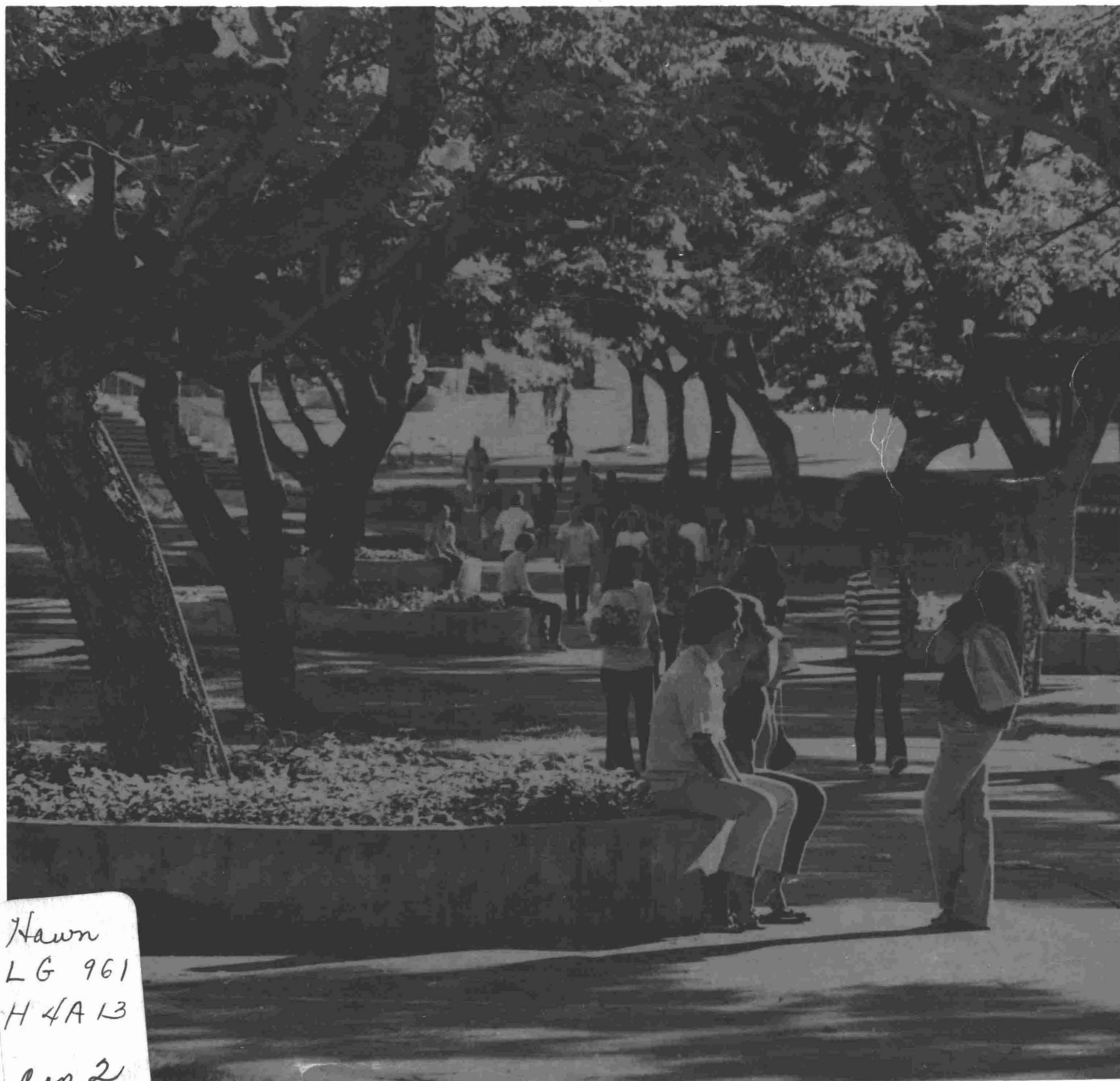


UNIVERSITY OF HAWAII BULLETIN

1972/1973 GENERAL INFORMATION AND CATALOG

MANOA CAMPUS

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Volume LI Number 3 June 1972

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MANOA CAMPUS CALENDAR 1972-1973

