954, Ph.D. 1965, California

Williams, Raburn, Assistant Professor of Business Economics and Quantitative Methods; B.A. 1965, Stanford; M.A. 1967, Chicago

Williamson, Jack, Assistant Professor of Mathematics; B.S. 1962, M.S. 1963, Carnegie Institute of Technology; Ph.D. 1967, Wisconsin

Wilson, C. Peairs, Professor of Agricultural Economics; B.S. 1938, M.S. 1940, Kansas State; Ph.D. 1958, California

Wilson, James C., Assistant Professor of English as Second Language; B.A. 1955, Vanderbilt; M.A. 1959, Ed.S. 1966, George Peabody College for Teachers

Wilson, John F., Acting Assistant Professor of Political Science; B.S. State University Maritime College (N.Y.); M.A. 1966, Ph.D. 1969, State Univ. of N.Y., Albany

Wilson, Mark K., Assistant Professor of English B.A. 1960, N. Carolina; M.A. 1964, Michigan; Ph.D. 1969, N. Carolina

Winchester, Betty Jo, Assistant Professor of History; B.A. 1961, Baylor; M.A. 1964, Ph.D. 1970, Indiana

Winnick, Theodore, Professor of Biochemistry B.A. 1935, California (Los Angeles); Ph.D. 1939, California

Winters, Lee E., Jr., Associate Professor of English; B.A. 1947, Michigan; M.A. 1952, Ph.D. 1956, California (Berkeley)

Winters, Lily C., Associate Professor of Chinese; B.A. 1937, Yenching; M.A. 1950, Hawaii

Wisnosky, John, Assistant Professor of Art M.F.A. 1964, Illinois

Wittermans, Tamme, Professor of Sociology Ph.D. 1955, London

Wittchi, Walter A., Professor of Education B.S. 1932, M.A. 1934, Ph.D. 1943, Wisconsin

Witwer, John, Lecturer in Accounting; B.S. Pennsylvania; M.B.A. Stanford

Wolf, Richard J., Assistant Professor of Physics; B.A. 1962, Carleton; Ph.D. 1967, California (Berkeley)

Woff, Robert J., Associate Professor of Public Health; Ph.D. 1953, Michigan
INSTRUCTION

Woodstencroft, Ramon D., Associate Professor of Physics and Astronomy; B.S. 1959, University College, London; Ph.D. 1962, St. John's College, Cambridge

Wolz, Carl, Assistant Professor of Drama and Theater and Music; B.A. 1959, Chicago; M.A. 1965, Hawaii

Won, George Y., Associate Professor of Sociology; B.A. 1955, M.A. 1957, Hawaii; Ph.D. 1962, Michigan State

Wong, Helene H., Associate Professor of Speech-Communication; B.A. 1942, M.A. 1947, Stanford; Ph.D. 1955, Louisiana State

Wong, Kaupena, Lecturer in Music; B.A. 1951, Hawaii

Wong, Ruth E.M., Assistant Professor of Mathematics; B.Ed. 1948, Hawaii; M.S. 1960, Illinois; A.M. 1964, Ph.D. 1968, Michigan

Wong, Wai Tim, Assistant Professor of Social Work; B.A. 1951, Hawaii; M.S.W. 1953, George Warren Brown

Wood, James B., Assistant Professor of Mathematics; B.A. 1964, Tennessee; Ph.D. 1969, Virginia

Woodruff, Charlotte V. C., Assistant Professor of Social Work; B.A. 1931, Smith College; M.S. 1944, Columbia

Woods, Susanne, Assistant Professor of English; B.A. 1964, M.A. 1965, California (Los Angeles); Ph.D. 1970, Columbia

Woolard, George P., Professor of Geophysics B.S. 1932, M.S. 1934, Georgia Institute of Technology; A.M. 1935, Ph.D. 1937, Princeton

Worth, Robert M., Professor of Public Health B.A. 1950, California; M.A. 1954, California (San Francisco); M.P.H. 1958, Harvard; Ph.D. 1962, California (Berkeley)

Worthley, Reginald G., Assistant Professor of Business Economics & Quantitative Methods B.A. 1965, M.S. 1967, Maine; Ph.D. 1969, Kansas State

Wright, Lloyd A., Assistant Professor of English; B.A. 1964, Knox College; M.A. 1965, Ph.D. 1969, Harvard

Wu, I-Pai, Assistant Agricultural Engineer B.S.A.E. 1955, National Taiwan; M.S.A.E. 1960, Ph.D. 1963, Purdue

Wulff, Louise M., Instructor in Medical Technology; B.S. 1932, Wisconsin; M.S. 1966, Hawaii

Wyrtki, Klaus, Professor of Oceanography Sc.D. 1950, Kiel (Germany)

Xigogianis, Louis P., Instructor in English as Second Language; B.A. 1953, Illinois; M.A. 1964, Hawaii

Yamada, Chi, Lecturer in Music Natori Diploma, Tokyo

Yamada, June K., Instructor in Speech-Communication; B.Ed. 1965, M.A. 1967, Hawaii

Yamada, Shigeharu, Assistant Professor of Education; B.A. 1955, B.Ed. 1956, M.F.A. 1966, Hawaii

Yamamoto, George K., Assistant Professor of Sociology; B.A. 1947, M.A. 1949, Hawaii

Yamamoto, Harry, Associate Professor of Food Science; B.S. 1955, Hawaii; M.S. 1958, Illinois; Ph.D. 1962, California (Davis)

Yamamura, Douglas S., Professor of Sociology; B.Ed. 1938, M.Ed. 1941, Hawaii; Ph.D. 1949, Washington

Yamasaki, Beatrice T., Associate Professor of Philosophy; B.A. 1950, Mount Holyoke; M.A. 1954, Hawaii; Ph.D. 1962, Bryn Mawr

Yamashita, Pearl N., Assistant Professor of Education; B.Ed. 1942, Hawaii; M.A. 1948, Iowa

Yamauchi, Hiroshi, Assistant Professor of Agricultural Economics; B.S. 1964, Ph.D. 1968, California (Berkeley)

Yamamura, Yoichi, Instructor in Japanese B.A. 1951, Chuo University

Yanagimachi, Ryuzo, Assistant Professor of Anatomy; B.S. 1952, Ph.D. 1960, Hokkaido

Yanagisako, Alvin Y., Instructor in Sociology B.A. 1960, M.A. 1964, Hawaii

Yang, Hong-yi, Japan D., Associate Professor of Physics; B.S. 1969, Harvard 1959, Purdue

Yang, Sarah L., Assistant Professor of Education; B.A. 1931, Colorado State College of Education; M.Ed. 1952, Hawaii

Yasner, Elaine, Lecturer in Music B.M. 1965, Oberlin

Yasunobu, Kunio, Professor of Biochemistry; B.S. 1950, Ph.D. 1954, Washington

Yee, Phillip K. H., Lecturer in Civil Engineering; B.S. 1938, Hawaii

Yee, Warren, Associate Professor of Horticulture; B.S. 1942, Hawaii; M.S. 1959, Purdue

Yeh, Yong-Her, Associate Professor of Economics; B.A. 1955, Taiwan; M.A. 1959, Ph.D. 1965, Minnesota

Yeh, Rui Zong, Associate Professor of Mathematics; B.A. 1953, Minnesota; M.A. 1956, Ph.D. 1959, Princeton

Yokoyama, Mitsuo, Associate Professor of Genetics; M.D. 1950, Jutendo Medical School; Ph.D. 1958, Tokyo Medical and Dental

Yoshikawa, Muneko, Instructor in Japanese B.A. 1962, Linfield College; M.A. 1967, Hawaii

Young, Franklin, Associate Professor of Foods and Nutrition; A.B. 1951, Mercer; B.S.A. 1952, M.Ag. 1954, Ph.D. 1960, Florida

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INSTRUCTION

Young, Gerald C., Instructor in French; B.A. 1947, California (Los Angeles); M.A. 1968, Hawaii
Young, Jack K., Associate Professor of Engineering; B.S. 1951, Hawaii; M.S. 1965, Colorado State
Young, Paul C., Professor of Electrical Engineering; B.S. 1952, Chicago; M.S. 1955, Ph.D. 1960, Illinois Institute of Technology
Young, Reginald H. F., Associate Professor of Public Health; B.S. 1959, M.S. 1965, Hawaii; Sc.D. 1967, Washington
Young, Richard E., Assistant Professor of Oceanography; B.A. 1960, Pomona; M.S. 1964, Southern California; Ph.D. 1968, Miami
Young, John, Professor of Japanese; B.A. 1942, Tokyo; B.S. 1949, M.S. 1951, Georgetown; Ph.D. 1955, Johns Hopkins
Young, H. Y., Associate Professor of Agronomy; B.S. 1932, M.S. 1933, Hawaii
Young, Richard E., Assistant Professor of Oceanography; B.A. 1960, Pomona; M.S. 1964, Southern California; Ph.D. 1968, Miami
Young, John, Professor of Japanese; B.A. 1942, Tokyo; B.S. 1949, M.S. 1951, Georgetown; Ph.D. 1955, Johns Hopkins
Young, Reginald H. F., Associate Professor of Public Health; B.S. 1959, M.S. 1965, Hawaii; Sc.D. 1967, Washington
Young, Richard E., Assistant Professor of Oceanography; B.A. 1960, Pomona; M.S. 1964, Southern California; Ph.D. 1968, Miami
Young, John, Professor of Japanese; B.A. 1942, Tokyo; B.S. 1949, M.S. 1951, Georgetown; Ph.D. 1955, Johns Hopkins
Young, H. Y., Associate Professor of Agronomy; B.S. 1932, M.S. 1933, Hawaii
Zbinden, Jorge, Instructor in Spanish B.H. 1952, Univ. of Chile; M.A. 1964, International Univ.
Zeitlin, Harry, Professor of Chemistry; B.A. 1937, Harvard; M.S. 1948, Ph.D. 1951, Hawaii
Zirker, Jack B., Professor of Physics and Astronomy; B.S. 1949, City College of N.Y.; Ph.D. 1956, Harvard

VISITING FACULTY

Alchian, Armen, Visiting Professor of Economics; Economics Chair; B.A. 1936, Ph.D. 1943, Stanford
Kasami, Tadao, Visiting Professor of Electrical Engineering; B.E. 1958, M.E. 1960, Ph.D. 1963, Osaka University
Kinloch, Hector G., Visiting Associate Professor of American Studies; B.A. 1949, M.A. 1953, Cambridge; M.A. 1954, Ph.D. 1960, Yale
Lundberg, Donald E., Visiting Associate Researcher & Associate Professor B.A. 1941, Northern Iowa; M.A. 1942, Duke; Ph.D. 1946, Cornell
Martin, Samuel E., Visiting Professor of Japanese; A.B. 1947, M.A. 1949, California; Ph.D. 1950, Yale
Oyama, Atsuko, Visiting Assistant Professor of Japanese; B.A. 1950, Tokyo Univ.
Yamamura, Kozo, Visiting Professor of Economics; B.A. 1957, California (Berkeley); Ph.D. 1963, Northwestern
Yao, Hsin-Nung, Visiting Professor of Chinese; B.A. 1931, Soochow Univ. (China)

AFFILIATE GRADUATE FACULTY

Apt, Walter J., Ph.D., Nematologist, Pineapple Research Institute
Barrow, Terence, Ph.D., Anthropologist, Bishop Museum
Barkley, Richard A., Ph.D., Chief, Oceanography Investigation, Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service
Bateson, Gregory, M.A., Associate Director of Research, Oceanic Institute, Makapuu
Bernstein, Leo, M.D., Former Director, State Department of Health
Brekke, John E., M.S., Food Technologist, Hawaii Fruit Laboratory, USDA
Colby, Edward W., M.P.H., Assistant Medical Director, Rehabilitation Center of Hawaii

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INSTRUCTION

Davis, Clifton J., B.S., Chief, Entomology Branch, State Department of Agriculture
Dollar, Alexander M., Ph.D., Supervisor, Hawaii Development Irradiator, State Department of Agriculture
Emory, Kenneth P., Ph.D., Anthropologist, Bishop Museum
Feltion, George E., Ph.D., Technical Director, Dole Corporation
Force, Roland W., Ph.D., Director, Bishop Museum
Fosberg, Francis Raymond, Ph.D., Special Adviser on Tropical Biology, Smithsonian Institution
Fujino, Kazuo, Ph.D., Chief of Subpopulations Program, Bureau of Commercial Fisheries, U.S. Fish and Wildlife Service
Gertel, Karl, Ph.D., Research Economist, U.S. Department of Agriculture
Gressitt, J. Linsley, Ph.D., Entomologist, Bishop Museum
Gudeman, Howard F., Ph.D., Director, Psychological Services and Training, Hawaii State Hospital
Halperin, Sidney L., Ph.D., Clinical Psychologist, Tripler General Hospital
Heinicke, Ralph M., Ph.D., Director of Chemistry and Food Research, Dole Corporation
Heinz, Don J., Ph.D., Head, Department of Genetics and Pathology, Experiment Station, HSPA
Hilton, H. Wayne, Ph.D., Principal Chemist, Experiment Station, HSPA
Hogg, Howard Carl, Ph.D., Agricultural Economist, U.S. Department of Agriculture
Howard, Alan, Ph.D., Anthropologist, Bishop Museum
Ishibe, Minoru, Ph.D., Head, Agronomy Department, Experiment Station, HSPA
Joyce, C. R., Ph.D., Medical Entomologist, State Department of Health
Kohloss, Frederick H., M.S., President, Frederick H. Kohloss and Associates, Inc.
Kondo, Yoshiho, Ph.D., Malacologist, Bishop Museum
Krauss, Beatrice, M.S., Plant Physiologist, Pineapple Research Institute
Larsen, Jimmy C., Ph.D., Research Oceanographer, Joint Tsunami Research Effort, Environmental Science Services Administration, U.S. Department of Commerce
Loomis, Harold, Ph.D., Tsunami Research Group, Environmental Science Services Administration
McLaren, Kazue, M.P.H., Assistant Director, Public Health Nursing Branch, State Department of Health
Miller, Gaylord, Ph.D., Chief, Tsunami Research, ESSA
Nickell, Louis G., Ph.D., Principal Physiologist and Biochemist, Experiment Station, HSPA
Paty, Jeanne E., M.P.H., Chief, Health Education Office, State Department of Health
Price, Saul, M.S., Regional Climatologist, Water Resources Research Center
Quisenberry, Walter B., M.D., Director, State Department of Health
Reynolds, William N., M.S., Senior Project Engineer, Experiment Station, HSPA
Rohrbach, Kenneth G., Ph.D., Plant Pathologist, Dole Corporation
Rosen, Leon, M.D., Head, Pacific Research Section, National Institute of Allergy and Infectious Diseases, U.S. Department of Health, Education and Welfare
Sakimura, Kanjo, Entomologist, Pineapple Research Institute
Seckel, Gunter R., M.S., Oceanographer, Bureau of Commercial Fisheries, U.S. Fish and Wildlife
Shaw, Ralph R., Ph.D., Vice-President, Grolier Educational Corporation
Shim, Walton K. T., M.D., Assistant Director, Birth Defects Center, Children's Hospital
Sinoto, Yoshihiko, Sc.D., Archeologist, Bishop Museum
Smith, Jimmie B., Ph.D., Head, Plant Breeding Section, Pineapple Research Institute
Steiner, Loren F., M.S., Research Entomologist and Investigations Leader, Hawaii Fruit Fly Investigations, U.S. Department of Agriculture
Takata, Michio, M.S., Director, Division of Fish and Game, State Department of Agriculture and Conservation
Tom, Albert Q. Y., Ph.D., Vice-President, Sunn, Low, Tom and Hara, Inc., Consulting Engineers
Van Royen, Pieter, Ph.D., Chairman and Botanist, Department of Botany, Bishop Museum
Wagner, Warren, Ph.D., Professor of Botany, Director, Botanical Gardens, University of Michigan
Waxman, Sorrell H., M.D., Kapiolani Maternity Hospital
Wallraabenstein, Paul P., Ph.D., Agricultural Statistician in Charge, Statistical Reporting Service, U.S. Department of Agriculture
Wilson, Nixon A., Ph.D., Acarologist, Bishop Museum
Wismer, Chester A., Ph.D., Senior Pathologist, Experiment Station, HSPA
Yen, Douglas E., M.Agr.Sc., Ethnobotanist, Bishop Museum
RESEARCH UNITS

RESEARCH UNITS AND FACILITIES

An asterisk (*) before a name indicates Degrees listed under "Instruction."