September 1972							October 1972							
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10	11	12	13	14	15	16	15	16	17	18	19	20	21	
17	18	19	20	21	22	23	22	23	24	25	26	27	28	
24	25	26	27	28	28	30	29	30	31					
November 1972							December 1972							
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26	27	28	29	30			24	25	26	27	28	29	30	
							31							
January 1973							February 1973							
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14	15	16	17	18	19	20	11	12	13	14	15	16	17	
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March 1973							April 1973							
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11	12	13	14	15	16	17	15	16	17	18	19	20	21	
18	19	20	21	22	23	24	22	23	24	25	26	27	28	
25	26	27	28	29	30	31	29	30						
May 1973							June 1973							
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13	14	15	16	17	18	19	10	11	12	13	14	15	16	
20	21	22	23	24	25	26	17	18	19	20	21	22	23	
27	28	29	30	31			24	25	26	27	28	29	30	
July 1973							August 1972							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	
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22	23	24	25	26	27	28	19	20	21	22	23	24	25	
29	30	31					26	27	28	29	30	31		

1972 Fall Semester (83 days)

August 21-26, Monday-Saturday Academic advising
 August 28-September 1, Monday-Friday Academic advising, registration, orientation
 September 4, Monday Holiday: Labor Day
 September 5, Tuesday Instruction begins
 September 18, Monday Last day to register for credit
 *September 22, Friday Last day to withdraw from courses
 October 9, Monday Holiday: Columbus Day
 October 23, Monday Holiday: Veterans' Day
 November 7, Tuesday Holiday: Election Day
 November 15, Wednesday Deadline for undergraduates and unclassified graduates to apply for Spring semester (new and returning students)
 November 16, Thursday Last day to process credit-no credit options
 November 22, Wednesday Last day for instructors to remove incompletes
 November 23, Thursday Holiday: Thanksgiving Day
 December 14, Thursday Last day of instruction
 December 15-16, Friday-Saturday Study period
 December 18-23, Monday-Saturday Final examinations
 December 23, Saturday Commencement
 December 23, Saturday Fall semester ends
 January 2-13, Tuesday-Saturday Interim Period

1973 Spring Semester (84 days)

January 8-13, Monday-Saturday Academic advising
 January 15-19, Monday-Friday Academic advising, registration
 January 22, Monday Instruction begins
 February 2, Friday Last day to register for credit
 *February 9, Friday Last day to withdraw from courses
 February 19, Monday Holiday: Presidents' Day
 March 26, Monday Holiday: Kuhio Day
 April 3, Tuesday Last day to process credit-no credit options
 April 13, Friday Last day for instructors to remove incompletes
 April 16-21, Monday-Saturday Spring recess
 April 20, Friday Holiday: Good Friday
 May 1, Tuesday Deadline for undergraduates and unclassified graduate applications for Fall semester 1973 (new and returning students)
 May 8, Tuesday Last day of instruction
 May 9-10, Wednesday-Thursday Study period
 May 11-17, Friday-Thursday Final examinations
 May 18-19, Friday-Saturday Student-faculty consultation
 May 20, Sunday Commencement
 May 20, Sunday Spring semester ends

*Withdrawal after these dates would be allowed only with the written permission of the instructor of each course.

1973 Summer Session

June 4—July 13 First Term
 June 11, Monday Holiday: Kamehameha Day
 June 25—August 3 Second Term
 July 4, Wednesday Holiday: Independence Day
 July 16—August 24 Third Term
 August 5, Sunday Commencement
 August 17, Friday Holiday: Admission Day

○ Academic dates of significance.
 □ Holidays and recesses.

This information bulletin for the academic year 1972-73 was compiled in March 1972, prior to the finalization of all academic programs for the year covered. Accordingly, descriptions and announcements of courses and curricula are subject to adjustment and change.

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 are listed by colleges and departments (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 *Schedule of Courses* issued prior to each semester and the summer session, showing the time and place of each class meeting.