Harold L. Lyon Arboretum

*Sagawa, Yoneo, Director
Anderson, Donald, Technician
*Baker, Gladys E., Botanist
Brasil, Melvin L., Research Affiliate

Carlquist, Sherwin, Ph.D., Research Affiliate; Professor of Botany, Claremont Graduate School, California

Clay, Horace F., Ph.D., Research Affiliate; Associate Dean of Special Programs, Leeward Community College

*Cutting, Windsor C., Pharmacologist
*Friend, Douglas J. C., Botanist
Gillett, George W., Ph.D., Research Affiliate; Professor of Botany and Director of Botanical Gardens, California, (Riverside)

*Goos, Roger D., Assoc. Botanist
*Hamilton, Richard A., Horticulturist
Henrickson, J., Ph.D., Research Affiliate; Botanist, Bishop Museum, Honolulu

Hirano, Robert, Jr. Researcher
B.S. 1962, M.S. 1967, Hawaii

*Kamemoto, Haruyuki, Horticulturist
*Kefford, Noel P., Botanist
Krauss, Beatrice, M.S., Plant Physiologist
*Lamoureux, C. H., Assoc. Botanist
*Lloyd, R. M., Asst. Botanist

*Matsumoto, Hiromu, Agricultural Biochemist
*Mueller-Dumbois, D., Botanist
Nagata, Kenneth, Asst. in Research
B.S. 1968, Hawaii

*Nakasone, Henry Y., Horticulturist
*Norton, Ted R., Pharmacologist
*St. John, Harold, Botanist
*Scheur, Paul J., Chemist
*Siegel, Barbara Z., Asst. Microbiologist
*Siegel, Sanford M., Botanist
*Smith, Albert C., Botanist
*Smith, C. W., Asst. Botanist

Stern, William L., Ph.D., Research Affiliate
Professor of Botany, Maryland
Stewart, W., Ph.D., Research Affiliate
Director, Pacific Tropical Botanical Gardens, Lawaikai, Kauai

Thorne, Robert F., Ph.D., Research Affiliate; Professor of Botany, Claremont Graduate School, California

Van Royen, P., Ph.D., Research Affiliate
Chairman, Dept. of Botany, Bishop Museum, Honolulu

Wagner, Warren H., Ph.D., Research Affiliate; Professor of Botany and Director of Botanical Gardens, Michigan

*Warner, R. M., Horticulturist
Yen, Douglas E., Ph.D., Research Affiliate
Ethnobotanist, Bishop Museum, Honolulu

Center for Engineering Research

*Harrenstien, Howard P., Director, Associate Dean

*Fand, Richard M., Professor of Mechanical Engineering
Fukao, Mary, Research Associate
B.A. 1968, Hawaii

Masone, Marsha, Asst. in Engrg. Research
B.A. 1969, New Mexico

Sheets, George M., Engineering Editor
LL.B. 1963, Arizona

Stockstill, Sharon, Asst. in Engrg. Research
B.A. 1969, Hawaii

*Szilard, Rudolph, Professor of Civil Engineering
Woodruf, Grif, Technician (CER Shop Manager)

Economic Research Center

*Miklius, Walter, Director

*Chau, Laurence, Asst. Prof. of Econ.

*Comitini, Salvatore, Assoc. Prof. of Econ.

*Ebel, Robert, Act. Asst. Prof. of Econ.

*Hight, Joseph, Act. Asst. Prof. of Econ.

*Pollock, Richard, Asst. Prof. of Econ.

*Psacharopoulos, George, Asst. Prof. of Econ. (on leave)
Shang, Yung-Cheng, Asst. Economist
B.A. 1958, Taiwan Provincial Chung-Hsing;
M.S. 1962, Southern Illinois; Ph.D. 1969, Hawaii
RESEARCH UNITS

Education Research and Development Center

*Ryan, David G., Director
*Adkins, Dorothy C., Researcher
*Bail, Frederick T., Asst. Researcher
Crowell, Doris C., Asst. Researcher
*Dunn-Rankin, Peter, Assoc. Researcher
Dunning, Marion P., Jr. Researcher
Elrod, Betty S., Asst. in Ed Research
*Espinosa, Renato, Assoc. Researcher
Geiger, Gayle J., Asst. in Ed Research
Hodges, Carole H., Jr. Researcher
Johngren, Nancy W., Asst. in Ed Research
Kelly, Karen G., Jr. Researcher
*King, Arthur R., Jr., Researcher

Lawrence, James W., Asst. Researcher
Leong, Patricia M., Asst. in Ed Research
Lerner, Virginia M., Asst. in Ed Research
*Levon, Donald A., Researcher
Loveless, Phyllis H., Jr. Researcher
Meyer, Lynne, Asst. in Ed Research
Okimoto, Annette Y., Jr. Researcher
*O'Malley, J. Michael, Asst. Researcher
*Reid, Ian E., Assoc. Researcher Affiliate
*Ryan, T. Antoinette, Researcher

Hawaii Agricultural Experiment Station

*Wilson, C. Pearis, Director
Afifi, Hani A., Asst. Agricultural Economist
B.S. 1960, Ain-Shams University (Cairo, Egypt); M.S. 1964, California (Berkeley); Ph.D. 1969, Hawaii
*Akamine, Ernest K., Plant Physiologist
*Anderson, Robert N., Asst. Agricultural Economist
*Anwar, Mahmoud, Asst. Entomologist
*Arakaki, Minoru, Assoc. Plant Pathologist
Awada, Minoru, Asst. Plant Physiologist
B.S. 1938, M.S. 1949, Hawaii
*Bartholomew, Duane P., Asst. Agronomist
*Beardsley, John W., Assoc. Entomologist
*Bess, Henry A., Sr. Entomologist
Bevenue, Arthur, Assoc. Biochemist
B.S. 1946, California
Bowen, John F., Asst. Plant Physiologist
B.A. 1960, Western Maryland College; M.S. 1963, Ph.D. 1965, Maryland
*Brewbaker, James L., Horticulturist
*Brooks, Coy C., Animal Scientist
*Buddenhagen, Ivan W., Plant Pathologist
Bullock, Richard M., Asst. Director and Horticulturist; B.S. 1940, Kansas State; M.S. 1942, Ph.D. 1950, Washington State
Campbell, Charles M., Asst. Animal Scientist
B.S. 1958, Texas A & M; M.S. 1960, Idaho; Ph.D. 1964, Oklahoma State
Cavaletto, Catherine G., Jr. Food Technologist; B.S. 1959, California
*Chantiny, John G., Home Economist
Chinn, James T., Jr. Horticulturist
B.S. 1957, Hawaii; M.S. 1962, California
*Cooil, Bruce J., Plant Physiologist
*Criley, Richard A., Asst. Horticulturist
*Davidson, Jack R., Agricultural Economist
*Ekern, Paul, Soil Scientist
*El-Swaify, Samir A., Asst. Soil Scientist

Emerson, Mary L., Asst. in Agricultural Biochemistry; B.A. 1967, Texas
*Fox, Robert L., Soil Scientist
*Frank, Hilmer A., Food Technologist
Fukunaga, Edward T., Agriculturist
B.S. 1934, M.S. 1935, Hawaii
*Gilbert, James C., Horticulturist
Goo, Theodore T. S., Research Associate
B.S. 1966, Hawaii
*Gopalakrishnan, Chennat, Assoc. Agricultural Economist
*Goto, Shosuke, Assoc. Plant Pathologist
*Green, Richard E., Assoc. Soil Scientist
*Hamilton, Richard A., Horticulturist
*Haramoto, Frank H., Assoc. Entomologist
*Hardy, D. Elmo, Sr. Entomologist
*Hartmann, Richard W., Asst. Horticulturist
*Herrick, Orpha, Asst. Home Economist
*Herrick, Raymond B., Assoc. Poultry Scientist
Higa, Stanley Y., Asst. in Entomology
B.S. 1961, Hawaii
*Hilker, Doris M., Assoc. Nutritionist
*Hing, Francisco S., Assoc. Food Technologist
Ho-a, Elodie B., Asst. in Animal Science
B.A. 1969, Hawaii
*Hollden, James S., Assoc. Specialist in Agricultural Economics
*Holtzmann, Oliver V., Assoc. Plant Pathologist
*Hundtoft, Elgin B., Assoc. Specialist in Agricultural Engineering
Hunter, James, Asst. Plant Pathologist
B.S. 1961, Kenne State; Ph.D. 1964, New Hampshire
*Hylin, John W., Assoc. Biochemist
*Ikawa, Haruyoshi, Asst. Soil Scientist
*Ishii, Mamoru, Assoc. Plant Pathologist
Ishizaki, Stanley M., Jr., Animal Scientist
B.S. 1959, M.S. 1963, Hawaii

Ito, Phillip J., Asst. Horticulturist
B.S. 1958, Hawaii; Ph.D. 1963, Minnesota

Jones, Rollin C., Asst. Soil Scientist
B.S.A. 1960, M.S. 1963, Arizona

*Kamemoto, Haruyuki, Horticulturist

*Kanehiro, Yoshinori, Asst. Soil Scientist
Kawano, Yoshihiko, Asst. Biochemist
B.A. 1943, Nihon University; M.S. 1957, Hawaii

*Keeler, Joseph T., Assoc. Agricultural Economist

*Kefford, Noel P., Professor of Botany

*Kinch, Donald M., Agricultural Engineer

*Klemm, Barbara E., Asst. in Agricultural Biochemistry;
A.B. 1964, Ohio Wesleyan

*Ko, Wen-hsiung, Asst. Plant Pathologist
B.S. 1962, National Taiwan University;
Ph.D. 1966, Michigan State

*Kinches, John T., Jr., Horticulturist
B.S. 1960, M.S. 1964, Hawaii

*Larson, Arnold B., Agricultural Economist

*Lee, James H. F., Jr., Animal Scientist
B.Sc. 1965, M.Sc. 1967, British Columbia

*Lieben, Tung, Asst. Agricultural Engineer

*Linton, Ira J., Assoc. Nutritionist

*Long, Charles R., Jr., Plant Physiologist
B.S. 1953, M.S. 1966, California

*Marders, William G., Rural Sociologist
B.S. 1929, California; M.S. 1954, Chicago;
Ph.D. 1964, California

*Matsuyama, Hisayuki, Biochemist

*Meredith, Donald S., Assoc. Plant Pathologist

*Mitchell, Wallace C., Entomologist

*Moy, James H., Asst. Food Technologist

*Murdock, Charles, Asst. Horticulturist

*Nakasone, Henry Y., Horticulturist
Nakata, Shigeru, Asst. Plant Physiologist
B.S. 1946, M.S. 1949, Ph.D. 1965, Hawaii

*Namba, Ryoji, Entomologist

*Nishida, Toshiyuki, Entomologist

*Nishimoto, Roy K., Assistant Horticulturist

*Obrero, Faustino P., Jr., Plant Pathologist
B.S. 1962, Philippines; M.S. 1964, Hawaii

*Ogata, James N., Jr., Chemist
B.S. 1956, Hawaii

*Palafox, Anastacio L., Asst. Poultry Scientist

*Parvin, Philip E., Assoc. Horticulturist
B.S.A. 1950, Florida; M.S. 1952, Michigan

*Patil, Suresh S., Assoc. Plant Pathologist
B.S. 1955, Sir Parashurambhau College
(Poona, India); M.S. 1959, Ph.D. 1962, Oregon State

*Paul, Allen B., Agricultural Economist

*Philipp, Perry F., Agricultural Economist

*Plucknett, Donald L., Assoc. Agronomist

*Putman, Edison W., Assoc. Plant Physiologist

*Reimer, Diedrich, Assoc. Animal Scientist
B.S.A. 1950, Manitoba; M.S. 1955, Ph.D. 1959, Minnesota

*Renaud, Bertrand M., Asst. Agricultural Economist

*Ross, Ernest, Poultry Scientist

*Rotar, Peter P., Assoc. Agronomist

*Saawa, Yoneo, Horticulturist

*Sanford, Wallace G., Agronomist
Schoeth, Charles, Asst. Soil Scientist
B.S. 1964, M.S. 1966, Penn State; Ph.D. 1970, Hawaii

*Scott, Frank S., Agricultural Economist

*Sekioka, Terry T., Asst. Horticulturist
B.S. 1963, Hawaii; M.S. 1967, Ph.D. 1969, Minnesota

*Sherman, Martin, Entomologist
Shigueru, Gordon T., Assoc. Horticulturist
B.S. 1939, M.S. 1947, Hawaii

*Silva, James A., Asst. Soil Scientist

*Smith, Ray, Assoc. Agricultural Engineer

*Spielmann, Heinz, Assoc. Agricultural Economist

*Standal, Bluebell R., Assoc. Nutritionist

*Stanley, Richard W., Assoc. Animal Scientist

*Suehs, Robert H., Jr., Plant Physiologist
B.Sc. 1959, Colorado; M.Sc. 1961, Hawaii

*Swindale, Leslie D., Soil Scientist and Associate Director

*Tamashiro, Minoru, Assoc. Entomologist
Tamimi, Yusuf N., Asst. Agronomist
B.S. 1957, Purdue; M.S. 1959, New Mexico State;
Ph.D. 1964, Hawaii

*Tanaka, Jack S., Asst. Horticulturist
B.S. 1951, M.S. 1960, Hawaii

*Tang, Chung-Shih, Asst. Biochemist
Thompson, John R., Assoc. Agronomist
B.S. 1949, M.S. 1952, Minnesota; Ph.D. 1964,
Iowa State

*Trujillo, Eduardo E., Assoc. Plant Pathologist

*Tsuda, Dick M., Asst. in Entomology
B.S. 1969, Hawaii

*Uehara, Goro, Assoc. Soil Scientist

*Uvata, Ukio, Asst. Agronomist

*Vogt, Dale W., Asst. Animal Scientist

*Walters, Mayme J., Asst. in Agricultural Biochemistry;
B.A. 1969, Texas

*Wang, Jaw-Kai, Agricultural Engineer

*Warner, Robert M., Horticulturist

*Wayman, Oliver, Animal Scientist

*Wheaton, Margaret L., Jr., Plant Physiologist
B.S. 1967, Duke University; M.S. 1969, Hawaii

*Wenkam, Nao, Asst. Nutritionist
B.S. 1948, M.S. 1950, Chicago
RESEARCH UNITS

Whitney, Arthur S., Asst. Agronomist
B.S. 1955, Ohio; M.S. 1958, Cornell;
Ph.D. 1966, Hawaii

Widman, Carlos P., Jr. Agricultural Economist; A.B. 1965, Georgetown University

*Wu, I-Pai, Asst. Agricultural Engineer

Yoamamoto, Harry Y., Assoc. Food Technologist

Yamauchi, Hiromi, Asst. Agricultural Economist

Young, Franklin, Assoc. Nutritionist

Young, Hong Yip, Assoc. Agronomist

Hawaii Institute of Geophysics

*Woollard, George P., Director
*Adams, Carl, Asst. Meteorologist
*Adams, William M., Seismologist
*Andermann, George, Assoc. Chemist
*Andrews, James E., Asst. Oceanographer
*Barkley, Richard A., Ph.D., Research Affiliate; Oceanographer, Honolulu Biological Laboratory, Bureau of Commercial Fisheries
Barnes, Wilbur H., Jr., Technician
Bell, Bernard, Technician
Bennett, Edward B., Asst. Oceanographer
B.A. 1955, M.A. 1958, British Columbia
Buddeleif, Robert, Asst. Chemist
Campbell, John F., Jr., Geophysicist
B.S. 1962, M.S. 1966, Hawaii
Crawford, Gordon B., Asst. Geophysicist
B.S. 1958, M.S. 1959, Oregon; M.A. 1960, Ph.D. 1962, Princeton
*Daugherty, Kenneth L., Asst. to Director and Assoc. Geodesist
Davis, Dan A., M.S., Research Affiliate Geologist, U.S. Geological Survey
Decker, Robert Wayne, D.Sc., Research Affiliate; Professor, Dartmouth College, and Geophysicist, Hawaii Volcano Observatory
Dehlinger, Peter, Ph.D., Research Affiliate Geophysicist, Director, Marine Sciences Institute, University of Connecticut
Duce, Robert A., Ph.D., Research Affiliate Assoc. Professor, University of Rhode Island
Ellis, Howard, B.S., Research Affiliate Physicist in Charge, Mauna Loa Observatory, U.S. Weather Bureau
*El Swafy, Samir Aly, Asst. Soil Scientist
*Fan, Pow-Foong, Asst. Geophysicist
Fisher, Richard V., Ph.D., Research Affiliate Professor, California (Santa Barbara)
Fullerton, Charles M., Asst. Geophysicist
B.S. 1954, Oklahoma; M.S. 1964, Ph.D. 1966, New Mexico Institute of Mining and Technology
*Furumoto, Augustine S., Assoc. Seismologist
*Gallagher, Brent, Asst. Oceanographer
*Gilley, Ellis G., Technician
*Gordon, Donald, Asst. Oceanographer
*Groves, Gordon W., Oceanographer

*Hardy, Wilton A., Oceanographer
*Hiraki, Kenneth, Technician
*Ho, Francis P. W., Asst. Meteorologist
*B.S. 1960, M.S. 1963, Hawaii
Houlton, Edward C., Technician
Ichinose, William N., Technician
B.A. 1954, Hawaii
*Ing. Gordon K. T., Jr. Meteorologist
B.S. 1964, Hawaii
Johnston, Rockne, Assoc. Geophysicist
B.S. 1952, Washington; Ph.D. 1968, Hawaii
*Khan, Mohammad A., Asst. Geodesist
Knowles, Leonard L., Specialist
U.S. 1958, M.S. 1960, Arkansas
Krueke, Loren, Jr., Geophysicist
B.S. 1960, Wisconsin; M.S. 1968, Hawaii
Ladd, Harry S., Ph.D., Research Affiliate Research Associate, Smithsonian Institution, U.S. National Museum
Larsen, Jimmy C., Research Affiliate Oceanographer, Pacific Oceanographic Laboratories, ESSA
Laudon, Thomas S., Ph.D., Research Affiliate; Geologist, Wisconsin State University
*Laurila, Simo H., Geodesist
Loomis, Harold E., Ph.D., Research Affiliate; Mathematician, Pacific Oceanographic Laboratories, ESSA
*Macleod, Gordon A., Sr., Geologist and Geophysicist
Machesky, Lawrence F., Research Associate
B.S. 1953, Wisconsin
*Malahov, Alexander, Assoc. Geophysicist
*Manghani, Murti H., Assoc. Geophysicist
Marsh, H. Clifton, Asst. Geophysicist
B.S. 1959, Hawaii
Mason, Ronald, Ph.D., Research Affiliate Geophysicist, Imperial College, London, England
Matko, George K., Administrative Officer
Mattes, Hubert, Technician
Trade School Weingarten, 1933 (Germany)
Mcafee, Ethel U., Specialist
B.S. 1939, Hawaii
Meyer, Robert P., Ph.D., Research Affiliate Geophysicist, University of Wisconsin
Michel, Jean G., Research Associate
RESEARCH UNITS

Miller, Gaylord R., Ph.D., Research Affiliate
Oceanographer, Environmental Science
Services Administration, Joint Tsunami
Research Effort

Moberly, Ralph M., Jr., Assoc. Geologist
Monges-Caldera, Julio (Inq.), Research
Affiliate; Geophysicist, Universidad
Nacional de Mexico

Murakami, Takio, Meteorologist

Naughton, John J., Chemist

Norris, Roger A., Jr., Geophysicist
B.A. 1960, M.S. 1963, Hawaii

Parvalescu, Antares, Ocean Engineer

Price, Saul, M.S., Research Affiliate
Regional Climatologist, U.S. Weather
Bureau, Honolulu

Pryor, Taylor A., A.B., Research Affiliate
President, The Oceanic Foundation, Makapuu Point

Ramage, Colin S., Assoc. Director and
Meteorologist

Resig, Johanna M., Asst. Micropaleontologist
Rex, Robert Walter, Ph.D., Research
Affiliate; Geologist, University of California (Riverside)

Rhodes, Richard R., Technician
B.F.A. 1958, Chicago

Rollinson, George R., Technician

Rose, John C., Geophysicist

Roy, Kenneth, Asst. Oceanographer

Ryan, Theodore V., Research Affiliate
Oceanographer, Pacific Oceanographic
Laboratories, ESSA, Seattle, Washington

Sadler, James C., Assoc. Meteorologist

Schlabach, David R., Technician

Shafer, Gerald Edward, Technician

Sokolowski, Thomas J., Research Affiliate
Geophysicist, Environmental Sciences
Services Administration, Joint Tsunami
Research Effort

Stearns, Harold T., Ph.D., Research
Affiliate; Consulting Geologist, East Palo
Alto, California

Stroup, Edward D., Assoc. Oceanographer

Suess, Erwin, Asst. Oceanographer
Diplom-Vorpriftung 1963, Justus Liebig-
Universitat; M.S. 1966, Kansas; Ph.D.
1968, Lehigh

Sutton, George H., Geophysicist

Taylor, Ronald, Asst. Meteorologist

Thompson, Noel J., Research Associate
B.S. 1951, Wisconsin

Vitousek, Martin J., Assoc. Geophysicist
B.S. 1949, Ph.D. 1955, Stanford

Walker, Daniel A., Jr., Seismologist
B.S. 1963, John Carroll (Cleveland);
M.S. 1965, Hawaii

Woodcock, Alfred H., Meteorologist
D.Sc. (Hon.) 1963, Long Island

Wyrtki, Klaus, Oceanographer

Young, Edith H., Specialist
A.B. 1930, Oberlin

Hawaii Institute of Marine Biology

*Brock, Vernon E., Director

Helfrich, Philip., Assoc. Director
B.S. 1951, Santa Clara; Ph.D. 1958,
Hawaii

Akiyama, Gerald, Research Associate
B.S. 1968, Hawaii

Bailey, Julie H., Asst. Prof. of Zoology

Baldwin, Wayne J., Research Associate
B.S. 1952, Humboldt State

Banner, Albert H., Professor of Zoology

Branham, Joseph M., Asst. Professor of
Zoology

Caperon, John, Associate Professor of
Oceanography

Cattell, S. Allen, Asst. Professor of
Oceanography

Chave, Keith E., Professor of Oceanography

Clarke, Thomas A., Asst. Professor of
Oceanography

Comitini, Salvatore, Assoc. Professor of
Economics

Doty, Maxwell S., Professor of Botany

Grigg, Richard W., Asst. Marine Biologist
B.A. 1958, Stanford; M.S. 1964,
Hawaii; Ph.D. 1969, California, San
Diego

Gundersen, Kaare R., Assoc. Prof. of
Microbiology

Haley, Samuel R., Asst. Professor of
Zoology

Hashimoto, David Y., Research Associate
B.S. 1963, Hawaii

Hashimoto, William Y., Research
Associate

Herman, Louis M., Assoc. Professor of
Psychology

Kay, E. Alison, Professor of General
Science

Kosaki, Thomas I., Asst. in Pharmacology
B.S. 1959, Utah

Losey, George S., Asst. Professor of
Zoology

Maciolek, John A., Assoc. Zoologist
B.S. 1950, Oregon State; M.S. 1953,
California; Ph.D. 1961, Cornell

Murphy, Garth I., Chairman, Department
of Oceanography

Petz, Nancy L., Research Associate
B.S. 1969, Hawaii

Popper, Arthur N., Asst. Professor of
Zoology
RESEARCH UNITS

Randall, John E., Grad. Faculty in Zoology
B.A. 1950, California (Los Angeles); Ph.D. 1955, Hawaii
*Reed, S. Arthur, Assoc. Professor of Zoology
*Reese, Ernst S., Assoc. Professor of Zoology
Sakamoto, Pauline S., Asst. in Marine Chemistry:
B.A. 1969, Hawaii
Shehadeh, Ziad H., Affiliate Grad Faculty in Zoology:
B.S. 1959, Beirut; M.S. 1960, Michigan; Ph.D. 1967, California (Los Angeles)
*Stevens, E. Donald, Asst. Professor of Zoology

Struhsaker, Jeannette W., Asst. Marine Biologist:
B.A. 1958, Western Washington College; Ph.D. 1966, Hawaii
Takahashi, Wataru, Jr., Marine Chemist
B.A. 1957, Hawaii; M.A. 1959, Indiana
*Tester, Albert L., Sr. Professor of Zoology
*Townsley, Sidney J., Professor of Marine Zoology
Wagner, Patricia J., Asst. in Marine Biology:
B.S. 1967, Colorado College
Watarai, Lloyd T., Research Associate
B.A. in Zoology 1961, Southern California
*Young, Richard E., Asst. Professor of Oceanography

Industrial Relations Center

*John B. Ferguson, Acting Director
*Edwin C. Pendleton, Research Associate
Paul F. Brissenden, Visiting Colleague in Industrial Relations:
A.B. 1908, Denver; A.M. 1912, California; Ph.D. 1917, Columbia

Joyce M. Najita, Jr., Researcher
Helene R. Shimaoka, Jr., Researcher
B.B.A. 1954, Hawaii

Labor-Management Education Program

Guy T. Nunn, Director
B.A. 1936, Occidental College; B.A. 1938, M.A. 1939, Oxford

Paul P. Tinning, Assoc. Specialist
B.A. 1957, Rutgers
Edward D. Beechert, Assoc. Specialist

Institute for Astronomy

*Jefferies, John T., Director
Akaka, William H., Technician
Bandermann, Lothar W., Asst. Astronomer
A.B. 1963, California; Ph.D. 1968, Maryland
Barclay, James C., Technician
Beery, Jerome G., Visiting Colleague
B.A. 1957, Kansas State; M.S. 1962, Ph.D. 1968, New Mexico
Bishop, Robert L., Technician
*Boesgaard, Ann M., Asst. Professor
Boesgaard, Hans, Research Associate
(Observatory Engineer); M.E. 1952, Copenhagen Higher Institute
*Bonsack, Walter K., Assoc. Professor
Bradshaw, Colby, Technician
Brady, Barbara A., Admin. Assistant
B.A. 1960, Northwestern
Bruns, Kamalu A. C., Research Associate
Cain, Stanley D., Research Associate
B.S. 1962; M.S. 1966, Wayne State
Cheigh, Francis, Research Associate
B.A. 1962, Hawaii

Cramer, Katherine F., Research Associate
Crump, Phillip C., Research Associate
De Mello, Joseph B., Research Associate
Eller, Rudy, Technician
Emarine, Lester L., Technician (Supervisor, Instrument Shop)
Enos, Ernest B., Technician
Finn, Gerald D., Assistant Astronomer
B.Sc. 1962, Ph.D. 1965, Queensland, Australia
Fischer, Edward E., Technician
Fisher, Richard R., Assoc. Astronomer
B.A. 1961, Grinnell; Ph.D. 1965, Colorado
Graham, Roy T., Technician
(Supervisor, Maintenance)
Gray, Harold A., Research Associate
B.S. 1960, Ohio State
Gwinn, Larry N., Research Associate
B.S. 1967, Grand Valley State
Harmon, Robert L., Technician
Harwood, James V., Research Associate
A.B. 1958, Columbia
Hathaway, Glen H., *Technician*  
(Mountain Superintendent)  

Hendricks, Peter L., *Research Associate*  
B.A. 1961, Calif. (Berkeley); M.A. 1967, Hawaii  

Hill, Raymond C., *Research Associate*  
B.A. 1964, Maryland  

Hipkiss, William W., *Technician*  

Ino, Janis L., *Research Associate*  
B.S. 1969, Hawaii  

Kawamura, Setsuji, *Technician*  
A.A. 1940, Indiana Technical College  

Kempston, David B., *Technician*  

King, Mary J., *Technician*  

Kowalski, Alexander T., *Research Associate*  

Kurz, James D., *Research Associate*  

LaForge, David H., *Research Associate*  
B.S. 1962, MIT  

Lu, Wayne M. T., *Technician*  

McCabe, Marie K., *Asst. Astronomer*  
B.S. 1945, New Zealand; M.S. 1955, London  

McGinnis, Lyle O., *Technician*  

Martin, Terry Z., *Research Associate*  
A.B. 1967, California (Berkeley)  

Menon, Thuppalay K., *Astronomer*  
B.Sc. 1947, India; S.M. 1953, Ph.D. 1956, Harvard  

Miller, Kenneth R., *Technician*  

Missbach, Mary F., *Specialist*  

Miyabara, Judith M., *Admin. Officer*  
B.B.A. 1965, Hawaii  

Miyashiro, Glenn, *Technician*  

Morrison, David, *Astronomer*  

Murphy, Robert E., *Astronomer*  

Nolt, Ira G., *Astronomer*  
B.S. 1960, Franklin & Marshall College; Ph.D. 1967, Cornell  

Oda, Sadao, *Research Associate*  
B.S. 1957, Heal Engineering College  

Ogura, Livian, *Technician*  

Orrell, Frank Q., *Professor*  

Pilaski, Harry, *Research Associate*  
A.S.E.E., American Institute of Technology  

Pope, Thomas P., *Research Associate*  

Roach, Franklin E., *Affiliate Astronomer*  
B.S. 1927, Michigan; M.S. 1930; Ph.D. 1934, Chicago  

Roth, Herman, *Technician*  

Ryerson, Herbert R., *Research Associate*  
B.E.E. 1949, Fenn College  

Simon, Theodore, *Asst. Astronomer*  

Sinton, William M., *Professor*  

Smith, Peter H., *Research Associate*  
B.A. 1969, California (Berkeley)  

Stahlberger, Werner E., *Technician*  

Stockton, Alan N., *Asst. Astronomer*  
B.A. 1964, California (Berkeley); Ph.D. 1968, Arizona  

Tamb, Donald R., *Admin. Officer*  
B.S. 1938, Purdue  

Tomley, Leslie J., *Asst. Astronomer*  

Walling, James M., *Research Associate*  
B.S. 1948, Oklahoma State; M.L.S. 1969, Hawaii  

Williams, Weston, *Research Associate*  
B.A. 1962, Humboldt  

Wolstencroft, Ramon D., *Assoc. Professor*  
B.Sc. 1959, University College of London; Ph.D. 1962, Cambridge  

Yamasaki, Peggy T., *Specialist*  
B.A. 1968, Stanford; M.A. 1969, Hawaii  

Yee, Harry K., *Research Associate*  
B.S. 1959, California (Berkeley)  

Young, Frank, *Research Associate*  
A.A. 1959, Taft College  

Zane, Ronald, *Research Associate*  
A.B. 1958, California (Riverside)  

*Zirker, Jack B., *Professor*  

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**RESEARCH UNITS**  

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**Laboratory of Sensory Sciences**  


*Ames, Lawrence L., *Behavioral Psychologist*  

Batkin, Stanley, *Affiliate Neurologist*  
B.S. 1933, New York; M.D. 1944, Royal Colleges, Edinburgh (Scotland)  

Kudar, John C., *Affiliate Physicist*  
Ph.D. 1952, Univ. of Szeged (Hungary)  

*McIntosh, Dean K., *Educational Psychologist*  

Ooyama, Hiroshi, *Visiting Scientist, Neurophysiologist*; Ph.D. 1957, Kyushu Univ.  

*Wolff, Richard J., *Astronomer*  

Wolstencroft, Ramon D., *Assoc. Professor*  
B.Sc. 1959, University College of London; Ph.D. 1962, Cambridge  

Yamasaki, Peggy T., *Specialist*  
B.A. 1968, Stanford; M.A. 1969, Hawaii  

Yee, Harry K., *Research Associate*  
B.S. 1959, California (Berkeley)  

Young, Frank, *Research Associate*  
A.A. 1959, Taft College  

Zane, Ronald, *Research Associate*  
A.B. 1958, California (Riverside)  

*Zirker, Jack B., *Professor*  

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RESEARCH UNITS

Land Study Bureau

*Baker, Harold L., Director and Land Economist
Awai, Eunice L., Jr. Spec. in Cartography
Prof. Cert. 1951, B.F.A. 1952, Pratt Institute

Ching, Arthur Y., Jr. Spec. in Land Classification; B.S. 1930, Hawaii
Fujimura, Faith N., Asst. Spec. in Cartography; B.A. 1950, Hawaii
Haughton, Fred A., Jr., B.S., Research Affiliate; State Conservationist, Soil Conservation Service

Murabayashi, Edwin T., Asst. Spec. in Land Classification; B.S. 1956, Washington State

Nelson, Robert E., B.S., Research Affiliate
Director, Institute of Pacific Islands Forestry, U.S. Forest Service

Peterson, L. Kenneth, B.S., Research Affiliate; Resident Engineer, U.S. Geological Survey, Honolulu

Sahara, Tamotsu, Spec. in Land Classification; B.S. 1948, Hawaii

Pacific and Asian Linguistics Institute

*Topping, Donald M., Director

*Bailey, Charles-James N., Asst. Prof.

*Forman, Michael L., Asst. Prof.

Hsu, Robert W., Asst. Linguisit
B.A. 1957, Cambridge; M.S. 1960, Georgetown; Ph.D. 1969, California (Berkeley)

Moir, Melody L., Asst. in Linguistics
B.A. 1967, Illinois

Peters, Ann Marie, Asst. Linguist
A.B. 1959, Bryn Mawr; M.A. 1961, Ph.D. 1966, Wisconsin

Pacific Biomedical Research Center

*Rogers, Terence A., Director, Professor of Physiology

*Allen, Richard D., Assoc. Professor of Microbiology

Arnold, John M., Assoc. Zoologist
B.A. 1958, Ph.D. 1963, Minnesota

*Batkin, Stanley, Clinical Professor

Burns, Roy, Asst. Researcher
B.Sc. 1966, Ph.D. 1969, Edinburgh

*Casarette, Louis J., Associate Prof. of Pharmacology

*Chung, Chin Sik, Biostatistician

*Crowell, David H., Professor of Psychology

*Cutting, Windsor C., Professor of Pharmacology

Gibbons, Allan, Admin. Officer
B.S. 1954, Temple

Gibbons, Ian, Assoc. Professor of Biophysics; B.S. 1954, Ph.D. 1957, Cambridge

*Groth, Hilde, Assoc. Professor

Hadfield, Michael G., Asst. Zoologist

*Hampton, Ian F. G., Asst. Professor of Physiology

*Hanna, Joel M., Asst. Professor of Anthropology

Hathaway, Joseph C., M.D., Research Affiliate; B.S. 1923, M.S. 1924, M.B. 1925, M.D. 1926, Minnesota

*Hemmes, Don, Instructor in Microbiology

*Hong, Suk Ki, Professor of Physiology

Kane, Robert E., Asst. Director
S.B. 1953, MIT; Ph.D. 1957, Johns Hopkins

Klemmer, Howard W., Microbiologist
B.S. 1949, M.S. 1950, Univ. of Saskatchewan; Ph.D. 1954, Wisconsin

*Lin, Yu-Chong, Asst. Professor of Physiology

*Norton, Ted R., Professor of Pharmacology

Palumbo, Nicholas E., Assoc. Veterinarian
B.S. 1952, D.V.M. 1959, Missouri

Perri, Sam, Animal Specialist
B.A. 1951, New York

Rand, David, Animal Specialist
B.B.A. 1958, Hawaii

Roth, Alexander, M.D. Research Affiliate
Chief Pediatrician, Kaiser Foundation Hosp., Honolulu

Setliff, James A., Jr. Researcher in Physiology; B.A. 1948, Vanderbilt

Szekerczes, Joseph, Research Associate

Ueno, Marilyn, Jr. Microbiologist
B.A. 1967, Hawaii

*Whittow, G. Causey, Professor of Physiology

Yauger, William L., Jr., Research Associate
B.A. 1962, Louisiana State

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Population Genetics Laboratory

Visiting Investigators:

Dr. Manabu Yamamoto, Kyoto Prefectural University of Medicine, Japan
Dr. Marie Tolarova, Czechoslovak Academy of Sciences, Czechoslovakia
Dr. Alberto Piazza, Instituto di Genetica Medica, Dell'Università di Torino, Italy
Dr. Andre Langaney, Centre de Recherches Anthropologiques, Musee de L'Homme, France
Dr. Bathsheva Bonne, Tel-Hashomer Hospital, Israel
Dr. W. J. Ewens, La Trobe University, Australia
Dr. Lalouel, Universite de Paris, Faculte de Medicine, Chaire de Genetique Fondamentale, Institut de Progenese, France

School of Public Health

Allan, Ann, Jr. Specialist
B.S. 1964, Miami; M.Ed. 1969, Hawaii

Bell, Bella Z., Jr. Researcher
B.A. 1949, Millikin

Bertellotti, Ernest E., Assoc. Specialist in Public Health; B.S. 1952, M.P.H. 1954, California (Berkeley); M.S. 1964, San Jose State College

Burian, Carol S., Research Associate
B.A. 1960, Miami

Buyama, Setsuko, Research Associate
B.A. 1965, Hawaii

Carleton, Eloise, Asst. Specialist in Public Health (Guam); A.B. 1935, California (Berkeley); M.S. 1947, Columbia

Higuchi, Asa, Asst. to the Dean, Business Affairs; B.S. 1949, M.S.W. 1953, Hawaii

Hori, Daniel, Asst. in Public Health
B.S. 1958, Hawaii

Irvin, Tahirih A., Asst. in Public Health
B.A. 1967, Hawaii

Kada, Jimmy M., Public Health Administrator; B.S. 1957, M.P.H. 1965, California (Los Angeles)

Kaku, Kanae, Asst. in Public Health, M.D. 1953, Nagoya University

Kimura, Leonard, Asst. in Public Health
B.A. 1964, Hawaii

Kubota, Sharon, Asst. in Public Health
B.A. 1968, Hawaii

McCuddin, Charles R., Associate Specialist in Public Health (Guam); B.A. 1956, U. of Washington; M.P.H. 1969, Hawaii

Okubo, Sakiko, Jr. Researcher
B.Ed. 1933, M.Ed. 1941, Hawaii

Sato, Jean Y., Research Associate
B.A. 1966, Hawaii

*Suehiro, Richard Y., Assoc. Specialist in Public Health

Sutter, Sharon K., Asst. Specialist in Public Health; B.S. 1961, Columbia; M.P.H. 1968, Hawaii

Swayne, James B., Specialist in Public Health (Guam); B.A. 1935, M.A. 1936, New Mexico

Terauchi, Mildred M., Asst. to Dean, Student Affairs; B.A. 1960, Hawaii; M.P.A. 1961, Syracuse

Tilton, Floyd H., Public Health Specialist
A.B., M.A. 1950, California (Los Angeles); M.D.C.W. 1954, McGill; M.P.H. 1963, California (Berkeley)

Wakashige, Frances K., Asst. in Public Health; B.A. 1966, Hawaii

Wallet, Adell, Specialist in Public Health (Guam); B.S. 1951, Oregon

*Widerholt, Ned B., Assoc. Specialist

Social Welfare Development and Research Center

*Nagoshi, Jack T., Director
Arinaga, Esther K., Program Specialist
M.A. 1969, Hawaii

Goold, Kathleen F., Program Specialist
M.S.S. 1967, Syracuse

Omura, Robert T., Asst. Director
B.S. 1954, Springfield
RESEARCH UNITS

Social Science Research Institute

*Lebra, William P., Director
*Pitts, Forrest R., Geographer and Assoc. Director for Program Development
*Babbie, Earl, Asst. Sociologist
*Barringer, Herbert A., Assoc. Sociologist
Caudill, William A., Ph.D., Research Affiliate; Laboratory of Socio-Environmental Studies, National Institute of Mental Health
Essene, Karen. Data Systems Analyst
Kim, Son-Ung, Research Assistant
B.A. 1968, Seoul Nat'l Univ.
*Kuroda, Yasumasa, Assoc. Political Scientist
Lebra, Takie Sugiyama, Assoc. Sociologist
*Lim, Youngil, Asst. Economist
Loveless, Owen, Ph.D., Research Affiliate Assoc. Prof. of Linguistics, Minnesota
*Maretzki, Thomas W., Anthropologist
Okamura, Ethel, Administrative Assistant
B.A. 1952, Barnard
*Oshima, Harry T., Economist
*Paige, Glenn, Political Scientist
*Pearson, Richard, Assoc. Anthropologist
*Riggs, Frederick W., Political Scientist
Sakai, Sady, Asst. in Research
B.A. 1945, Minnesota
*Solheim II, Wilhelm G., Anthropologist
Wells, Anne, Publications Manager
Hawaii Institute of Marine Biology.
*Kang, Hugh, Assoc. Historian
Katz, Martin, Ph.D., Research Affiliate
Ph.D. 1962, Harvard
*Kim, Youngil, Asst. Economist
B.A. 1968, Seoul Nat'l Univ.
*Won, George, Assoc. Sociologist
Wu, David Yen-Ho, Research Assistant
B.A. 1963, Nat'l Taiwan Univ.
*Yamamura, Douglas S., Sociologist

Water Resources Research Center

*Cox, Doak C., Director
*Adams, William M., Seismologist
*Buddemeier, Robert W.
*Burbank, Nathan C., Jr., Sanitary Engineer
*Chang, Jen-Hu, Assoc. Climatologist
*Chave, Keith E.
*Cheng, Edmund
*Chou, James C. S.
*Clutter, Robert I.
*Davidson, Jack R., Agricultural Economist
*Duce, Robert A., Asst. Professor of Chemistry
*Ekern, Paul C., Jr., Hydrologist
*El-Ramly, Nabil
*Fan, Pow Foong
*Gunderson, Kaare R.
Helfrich, Philip
Degrees listed under “Hawaii Institute of Marine Biology.”

Hufen, Theodorus H., Research Associate
B.S. 1967, M.S.1968, Hawaii
*Lau, L. Stephen, Assoc. Director
*Macdonald, Gordon A.
*Mink, John, Research Affiliate
Johns Hopkins
*Moncur, James E. T.
*Peterson, Frank L., Asst. Geologist
Price, Saul, Research Affiliate
Regional Climatologist, U.S. Dept. of Commerce, Weather Bureau, Pacific Region
*Williams, John A., Asst. Professor of Civil Engineering
*Wu, I-Pai, Asst. Hydraulic Engineer
Yamauchi, Hiroshi, Asst. Researcher
B.S. 1955, Hawaii; Ph.D. 1968, California (Berkeley)
*Young, Reginald, Asst. Sanitary Engineer
Cooperative Extension Service

*Wilson, C. Peairs, Director
Anderson, Margaret E., Asst. Extension Home Economist, West Oahu; B.S. 1960, Los Angeles State
Aoki, George M., Assoc. County Extension Agent—Community Resource Development, Hilo; B.S. 1950, Hawaii
Arakawa, Bernice, Asst. Extension Home Economist, South Oahu; B.S. 1964, Hawaii
Au, Frances, Asst. Extension Home Economist, South Oahu; B.S. 1964, Hawaii
Blalock, John R., County Extension Agent, Kauai; B.S. 1946, M.S. 1949, Massachusetts
*Boyer, Jere, Asst. Spec. in Agricultural Economics
Bradshaw, Blaine, Assoc. Spec. in Extension (RAD); B.S. 1939, M.S. 1962, Wyoming
Chong, Wing You, Assoc. County Extension Agent, Hilo; B.S. 1943, California
Doi, M. James, Assoc. County Extension Agent, Maui; B.S. 1942, Hawaii
Donahue, Eugenia, Extension Home Economist, Kauai; B.S. 1947, M.S. 1957, Kentucky
Donoho, Harry R., Assoc. Area Spec. in Livestock Management; B.S. 1949, Kentucky; M.S. 1951, Ph.D. 1955, Ohio State
Doue, Stephen M., Assoc. Spec. in Agricultural Economics; B.S. 1947, M.S. 1959, Hawaii
Fujimoto, Frederick W., Assoc. County Extension Agent, Molokai; B.S. 1953, M.S. 1969, Hawaii
Garcia, Clarence W., Asst. County Extension Agent, Kamuela; B.S. 1957, Hawaii; M.A. 1968, Oregon
Gascon, Helen C., Assoc. Extension Home Economist, West Oahu; B.S. 1953, M.S. 1960, Hawaii
Gittin, Harris M., Assoc. Spec. in Agricultural Engineering; B.S. 1940, B.Agr.Eng. 1941, Ohio State; M.S. 1962, Michigan
Goodell, Dale N., Assoc. Director B.S. 1942, Iowa State; M.S. 1952, Minnesota
Hansen, Harry L., County Extension Agent, Kauai; B.S. 1942, Nevada
Higaki, Tadashi, County Extension Agent, Hilo; B.A. 1958, M.S. 1961, Hawaii
Hiroshige, Herbert M., Assoc. Spec. in Agricultural Economics, Hilo; B.S. 1934, California; M.A. 1950, Hawaii
Honma, Haruo, County Extension Agent, Oahu; B.S. 1940, Hawaii, M.Ed. 1950, Colorado State; M.S. 1959, Michigan State
Hori, Ted M., Asst. County Agent, Kula; B.S. 1955, Hawaii
Horimoto, Helene H., Asst. Extension Home Economist, South Oahu; B.S. 1963, Hawaii; M.S. 1970, Maryland
*Hugh, Williams L., Assoc. State and Area Swine Specialist
*Hundtoft, Elgin, Asst. Spec. in Agricultural Engineering
Hunter, Miller T., County Extension Agent, Maui; B.S. 1940, M.S. 1962, Missouri
Ikeda, Warren S., County Extension Agent, Hilo; B.S. 1939, Hawaii
Ikehara, Dennis K., Assoc. County Extension Agent, Kauai; B.S. 1961, Hawaii
*Ishida, Jack T., Spec. in Agricultural Economics
Ito, Mabel I., Extension Home Economist, Maui; B.S. 1941, Hawaii
Iwane, John Y., County Extension Agent, Kona; B.S. 1940, Hawaii
Kawamata, Raymond M., Asst. County Agent, Homokaa; B.S. 1968, California State Poly. College
Kawasaki, Carol S., Asst. Extension Home Economist, South Oahu; B.S. 1966, Hawaii; M.Ed. 1967, Maryland
Kemper, Joel J., Asst. Specialist in Area Livestock, Kona; B.S. 1958, Colorado; M.S. 1966, Wyoming; Ph.D. 1969, New South Wales University
Kincaid, Olive E., Asst. Home Economist, Molokai; B.S. 1967, Wyoming
Kitagawa, Yukio, Assoc. County Extension Agent, West Oahu; B.S. 1955, Hawaii; M.S.1968, Oregon State
Kohashi, Kikuye, Extension Home Economist, Hilo; B.S.1950, Hawaii
*Koshi, James H., Area Spec. in Dairy Science
Kumabe, Bunki, County Extension Agent, East Oahu; B.S.1942, Hawaii; M.S. 1953, Missouri
*Laemmle, Franklin F., Asst. Spec. in Plant Pathology
LaPlante, Albert A., Jr., Assoc. Spec. in Entomology; B.S. 1944, Massachusetts; Ph.D. 1949, Cornell
Lenk, Sachiko, Extension Home Economist, Kamuela; B.S. 1949, Hawaii; M.S. 1958, Pennsylvania State
SERVICE UNITS

Lyman, Clarence, *Spec. in Pasture Management; B.S. 1937, M.S. 1941, Hawaii
Marders, William Glenn, *Rural Sociologist
B.S. 1930, California; M.S. 1954, Chicago; Ed.D. 1964, California

*Martinez, Albert P., *Assoc. Spec. in Plant Pathology
Maruyama, Charles I., *County Extension Agent, Maui; B.S. 1935, Hawaii; M.S. 1962, Washington State
Matsumoto, Eleanor A., *Assoc. Spec. in Home Economics; B.S. 1941, Hawaii; M.S. 1953, Columbia
McCall, Wade W., *Spec. in Soil Management
B.S.A. 1942, M.A.E. 1947, Florida; Ph.D. 1953, Michigan

*McLain, Dennis, *Asst. Spec. in Horticulture
McOmber, Phyllis Ann, *Clothing Specialist
B.S. 1958, Florida State; M.S. 1968, Iowa
Mihata, Keiichi, *County Extension Agent, East Oahu; B.A. 1935, M.S. 1964, Hawaii

*Miyahara, Allen, *Assoc. Spec. in Animal Science
Moser, Roy, *Spec. in Food Technology
B.S. 1947, M.S. 1949, Massachusetts
Nakagawa, Yukio, *Assoc. Spec. in Horticulture; B.S. 1940, Hawaii

Nakasato, Masaru G., *County Agent Supervisor; B.S. 1951, Hawaii; M.S. 1961, Oregon State
Okagawa, Tomoyuki, *Assoc. County Extension Agent, East Oahu; B.S. 1954, Hawaii

Okazaki, Dora T., *Assoc. Extension Home Economist, Hilo; B.S. 1959, Stout State
Ota, Robert M., *County Extension Agent, Hilo; B.S. 1950, Colorado State; M.S. 1959, Purdue

Penner, Ruth T., *Assoc. Home Demonstration Agent, South Oahu; B.S. 1943, Tennessee
Reid, Vera Y., *Asst. Spec. in Home Management and Home Furnishings; B.S. 1942, Auburn; M.S. 1959, Florida State
Sakuma, Mabel Y., *Asst. Extension Home Economist, Maui; B.S. 1956, Hawaii

Shigeta, Daniel T., *County Extension Agent, Maui; B.S. 1950, Hawaii; M.Ed. 1964, Colorado
Shigeta, James Y., *State 4-H Club Leader
B.S. 1951, Maryland; M.S. 1958, Wisconsin

Shimabukuro, Betty Z., *Assoc. State Leader, 4-H—Youth; B.S. 1946, Hawaii, M.S. 1953, Michigan
Shirakawa, Takumi, *County Extension Agent, Nastehu; B.S. 1948, Hawaii; M.S. 1963, Michigan State


Tanaka, Tokushi, *Assoc. Area Spec. in Poultry Science; B.S. 1948, M.S. 1953, Hawaii

Tejo, Fortunato G., *Assoc. Spec. in Visual Aid; B.S. 1927, Hawaii

Thompson, Betty Jo, *Assoc. Extension Home Economist, Hilo; B.S. 1953, Oklahoma
Vasold, M. Amalie, *Assoc. Spec., Youth Prog. B.S. 1940, Central Michigan; M.S. 1944, Columbia

Watunabe, Roger T., *Spec. in Soil Management B.S. 1956, Hawaii
Watunabe, Yoshio, *Asst. County Agent, Hilo B.S. 1958, Hawaii

*Watson, Donald P., *Spec. in Horticulture

Weeks, Shirley, *Spec. in Human Development and Human Relations

Wetters, Doris E., *Asst. Dir. of Human Resources Development

Yamamoto, Tom, *Assoc. County Extension Agent, Hilo; B.S. 1957, M.S. 1964, Oregon State


Yee, Warren Y. J., *Assoc. Spec. in Horticulture; B.S. 1942, Hawaii; M.S. 1959, Purdue

Yonamine, Charles N., *Assoc. County Extension Agent, West Oahu; B.S. 1951, California State Polytech


SERVICE UNITS

Educational Television Broadcasting Services

Daniel, Lark O., Director and General Manager; B.A. 1951, M.A. 1952, Southern Methodist; Ph.D. 1955, Purdue
Carter, Nicholas, Producer-Director B.S. 1962, M.A. 1964, Florida
Durban, Martha Sue, Graphic Artist B.A. 1969, Texas Tech
Ehlen, Clarence, Program Manager B.S. 1951, Wisconsin
Fujikawa, Robert, Studio Engineer
Gutermuth, Grant, Ass't Chief Engineer B.A. 1969, California (Riverside)
Hansen, Howard, Graphics Supervisor
Hickok, Monte, Producer-Director B.A. 1965, San Francisco State College
Itaki, Terry, Studio Engineer
Kawamoto, Leslie, Film Assistant
Konno, Joe, Film Supervisor
Matsushige, Makoto, Studio Engineer
Nagai, Hisashi, Administrative Ofcr. B.B.A. 1956, Hawaii
Nomura, Anita, Graphic Artist B.A. 1968, Hawaii
Oshiro, Kaname, Studio Engineer
Patton, Ruth, Program Assistant B.A. 1952; M.A. 1965, Denver
Peck, Albert, Chief Engineer A.A. 1942, Stockton, California
Sakata, Akio, Studio Engineering Supervisor
Simmons, Helen, Traffic Continuity Supervisor; B.A. 1947, Oklahoma
Tanabe, Edward, Studio Engineer
Tuell, Gordon, Production Manager B.A. 1938, Washington
Webster, Dennis, Studio Facilities Supervisor; A.B. 1965; M.A. 1968, Michigan

Office of Foreign Contracts

*Ihara, Teruo, Professor of Education, Director
Arashiro, Kimie, Education Specialist B.S. 1957, Brigham Young
Aten, Donald G., Assistant Professor of Education; B.Ed. 1933, M.A. 1939, Hawaii; Ph.D. 1948, Washington
*Collins, Dwane R., Professor of Education
*Daufer, Carl J., Ass't Professor of Education
Hagiwara, George, Education Specialist B.S. 1941, Utah State Agr. College
Lorenzen, Robert W., Education Specialist B.S. 1950, Chicago Technical College; B.A. 1952, Iowa State Teachers College; M.A. 1958, Long Beach State College
Okinaga, Gertrude M., Education Specialist B.A. 1957, Montclair State; M.A. 1967, Hawaii
Stevens, Carroll W., Education Specialist B.Ed. 1959, Keene Teacher College; M. Ed. 1968, Hawaii
Stortzman, Bernice M., Education Specialist B.S.1949, George Williams; M.Ed. 1968, Hawaii
Terpstra, Majory S., Education Specialist B.A. 1953, M.Ed. 1967, Hawaii
Tsutsui, Hazel K., Education Specialist B.A. 1949, M.A. 1959, Hawaii
Wong, Francis K. C., Education Specialist B.Ed. 1962, 5th Yr. 1963
Yamauchi, Shozun, Education Specialist B.S. 1940, Hawaii; M.S. 1966, Illinois Wesleyan
Zane, Ah Chong, Education Specialist B.A. 1942, Santa Barbara; M.Ed. 1947, Missouri

Foreign Language Laboratories

Theuma, Jean R., Director Diploma 1961, Sorbonne; B.A. 1962, Hawaii; M.A. 1966, Middlebury College
Evans, James L., Technical Supervisor
Fukuda, Annette C., Language Labs Coordinator; B.A. 1966, Hawaii
SERVICE UNITS

Legislative Reference Bureau

Kitamura, Henry N., Researcher and Director; B.A. 1952, Hawaii; J.D. 1959, George Washington

Claveria, Susan K., Asst. in Research
B.A. 1968, Hawaii

Fong, Georgine A., Jr., Research Librarian
B.A. 1942, Hawaii; MLS 1969, Hawaii

Ikeda, George K., Assoc. Researcher
B.A. 1962, Hawaii; Ph.D. 1968, Harvard

Imamoto, Jean R., Jr. Research Librarian
B.S. 1967, Minnesota; M.A. 1969, California

Inouye, Carole M., Jr. Researcher
B.S. 1967, Minnesota; M.A. 1969, New York

Kahle, Richard F., Jr., Asst. Researcher
B.B.A. 1962, Hawaii; J.D. 1965, California

Kim, Millicent Y. H., Jr. Researcher
B.A. 1960, M.A. 1966, Hawaii

Kobayashi, Hanako, Asst. Research Librarian; B.A. 1954, Hawaii; M.S. 1956, Simmons College

Miyagi, Annette Y., Research Associate
B.A. 1964, Hawaii

Morimoto, Ann M. F., Jr. Researcher
B.A. 1966, Hawaii

Putman, Patricia K., Assoc. Researcher
B.A. 1944, J.D. 1956, California

Taylor, Carroll S., Asst. Researcher
B.A. 1965, Yale; J.D. 1968, California

Peace Corps Training

*Oben, Phillip R., Director, Peace Corps Training Hawaii; B.A. 1953, Wesleyan; M.S. 1959, California (Los Angeles)

Beetle, Melvin E., Training Officer
B.A. 1962, Trenton State College

Bracher, George J., Medical Officer
B.A. 1930, Wittenberg; M.D. 1934, Oregon

Brenneman, William E., Cross-Cultural Studies Specialist; B.A. 1961, M.A. 1963, Syracuse

Bunye, Maria Victoria, TEFL Specialist
B.A. 1960, Philippines; M.A. 1964, Ateneo de Manila; M.A. 1965, Georgetown

Colbert, Jack W., Project Coordinator
B.A. 1968, San Diego State

Crowley, Dale P., Linguist
B.A. 1950, Bob Jones; M.S. 1965, Georgetown

David, Kenneth H., Field Assessment Officer; B.A. 1960, American International College; M.A. 1963, Ph.D. 1967, Hawaii

DeLeon, Patrick H., Field Assessment Officer; B.A. 1964, Amherst College; M.S. 1966, Ph.D. 1969, Purdue

Downs, James F., Cross-Cultural Studies Specialist; B.A. 1956, M.A. 1958, Ph.D. 1961, California

Jaeckle, Walter R., Assessment Coordinator
B.A. 1957, Ph.D. 1965, Nebraska

Kaine, Patricia Ann, Program Specialist
B.A. 1955, College of St. Rose; M.S.W. 1960, Western Reserve

Kaine, Patricia Ann, Deputy Director/Programs (Acting); B.A. 1961, Chicago

Moody, Dick L., Field Assessment Officer
B.S. 1961, M.A. 1962, Bradley; Ph.D. 1969, Western Reserve

Oda, Ethel A., Field Assessment Officer
B.Ed. 1958, Prof. Cert. 1959, M.Ed. 1964, Hawaii; Ph.D. 1969, Minnesota

Papagiannis, George J., Deputy Director/Programs (Acting); B.A. 1961, Massachusetts

Pezzoli, Jean Ann, Junior Assessment Officer; B.A. 1965, M.A. 1967, Ph.D. 1969, Massachusetts

Pezzoli, Jean Ann, Junior Assessment Officer; B.A. 1965, M.A. 1967, Ph.D. 1969, Massachusetts

Robinson, Henry W., Program Specialist
B.A. 1947, Brigham Young; M.S. 1949, Southern California; Ph.D. 1962, Stanford

Sias, John D., Jr., Program Committee Coordinator; B.S. 1960, Clarion State College

Torigoe, Edgar M., Deputy Director/Administrator
B.A. 1957, Western Michigan

White, Alan F., Training Center Director
A.B. 1965, Miami

Zimm, Maurice, Special Assistant

Tropical Rice Production Center

Plucknett, Donald L., Administrative Officer; B.S. 1953, M.S. 1957, Nebraska; Ph.D. 1961, Hawaii

Dela Pena, Ramon, Rice Specialist
B.S. 1958, Univ. of the Philippines; M.S. 1964, Ph.D. 1967, Hawaii
SERVICE UNITS

Statistical and Computing Center

*Peterson, W. Wesley, Acting Director
Arashiro, Daniel Y., Sr. Systems Programmer; B.S. 1965, Hawaii
Carey, Helen, Computer Specialist
M.A. 1969, Western Michigan
Higashi, Albert M., Lead Systems Programmer; B.S. 1963, Hawaii
Hu, Julie, Computer Specialist
M.A. 1968, Berkeley
Leong, Dianna L., Systems Programmer
B.A. 1965, Vassar

Nagamine, Sheila S., Computer Specialist
M.A. 1969, Hawaii
Soong, William Y., Jr., Sr. Systems Programmer; B.A. 1964, Hawaii
Tsuchiyama, Frances F., Supervisor, Machine Operation; B.A. 1963, Hawaii
Yee, Walter S., Assistant Director
B.S. 1960, Hawaii

Yu, University of Hawaii Press

Sparks, Robert W., Director
B.A. 1960, M.A. 1964, Hawaii
Cone, Virginia, Editor
B.A. 1968, Hawaii
Howe, John S., Journals Manager
B.A. 1961, Haverford College; M.A. 1967, Chicago

Kimura, Katherine, Fiscal Officer

Kooistra, John F., Asst. Director and Sales Manager; B.A. 1959, Michigan
Nye, John C., Design and Production Mgr.
Wiley, Iris, Executive Editor
B.A. 1959, Brandeis
Yoshida, Gayle, Asst. Editor
B.A. 1965, Hawaii

COMMUNITY COLLEGES SERVICE OFFICE

*Kosaki, Richard H., Vice-President for Community Colleges
Fujikawa, Daniel Y., Asst. Administrative Officer; B.B.A. 1968, Hawaii
Ige, Philip K., Curriculum Coordinator
B.Ed. 1951, M.Ed. 1961, Hawaii; Ph.D. 1968, Columbia
Kosaka, Charles H., Institutional Research Coordinator; B.A. 1987, Hawaii
Lefforge, Orland S., Coordinator of Community Services; B.A. 1936, Manchester College; M.A. 1940, Ph.D. 1953, Wisconsin

Lorenzen, Robert W., Teacher-Trainer, Technical Education; B.A. 1952, Iowa State; M.A. 1958, Long Beach State
Lynn, David R., Coordinator, Vocational Research Coordinating Unit; A.B. 1937, San Jose State; M.A. 1968, Hawaii
Rantala, John, Program Specialist, Vocational Education; B.S. 1941, Stout State; M.Ed. 1953, Illinois
Shigetomi, Samson S., State Director for Vocational Education; B.S. 1962, M.S. 1963, Oklahoma State
Takemoto, Yukio, Asst. Administrative Officer; B.B.A. 1967, Hawaii
White, Edward T., Director of School and College Relations; B.A. 1936, M.A. 1939, Columbia

HONOLULU COMMUNITY COLLEGE

Nagy, Albert M., Provost
Fujimoto, Donald M. Acting Dean of Student Services
Van Doren, Leon H., Dean of Instruction

KAPIOLANI COMMUNITY COLLEGE

Won, Raymond Y. C., Provost
Doi, Edith H., Dean of Students
Nakamoto, Harriet H., Dean of Instruction

LEEWARD OAHU COMMUNITY COLLEGE

Tuthill, Leonard D., Provost
Prihoda, John J., Dean of Educational Services

HAWAII COMMUNITY COLLEGE

Sumada, Mitsugu, Provost

MAUI COMMUNITY COLLEGE

Hoshor, John P., Provost
Sine, Thomas, Dean of Student Personnel Services
Lunty, Harold, Dean of Instruction

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ADMINISTRATIVE OFFICES

KAUAI COMMUNITY COLLEGE

Ige, Philip K., Provost
Kubota, Kiyoshi, Dean of Administration (on leave)
Cremer, James T., Dean of Instruction

OFFICE OF THE UNIVERSITY VICE-PRESIDENT

*Kosaki, Richard H., University Vice-President
Kirkendall, Guy R., Staff Assistant, International Relations
Kitamura, Henry N., Director, Legislative Reference Bureau
Misajon, James J. M., Director of Special Services

Olsen, Phillip B., Director, Peace Corps Training for Hawaii
Rossi, Joan B., Executive Secretary, Committee for the Preservation and Study of Hawaiian Language, Art and Culture
Tinker, Spencer W., Director, Waikiki Aquarium

OFFICE FOR ACADEMIC DEVELOPMENT

*Kamins, Robert M., Dean for Academic Development
*Melendy, H. Brett, Interim Dean for Academic Development
*Potter, Robert E., Assoc. Dean for Academic Development

Bess, H. David, Asst. Dean for Academic Development
Meredith, Gerald M., Evaluation Officer
B.A. 1955, M.A. 1956, California (Berkeley); Ph.D. 1969, Hawaii

OFFICE OF VICE-PRESIDENT FOR BUSINESS AFFAIRS

Lau, Kenneth K., Vice-President for Business Affairs; B.A. 1938, Hawaii; J.D. 1941, Michigan; LL.M. 1951, Harvard
James, Charles S., Asst. Vice-President for Business Affairs; and Director, Auxiliary Services; B.A. 1947, California
Arnett, Thomas N., Director of Personnel
B.S. 1933, Florence State; J.D. 1939, LL.M. 1942, Georgetown
Prather, Robert H., Asst. Director of Personnel; B.A. 1962, Maryland
Bloede, V. Carl, Contracts Officer
A.B. 1940, Dartmouth; LL.B. 1950, Baltimore; LL.M. 1967, Georgetown
Creighton, Thomas H., University Planner
B.A. 1926, Harvard
Koehler, Philip W., Director, Facilities Management; B.A. 1942, Northwestern College

Mashima, Edward K., Administrative Officer; B.A. 1952, Hawaii
Moriyasu, Henry M., Assistant Director, Auxiliary Services; B.A. 1947, Hawaii
Snyder, Keith S., Comptroller
B.A. 1942, Carleton College
Alexander, Woodrow E., Director, Procurement and Property Management; B.S. 1957, M.B.A. 1959, Maryland
Arre, Geminiano Q., Jr., General Manager, Bookstores; B.B.A. 1956, Philippines; M.A. 1960, Hawaii

Balmore, Jose D., Treasury Officer
B.S. 1951, Ohio State
Cason, Alan R., Program and Service Officer; B.A. 1941, Carleton College
Morihara, Morio, Business Management Officer; CPA
Tanabe, George K., Comptroller, Contracts and Grants; B.B.A. 1941, Armstrong; CPA
Wetherall, Daniel E., Accounting Systems Officer; B.S. 1959, Roosevelt
Sumida, Kenji, Coordinator, Budget and Planning; B.B.A. 1953, Hawaii
Arita, Daniel K., Director, Management Systems; B.S. 1958, Portland
Murakawa, Walter K., Director, Physical Planning and Construction; B.S. 1955, Detroit
Ohta, Kenneth H., Fiscal Analysis Officer
B.A. 1942, Hawaii
Ono, Susumu, Budget Director
Yamada, Allen H., Internal Auditor
B.S.B.A. 1948; M.B.A. 1949, Denver; CPA

Management Systems Office
Arita, Daniel K., Director
B.S. 1958, Portland
Awaya, Raleigh S., Programmer
B.A. 1966, Hawaii
Corbin, Robert D., Institutional Analyst  
B.A. 1968, Hawaii; M.A. 1969, Claremont Graduate School  
Foley, Elizabeth, Programmer  
Fujita, Sharon Y., Institutional Analyst  
B.A. 1968, Hawaii  
Gomes, L. Mitchell, Institutional Analyst  
B.A. 1963, Hawaii  
Ito, Richard M., Institutional Analyst  
B.B.A. 1965, Hawaii  
Ke, George Jr., Systems Analyst  
B.S. 1952, La Salle  
Kirkpatrick, Nora B., Institutional Analyst  
B.A. 1938, Minnesota; M.A. 1941, Radcliffe  
Miyoshi, Gerald I., Institutional Analyst  
B.A. 1967, Stanford  
Morihara, Gerald T., Institutional Analyst  
B.B.A. 1965, Hawaii  
Murakami, Leslie S., Institutional Analyst  
B.A. 1958, Santa Clara; M.A. 1968, Hawaii  
Nakahara, Kenneth K., Institutional Analyst  
B.S. 1961, Calif. St. Polytechnic  
Pang, Hubert W. H., Institutional Analyst  
B.B.A. 1968, M.S. 1969, Hawaii  
Shimabukuro, Ronald T., Programmer  
B.A. 1962, Hawaii  

Unemori, Grace K., Institutional Analyst  
B.A. 1950, Hawaii  

Physical Planning and Construction  
Muraoka, Walter K., Director  
B.S. 1955, Detroit  
Akita, Clyde F., Projects Coordinator  
B.S. 1962, Hawaii  
Connors, Walter J., University Architect  
B.S. 1952, Detroit  
Hansen, John L., University Engineer  
B.S. 1942, U.S. Naval Academy  
McGuire, Harold P., Projects Coordinator  
B.S. 1951, California State Poly. College  
Nakahara, Richard Y., Projects Coordinator; B.S. 1962, Hawaii  
Seto, Donald M., Projects Coordinator  
B.S. 1957, Illinois Institute of Technology  
Tashiro, Clinton K., Administrative Officer; B.B.A. 1955, Hawaii  

DIVISION OF CONTINUING EDUCATION AND COMMUNITY SERVICE  

*Miwa, Ralph M., Administrative Dean  
Kim, Dewey H., Associate Dean  
B.A. 1950, Hawaii; M.P.A. 1961, Syracuse  
Fleece, Jeffrey A., Asst. Dean, Student Services; B.A. 1941, Central College (Missouri); M.A. 1942, Vanderbilt; Ph.D. 1952, Iowa  

Special and Professional Programs  
Brown, Harold P., Program Specialist, Conference Center; B.S. 1934, Michigan; M.A. 1955, Stanford  
Holway, Iva T., Program Specialist, Teacher Institutes; LL.B. 1940, Lincoln  
Saunders, Marion G., Program Specialist, Continuing Education for Women; B.A. 1935, New Mexico; M.A. 1942, Southern California; M.A. 1960, Hawaii  
Tamaru, Jean Y., Program Specialist  
B.B.A. 1968, Hawaii  

Courses and Curricula  
Tominaga, Henry K., Director  
B.S. 1953, Springfield; M.S. 1954, Pennsylvania State; Ed.D. 1964, Colorado State College  
Grado, Fausto, Program Specialist  
B.A. 1964, Hawaii  

Joseph, Neal A., Program Specialist  
B.Ed. 1968, M.Ed. 1969, Hawaii  
Sakai, Hester H., Program Specialist  
B.B.A. 1953, M.B.A. 1954, Hawaii  

Community Services Program  
Mayer, Frederick R., Director  
Carpenter, Thomas F., Program Specialist, Speakers' Bureau; B.A. 1957, Kansas State; M.A. 1960, Northwestern  
Hardin, Herb H., Training Coordinator, Civil Defense  
Johnson, Harriet L., Program Specialist, Lyceum Series; B.S. 1938, M.A. 1948, Ohio State  
Lardin, Harry E., Program Coordinator, Civil Defense; B.S. 1934, West Point  
Lloyd, Happy K., Asst. Regional Training Officer, Head Start  
Matsuda, Kimiko C., Regional Training Officer, Head Start; B.A. 1946, Hawaii; M.A. 1947, Columbia  

Center for Governmental Development  
Kusao, Tyrone T., Director  
B.A. 1950, Hawaii; M.S. 1969, Southern California  
Nagoshi, Kunio, Training Coordinator  
B.A. 1953, M.A. 1954, Hawaii  

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OFFICE OF RESEARCH ADMINISTRATION

*Gorter, Wytze, Director of Research
*Rosenberg, Morton M., Associate Dean Research, Fellowships, and Special Training Programs
Du Mont, Rosemary, Assistant to Dean for Fellowships; B.S. 1967, Northwestern; M.S. 1969, Syracuse
I, Wilfred, Administrative Officer
Kong, Donald, Administrative Officer
B.A. 1961, Hawaii
B.A. 1965, Hawaii
Matsunaga, Ichiro, Assistant to Director of Research, Fiscal Affairs; B.S.A. 1951, Walton School of Commerce
McMath, Carroll B., Jr., Assistant to Director of Research; B.S. 1932, Oregon State; M.S. 1936, New York
Morikawa, Ronald A., Administrative Officer; B.B.A. 1953, Hawaii
Ouchi, Herbert H., Administrative Officer
B.A. 1966, Hawaii

OFFICE OF STUDENT AFFAIRS
Ellingson, Alfred L., Director of Student Services; B.A. 1943, B.S. 1948, Oregon
Amjadi, Hormoz, Specialist (Psychiatrist), Counseling and Testing; M.D. 1959, Tehran
Blaser, Donald C., Asst. in Student Personnel, Gateway; B.A. 1954, Nebraska State; M.A. 1959, Nebraska
Boatin, Arthur W., Jr. Spec., International Student; A.B. 1958, Columbia; M.A. 1964, Yale
Burgoyne, James M., Director, Student Housing; B.S. 1948, M.B.A. 1949, Wisconsin
Chang, Gail, Head Resident, Hale Lautima
B.A. 1969, Hawaii
*Char, Donald F. B., Director, Student Health Service
Choy, Mary W., Jr. Spec., International Student; B.A. 1940, California
Cross, John S., Assoc. Spec., Student Activities; B.P.I. 1959, British Columbia; M.S. 1960, Ph.D. 1968, Oregon
Denny, James M., Assoc. Spec., Counseling and Testing; A.B. 1951, Oberlin; Ph.D. 1958, Western Reserve
Doi, Ruth N., Jr. Spec., Admissions and Records; B.A. 1949, Hawaii
Dunne, Willis E., Jr. Spec., Student Activities; B.B.A. 1959, Hawaii
Francoise, Gertrude, Head Resident, Hale Kahawai; B.A. 1969, Hawaii
Fukuda, Donald R., Director, Admissions and Records; B.Ed. 1956, M.A. 1963, Hawaii
Goodridge, Robert C., Director, Financial Aids; B.A. 1937, Denison; M.Ed. 1950, Ed.D. 1953, Buffalo
Greene, Edward C., Jr. Asst. Spec., Student Affairs; Ph.B. 1928, M.F. 1932, Yale
Harada, Takeshi, Asst. Spec., Student Activities; B.S. 1951, Hawaii; M.S. 1955, Illinois
Higa, George, Jr. Spec., Financial Aids
B.A. 1965, M.S. 1968, Hawaii
Higashi, Sylvia K., Jr. Spec., Admissions and Records; B.A. 1967, M.Ed. 1968, Hawaii
Iams, Ruth W., Assoc. Spec., Counseling and Testing; Ph.B. 1953, Chicago; M.A. 1952, Hawaii
Kameda, Stephen K., Asst. in Student Personnel, Admissions & Records; B.A. 1967, Michigan State
King, Leroy J., Asst. Spec., Financial Aids
B.A. 1963, Nebraska; M.A. 1968, Hawaii
Koch, Noni, Specialist, Student Health Service; M.D. 1952, Panjab
Lankutis, Katherine, Head Resident, Gateway; B.A. 1962, Oberlin
McAleenan, Andrea C., Jr. Spec., Admissions and Records; B.A. 1966, M.A. 1967, Michigan State
McArdle, H. Roy, Director, Placement and Career Planning; B.S. 1941, Columbia; M.B.A. 1962, Hawaii
McPherson, Mary Lou, Asst. Spec., Student Housing; B.S. 1933, Kansas State; M.A. 1955, Missouri
Michel, John, Director, Counseling and Testing; B.A. 1950, Lehigh; M.A. 1951, Georgia; Ph.D. 1958, Texas
Miyahira, Dixie, Specialist (Psychiatrist), Counseling & Testing; B.S. 1954, Wisconsin; M.D. 1958, Pennsylvania
Nakamura, Dorothy R., Asst. Spec., Student Housing; B.Ed. 1956, Hawaii
Naughton, June C., Jr., Spec., International Student; B.A. 1959, San Jose; M.A. 1960, Columbia
Ohara, Ralph N., Asst. Spec., Admissions and Records; B.Ed. 1959, M.Ed. 1967, Hawaii
Okihara, Burt H., Jr., Spec., Student Housing; B.A. 1962, Hawaii
Omori, Phyllis, Asst. in Student Personnel, Admissions & Records; B.A. 1968, Hawaii
Paraz, Alvin A., Specialist, Student Health Service; M.D. 1955, Santo Tomas
Sakamaki, Leigh, Specialist, (Psychiatrist), Counseling & Testing; B.S. 1955, M.D. 1959, Michigan
Sherman, Ruth, Asst. Spec., Counseling and Testing; B.A. 1942, Douglass; M.A. 1964, Hawaii
Shibuya, Gary M., Asst. in Student Personnel, Admissions & Records; B.B.A. 1969, Hawaii
Shishido, Karleen S., Jr. Spec., Student Personnel; B.A. 1969, Hawaii
Slaybaugh, Jack E., Head Resident, Gateway; B.A. 1961, California State; M.A. 1969, Hawaii
Smith, Charles J., Asst. in Student Personnel, Johnson; B.E. 1965, Hawaii; M.Ed. 1968, Florida
Takagi, Kikue, Jr., Spec., Student Activities Ed.B. 1942, Hawaii
Taniguchi, Shirley T., Jr., Spec., Student Housing; B.B.A. 1949, Hawaii
Walker, Wayne, Jr., Spec., Admissions and Records; A.B. 1944, California (Berkeley)
Wang, Farouk, Head Resident, Johnson B.A. 1967, Hawaii
Wery, Katherine H., Asst. Spec., Financial Aids; B.A. 1944, Westminster
Wong, Carolina D., University Physician M.D. 1941, Santo Tomas

**College of Arts & Sciences**

**Student Services Office**

* Levy, Alfred J., Associate Dean
* Bilsborrow, Eleanor J., Academic Adviser
* Collier, Roy, Academic Adviser for Foreign Students
* Comcowich, Jerome M., Pre-Education Adviser
* Gordon, Paul, Academic Adviser
* Helmich, Andrew, Pre-Education Adviser
* Kamins, Shirley, Academic Adviser
* Koehler, Dorothy, Academic Adviser
* Larson, Valentine, Academic Adviser
* Lynch, Maryann, Academic Adviser

Merritt, Grace, Academic Adviser, Director of Kokua; B.A. 1941, Montana; M.A. 1949, Denver
Omori, Rachel T., Academic Adviser B.Ed. 1944, 5th Yr. Cert. 1945, Hawaii
* Ozaki, Flora, Pre-Nursing Adviser
* Putman, Ed, Academic Adviser
Settle, Joyce, Academic Adviser B.Ed. 1959, M.A. 1962, Hawaii
* Sohl, Kathryn E., Academic Adviser

**Drama and Theatre**

Caldeira, Arthur B., Jr., Specialist in Drama and Theatre; B.A. 1951, Hawaii
Miji, Takeo, Jr. Specialist in Drama and Theatre; B.A. 1955, Hawaii

**Institutional Research Office**

* Babbie, Earl R., Director
* Dannemiller, James E., Specialist
B.A. 1961, Miami; M.A. 1968, Hawaii

Quinn, Diane K., Researcher B.A. 1966, Hawaii
LIBRARY ACTIVITIES

*West, Stanley L., University Librarian and Professor

*Adams, Charles M., Director, Sinclair Library; Professor, Graduate School of Library Studies


Bell, Janet E., Hawaiian Curator, Hawaiian & Pacific; B.A. 1932, Hawaii; B.S. in L.S. 1933, Washington


Chang, Diana M. D., Jr. Library Spec., Social Science Reference; B.A. 1955, California (Berkeley); M.L.S. 1966, Hawaii


Correa, Genevieve B., Humanities Bibliographer; B.A. 1940, Hawaii; B.S.L.S. 1946, North Carolina

Crozier, Virginia, Asst. University Librarian (Public Services); B.A. 1931, Pomona; B.S.L.S. 1932, Emory


Esses, Martha, Jr. Library Spec., Humanities Reference; B.A. 1964, UCLA; M.S.L.S. 1966, Southern California

Franklin, Alma I., Asst. Library Spec., Cataloging; B.A. 1954, Hawaii; M.L.S. 1955, California

Frissell, Barbara, Jr. Library Spec., Selection & Search; A.A. 1946, B.A. 1948, California (Berkeley)

Fristoe, Ashley J., Asst. University Librarian (Technical Services); B.A. 1942, Tulane; M.L.S. 1964, Rutgers


Hamada, Helen, Spec. in Graphics, IRSC; B.F.A. 1969, Hawaii


Jackson, Frances O., University Archivist, Archives & Rare Books; B.A. 1954, Stanford; M.A. 1958, Hawaii; M.L.S. 1966, California (Berkeley)


Kane, Rita, Head, Science Technology Reference; B.S. 1953, Boston; M.L.S. 1967, Hawaii


Liu, Regina S. R., Jr. Library Spec., Science Technology Reference; B.A. 1960, National Taiwan University; M.L.S. 1964, Rutgers

Matsumori, Donald M., Jr. Library Spec., Cataloging; B.B.A. 1955, Hawaii; M.S.L.S. 1960, UCLA


Melton, Bonnie, Administrative Assistant, Hamilton Library; B.S. 1955, Southeast Missouri; M.L.S. 1969, Hawaii

Moore, Christine F., Jr. Library Spec., Selection & Search; B.A. 1967, Hawaii; M.S. 1969, Wisconsin


Powell, Janice, Head, Humanities Reference; B.A. 1964, Colorado State; M.A.L.S. 1966, Denver

Richmond, Virginia H., Jr. Library Spec., Reclassification; B.A. 1963, Dominican College; M.L.S. 1968, Hawaii

Rizzo, Lawrence, Jr. Library Spec., Interlibrary Loan; A.B. 1959, UCLA; M.L.S. 1962, California (Berkeley)


Saito, Shiro, Head, Social Science Reference; B.Ed. 1951, Hawaii; M.A. 1956, Minnesota
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<tr>
<th>Name</th>
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<tr>
<td>Sanderson, Richard</td>
<td>Media Spec., Instructional Resources Service Center</td>
<td>B.A. 1952, Cornell; M.A. 1958, Ph.D. 1961, Southern California</td>
</tr>
<tr>
<td>Schaafsma, Carol A.</td>
<td>Head, Selection &amp; Search</td>
<td>B.S.Ed. 1958, Indiana; M.L.S. 1968, Hawaii</td>
</tr>
<tr>
<td>Smith, Margaret H.</td>
<td>Jr. Library Spec., Social Science Reference</td>
<td>Ed.D. 1936, Hawaii; M.A. 1937, Columbus; B.L.S. 1938, Pratt Institute</td>
</tr>
<tr>
<td>Stough, M. Suzanne</td>
<td>Spec. in Graphics, IRSC</td>
<td>B.S. 1970, Indiana State</td>
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**HAWAII CURRICULUM CENTER**

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<tr>
<th>Name</th>
<th>Title</th>
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<tbody>
<tr>
<td>Shimabukuro, Shinkichi</td>
<td>Director</td>
<td>B.Ed. 1947, Hawaii; M.Ed. 1957, D.Ed. 1959, Pennsylvania State</td>
</tr>
<tr>
<td>Callender, Janet M.</td>
<td>Education Associate</td>
<td>B.A. 1957, Sacred Heart, Tokyo; M.A. 1968, Hawaii</td>
</tr>
<tr>
<td>Carr, Norma</td>
<td>Education Associate</td>
<td>B.S. 1951, New York; M.A. 1954, Columbia</td>
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<tr>
<td>Douthit, Dorothy</td>
<td>Specialist</td>
<td>B.A. 1960, Wayne State; M.A. 1965, Ph.D. 1967, Texas</td>
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<tr>
<td>Enoki, Donald</td>
<td>Curriculum Specialist</td>
<td>B.A. 1959, Hawaii; M.A. 1966, Columbia</td>
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<tr>
<td>Fujita, Grace</td>
<td>Curriculum Specialist</td>
<td>B.A. 1945, 5th Year Certificate 1946, Hawaii</td>
</tr>
<tr>
<td>Huddleston, Don</td>
<td>Secondary Teacher</td>
<td>B.Ed. 1969, Maryland</td>
</tr>
<tr>
<td>Keating, Barbara E.</td>
<td>Elementary Teacher</td>
<td>B.S. 1960, Oregon</td>
</tr>
<tr>
<td>Kleinjans, Edith K.</td>
<td>Specialist</td>
<td>A.B. 1943, Hope College; M.A. 1944, Michigan</td>
</tr>
<tr>
<td>Koki, Stanley</td>
<td>Curriculum Specialist</td>
<td>B.A. 1957, Hawaii</td>
</tr>
<tr>
<td>Truitt, Deborah H.</td>
<td>Jr. Library Spec., Sinclair Library</td>
<td>B.S.Ed. 1966, State University College (Genesco); M.S.L.S. 1968, Hawaii</td>
</tr>
<tr>
<td>Tsu, Millie</td>
<td>Head, Processing</td>
<td>A.A. 1947, Bakersfield; B.A. 1954, M.L.S. 1955, California (Berkeley)</td>
</tr>
<tr>
<td>Van Zwalenberg, Joyce</td>
<td>Head, Circulation</td>
<td>B.A. 1950, Mills; M.L.S. 1968, Hawaii</td>
</tr>
<tr>
<td>Yee, Wai-Chee</td>
<td>Jr. Library Spec., Cataloging</td>
<td>B.A. 1938, Hawaii; B.S.L.S. 1939, Columbia</td>
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**HAWAII CURRICULUM CENTER**

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<tr>
<th>Name</th>
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<tr>
<td>Lee, Eun Sook</td>
<td>Secondary Teacher</td>
<td>B.A. 1952, Wesleyan; A.M.T. 1953, Radcliffe</td>
</tr>
<tr>
<td>Look, May</td>
<td>Secondary Teacher</td>
<td>B.Ed. 1943, 5th Year Certificate 1944, Hawaii</td>
</tr>
<tr>
<td>*Maney, Florence A.</td>
<td>Assistant Professor of English</td>
<td></td>
</tr>
<tr>
<td>Matsumura, Jean S.</td>
<td>Specialist</td>
<td>B.A. 1963, M.A. 1967, Hawaii</td>
</tr>
<tr>
<td>McKean, Margith</td>
<td>Specialist</td>
<td>A.B. 1964, Duke</td>
</tr>
<tr>
<td>Nakatsu, Roy</td>
<td>Secondary Teacher</td>
<td>B.Ed. 1968, Church College</td>
</tr>
<tr>
<td>Noda, Lillnn A.</td>
<td>Education Associate</td>
<td>B.A. 1966, Smith; M.A. 1967, Claremont</td>
</tr>
<tr>
<td>Nunes, Shih 0</td>
<td>Administrator and Manager of English Project</td>
<td>B.A. 1938, 5th Year Certificate 1939, Hawaii</td>
</tr>
<tr>
<td>Oksendahl, Wilma</td>
<td>Curriculum Specialist</td>
<td>B.A. 1948, Montana State; M.A. 1958, Columbia</td>
</tr>
<tr>
<td>Ostrander, Norma</td>
<td>Specialist</td>
<td>B.Ed. 1961, Chadron State; M.A. 1967, Chicago</td>
</tr>
<tr>
<td>Ovio, Nicholas A.</td>
<td>Technician</td>
<td></td>
</tr>
<tr>
<td>*Owens, Thomas R.</td>
<td>Assistant Professor of Education</td>
<td></td>
</tr>
</tbody>
</table>
LABORATORY SCHOOL

Port, Antoinette, Curriculum Specialist
B.A. 1961, Boston College; M.A. 1964, Columbia

Port, Richard, Curriculum Specialist
B.A. 1960, Boston College; M.A. 1964, Columbia

Rodgers, Theodore, Specialist and Assistant Professor of Psychology and Linguistics; B.A. 1956, Amherst; M.S. 1962, Georgetown; Ph.D. 1968, Stanford

Tanouye, Mary, Curriculum Specialist
B.Ed. 1958, M.Ed. 1960, Hawaii

Wakuya, Florence H., Elementary Teacher
B.Ed. 1955, 5th Year Certificate 1956, Hawaii

Watanabe, Tokie, Kindergarten Teacher
B.Ed. 1962, Hawaii

Watson, Roger A., Specialist
B.A. 1962, Union College; M.A. 1968, Stanford

*Yucker, Julius L., Jr., Professor of Education

UNIVERSITY LABORATORY SCHOOL

*King, Arthur R., Jr., Professor of Education and Director

*Allen, Leslie R., Assistant Professor of Education

Anderson, Roger K., Education Associate
B.A. 1965, Austin College; M.A. 1969, Hawaii

*Belshe, Mirella M., Assistant Professor of Education

*Bennett, Hannah Lou, Assistant Professor of Education

*Brantley, L. Reed, Professor of Education


Conrad, Ray W., Education Associate
A.B. 1959, Georgetown; M.Ed. 1965, Hawaii

Cornell, Lois J., Education Associate
B.A.Ed. 1963, Pacific Lutheran

*Curtis, Delores M., Associate Professor of Education

*Damon, Paulette S., Acting Assistant Professor of Education

Demanche, Edna Louise, Education Associate
B.S. 1940, St. Vincent; M.S. 1964, Ph.D. 1969, Notre Dame

Falk, Ruth R., Specialist
Nurse's Training, Ancher Hospital School of Nursing, 1958

Fine, Virginia K., Lecturer in Education
B.A. 1943, Oklahoma State; M.Ed. 1964, Hawaii

Flori, Monica R., Lecturer in Education
B.A. 1968, Universidad de la Republica O. del Uruguay

Fujinaka, Suzette A., Education Associate
B.Ed. 1968, M.Ed. 1969, Hawaii

Gordon, Ira, Education Associate
B.S. 1967, Rollins College

Goris, Betty Lou C., Education Associate
B.A. 1942, California (Berkeley)

*Greenberg, Marvin, Associate Professor of Education

Griffin, Helen K., Education Associate
B.A. 1951, Boston; M.A. 1969, Hawaii

*Hashimoto, Mitsuo, Assistant Professor of Education

*Higa, Harold T., Assistant Professor of Education

Ing, Charlys M., Education Associate
A.B. 1967, Wellesley

Kamikawa, Miyoko, Education Associate
Graduate 1943, Kyoto Women's College, Japan

Kandel, Walter W., Education Associate
B.Ed. 1967, Hawaii

Keliikoa, Edward N., Education Specialist
B.A. 1956, Pasadena; B.S.E. 1960, U.S. Naval Academy; M.S. 1966, George Washington

*King, Irvin L., Assistant Professor of Education

Klemm, Barbara E., Education Associate
B.A. 1964, Ohio Wesleyan

*Krause, Loretta, Assistant Professor of Speech

*Kyselka, Will, Assistant Professor of Education

Lani, David K., Education Associate
B.A. 1966, M.A. 1968, Hawaii

*Larriva, Jim, Instructor in Education

*Leib, Edna Lee, Assistant Professor of Education

Luke, Loretta, Teacher
B.S. 1968, Skidmore College; M.Ed. 1969, Hawaii

Miki, Sharon L., Education Associate
B.A. 1966, M.Ed. 1969, Hawaii

Mitchell, Ronald L., Education Specialist
A.B. 1950, Stanford; M.A. 1962, Claremont

Mui, Lois T., Education Associate
A.B. 1956, Boston; M.A. 1957, Columbia (on leave)

Newland, William W., Education Associate
B.A. 1966, California (Berkeley)

Noyes, Mary H., Jr. Researcher
A.B. 1942, California (Berkeley); M.A. 1963, George Peabody College

Okuda, Robert T., Education Associate
B.Ed. 1969, Hawaii

*Pottenger, Francis, Assistant Professor of Education
EAST-WEST CENTER

IAP—Institute of Advanced Projects, ISI—Institute for Student Interchange,
ITI—Institute for Technical Interchange

Kleinjans, Everett, Chancellor
A.B. 1943, Hope College; M.A. 1948, Ph.D. 1958, Michigan

Ajirogi, Harold H., Sr. Program Officer, ITI
B.S. 1949, Brigham Young; M.Ed. 1957, Illinois

Anderson, Judith M., Asst. Intercultural Activities Coordinator, ISI; B.A. 1964, California; M.A. 1967, Stanford

Bellinger, Roger S., Assoc. Program Officer, AID, ITI; B.A. 1956, Michigan State; M.A. 1967, Hawaii

Bennington, Jeannette, Alumni Liaison Officer, Public Affairs Office; B.S. 1957, Western Reserve and The Cleveland Institute of Art; M.A. 1969, Hawaii

Brownell, John A., Deputy Chancellor for Academic Affairs; B.A. 1947, M.A. 1948, Whittier College; Ed.D. 1952, Stanford

Burian, Fredrich J., Sr. Program Officer, ITI; B.A. 1963, Hawaii

Char, Lan Hiang, Library Acquisitions Specialist, EWC Library; B.A. 1951, M.A. 1956, Indonesia; M.Sc. 1959, Columbia

Choo, Yam-wai, Library Acquisitions Specialist, EWC Library; B.A. 1960, Nanyang; M.L.S. 1969, Hawaii


Demeny, Paul, Director, East-West Population Institute; B.A. 1955, Budapest; M.A. 1959, Ph.D. 1961, Princeton

Dolan, Virginia W., Sr. Administrative Asst., East-West Population Institute; B.A. 1935, Hawaii


Durham, Marvin L., Assoc. Institute Director, ISI; B.S. 1952, Washington; M.A. 1953, Ph.D. 1962, Fletcher School of Law and Diplomacy

Ehlen, Carol A., Publications Spec. Public Affairs Office; B.A. 1962, Oregon College of Education

Faustino, Sally S., Assoc. Program Officer, ITI; B.S. 1952, Hawaii; M.P.H. 1962, Michigan

Feldman, Reynold, Intercultural Activities Officer, ISI; B.A. 1960, M.A. 1962, Ph.D. 1966, Yale

Fong, Monica S., Jr. Researcher, East-West Population Institute; A.B. 1963, Vassar College; M.A. 1965, Stanford

Fujikawa, Wallace A., Housing Manager, EWC Housing;

Fujioke, Wake A., Assoc. Editor, EWC Press; B.A. 1959, M.A. 1967, Hawaii

Fukumi, Yasuko, Library Cataloger, EWC Library; B.A. 1949, Tsuda College (Japan); M.A. 1964, Kansas State Teachers College

Gilstrap, Sam P., Deputy Chancellor for Admin. and Asst. Director for Admin., East-West Population Institute; B.S. 1930, Oklahoma State; L.L.B. 1931, Cumberland
<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Institution</th>
<th>Highest Degree</th>
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<tbody>
<tr>
<td>Glennie, Susan J.</td>
<td>Library Asst., EWC Library</td>
<td>B.A. 1963, Victoria</td>
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<tr>
<td>Gould, Miriam L.</td>
<td>Program Asst., Sr. Specialists Program, IAP</td>
<td>B.A. 1940</td>
<td></td>
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<tr>
<td>Gugeler, Utako K.</td>
<td>Library Cataloger, EWC Library</td>
<td>B.A. 1959, Keio</td>
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<tr>
<td>Harris, Alice D.</td>
<td>Library Specialist, EWC Library</td>
<td>B.A. 1951, Russell Sage College</td>
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<tr>
<td>Katakaru, Ray T.</td>
<td>Acting Director, AID, ITI</td>
<td>B.S. 1940, Stout State College</td>
<td></td>
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</tr>
<tr>
<td>Kenda, Juanita E.</td>
<td>Community Relations Officer, B.F.A. 1945</td>
<td>Tyler School of Fine Arts, Temple</td>
<td></td>
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<tr>
<td>Kimura, Irene J.</td>
<td>Sr. Administrative Asst., AID, ITI</td>
<td>B.A. 1966, Hawaii</td>
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<tr>
<td>Kokubun, Herbert T.</td>
<td>Administrative Management Officer, Administration; B.A. 1952, M.A. 1968, Hawaii</td>
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<tr>
<td>Konoshima, Sumiye E.</td>
<td>Asst. Librarian for Operations and Programs, EWC Library; A.B. 1939, Hope College; M.A. 1957, Columbia; M.L.S. 1968, Hawaii</td>
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<td>Kukino, Keiji</td>
<td>Administrative Analyst, Administration; B.S. 1960, Hawaii</td>
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<td>Kusuhara, Harriet A.</td>
<td>Sr. Administrative Assistant, ITI</td>
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<td>Kyle, John H.</td>
<td>Director, EWC Press</td>
<td>B.A. 1951, M.A. 1953, Oklahoma</td>
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<tr>
<td>Lau, Chau Mun</td>
<td>Librarian Asst., EWC Library</td>
<td>B.A. 1966, Hawaii</td>
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<tr>
<td>Lau, Florence M.</td>
<td>Assoc. Program Officer, IS1</td>
<td>B.A. 1961, M.A. 1964, Hawaii</td>
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<tr>
<td>Lee-Kai, Fannie</td>
<td>Sr. Administrative Asst., IAP</td>
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<tr>
<td>Long, Herbert D.</td>
<td>Director, IS1</td>
<td>B.A. 1953, Stanford; B.D. 1956, Stanford</td>
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<td>Makey, Sumi Y.</td>
<td>Sr. Program Officer, IS1</td>
<td>B.A. 1948, Hawaii; M.A. 1951, Columbia</td>
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<td>Matsui, Masato R.</td>
<td>Library Acquisitions Spec. (Coordinator, Oriental Collections), EWC Library; B.A. 1953, Doshisha; M.S. 1958, Syracuse</td>
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<td>Muramoto, Roy H.</td>
<td>Assoc. Program Officer, AID, ITI</td>
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<tr>
<td>Nagao, Clarence M.</td>
<td>Student Residence Head, EWC Housing</td>
<td>B.A. 1962, Johns Hopkins; M.A. 1969, Hawaii</td>
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<td>Nakamura, Rose S.</td>
<td>Assoc. Program Officer, IS1</td>
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<td>Nishihara, Kenneth Y.</td>
<td>Asst. Admin, Management Officer, Administration; B.A. 1954, Hawaii</td>
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<tr>
<td>Quensell, Walter G.</td>
<td>Student Residence Head, EWC Housing</td>
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<tr>
<td>Roberts, Dorothy E.</td>
<td>Assoc. Program Officer, IS1</td>
<td>B.A. 1930, California; M.A. 1938, Southern California; Ph.D. 1955, California (Berkeley)</td>
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<tr>
<td>Saito, Masaji</td>
<td>Admin. Analyst, Administration; B.S. 1956, 5th Year Certificate 1957, Hawaii</td>
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<tr>
<td>Tokyo, Shosho C.</td>
<td>Library Asst., EWC Library</td>
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<tr>
<td>Sussman, Gerald E.</td>
<td>Assoc. Program Officer, IS1</td>
<td>B.S. 1959, LL.B. 1962, Georgetown; M.A. 1964, Johns Hopkins</td>
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<td>Tachibana, Allene S.</td>
<td>Sr. Administrative Asst., Public Affairs Office</td>
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<tr>
<td>Tasaka, Jean M.</td>
<td>Asst. Student Residence Head, EWC Housing</td>
<td>B.Ed. 1967, Hawaii</td>
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<td>Tatsuno, Hazel O.</td>
<td>Sr. Administrative Asst., Sr. Specialist Program, IAP</td>
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<tr>
<td>Trifonovitch, Gregory</td>
<td>Sr. Program Officer, ITI</td>
<td>A.B. 1960, Wheaton College</td>
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<tr>
<td>Uemura, Jeanne M.</td>
<td>Sr. Administrative Asst., Office of Deputy Chancellor for Academic Affairs</td>
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<tr>
<td>Ulrey, Kathryn L.</td>
<td>Asst. Community Relations Officer; B.S. 1947, Manchester</td>
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<td>Wang, James C. F.</td>
<td>Assoc. Program Officer, IS1</td>
<td>B.A. 1950, Oberlin</td>
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<tr>
<td>Wright, Joyce M.</td>
<td>Director, EWC Library</td>
<td>B.S. 1938, B.A. L.S. 1939, Washington</td>
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<td>Wright, Norman J.</td>
<td>Sales Manager, EWC Press</td>
<td>B.A. 1939, Alabama; M.A. 1941, Hawaii</td>
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<tr>
<td>Yorita, Peggy H.</td>
<td>Assoc. Program Officer, IS1</td>
<td>B.A. 1946, Hawaii; M.Ed. 1959, Boston</td>
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<tr>
<td>Yoshizumi, Dorothy K.</td>
<td>Sr. Administrative Asst., Office of Deputy Chancellor for Administration</td>
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<table>
<thead>
<tr>
<th>Division</th>
<th>1st Sem.</th>
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<tr>
<td><strong>Graduate Division</strong></td>
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<tr>
<td>Doctor's Candidates</td>
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<td>Master's Candidates</td>
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<td><strong>Total</strong></td>
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<tr>
<td><strong>College of Arts and Sciences</strong></td>
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<tr>
<td>Seniors</td>
<td>1,135</td>
<td>1,110</td>
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<td>Juniors</td>
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<td>1,773</td>
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<tr>
<td>Sophomores</td>
<td>2,433</td>
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<tr>
<td>Freshmen</td>
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<td>2,739</td>
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<td><strong>Total</strong></td>
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<td><strong>College of Business Administration</strong></td>
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<tr>
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<td><strong>School of Travel Industry Management</strong></td>
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<td>Juniors</td>
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<td>Seniors</td>
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<td>Sophomores</td>
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<td><strong>College of Engineering</strong></td>
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<td>Seniors</td>
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<td>Juniors</td>
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<td>Sophomores</td>
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<td><strong>Total</strong></td>
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<td><strong>Health Sciences and Social Welfare: Medicine</strong></td>
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<td>Graduate Pre-Clinical Students</td>
<td>71</td>
<td>66</td>
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<tr>
<td>Seniors</td>
<td>38</td>
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<tr>
<td>Juniors</td>
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<td>Sophomores</td>
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<td>Freshmen</td>
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<td><strong>Total</strong></td>
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Summary of Enrollment (continued)

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<th>Health Sciences and Social Welfare: Nursing</th>
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<tr>
<td>Seniors</td>
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<td>Juniors</td>
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<td>Total University Degree and Diploma Candidates</td>
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<th>College of Tropical Agriculture</th>
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<td>Juniors</td>
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<td>Special Graduate Students</td>
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<td>In-Service Teachers</td>
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<td>Unclassified Undergraduate Students</td>
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<td>Unclassified Graduate Students</td>
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<th>East-West Center Grantees on Study Tours</th>
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<td>Asians</td>
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<th>Total, Hilo Campus</th>
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<th>College of General Studies</th>
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