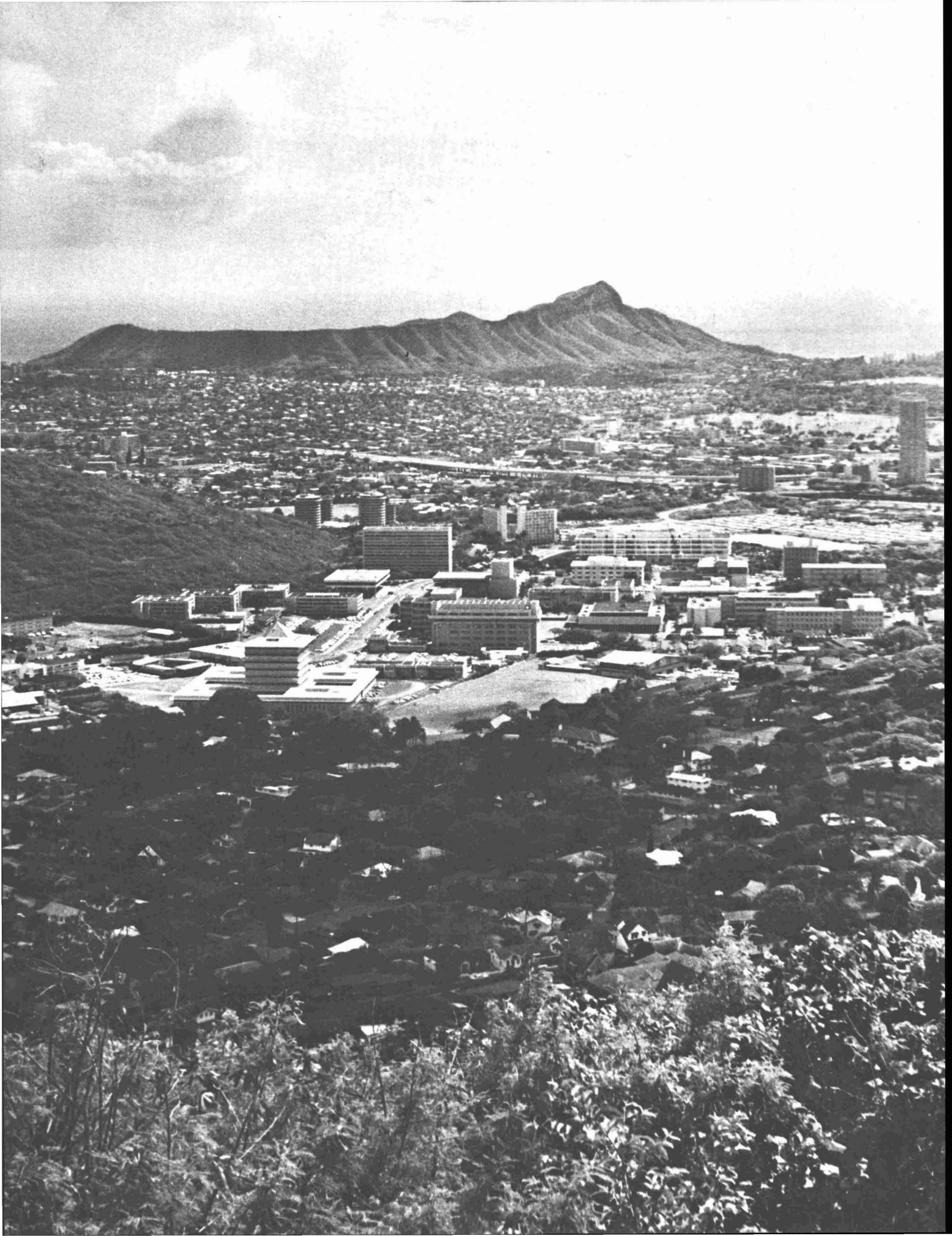
Heading each course description are the number and title of the course, the number of credits, and the semester given. Thus:

- a. (3) I = a 3-credit course offered the first semester
- b. (4) II = a 4-credit course offered the second semester
- c. (3) I, II = a 3-credit course repeated in the second semester
- d. (5-5) Yr. = a year's sequence carrying 5 credits each semester
- e. (v) = the number of credits may vary, arranged by the instructor in each instance.

Alongside the title of each course is the name of the faculty member(s) giving it, as best ascertained at the time this catalog was prepared in early spring of 1972. Rank, title and academic degrees of all faculty are given at the end of the catalog.

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.

*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.



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General Information

The University of Hawaii, the state-supported system of 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. Hawaii's physical characteristics have focused interest on natural phenomena in geophysics such as tsunami research, volcanology, astronomy and astrophysics. Hawaii's multi-racial 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 interracial relations.

The University offers course work leading to the bachelor's degree in 69 fields. The Graduate Division offers work leading toward the master's degree in 64 fields and the doctorate in 34.

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. A four-year campus and two more community colleges are planned for Oahu.

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. Branches of the Hawaii Agricultural Experiment Station are located on five of the major islands of the state.

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 twelve 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.

In 1964 the state legislature authorized the University 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 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's Manoa Campus is administered by seven colleges: Arts and Sciences, Business Administration, Continuing Education and Community Service, Education, Engineering, Health Sciences and Social Welfare, and Tropical Agriculture.

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



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Health, School of Social Work. The School of Library Studies is an additional professional school.

Experimental programs such as New College, Ethnic Studies, Liberal Studies and others are offered. 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.

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 and an international relations advisory council. The Manoa Campus administration is headed by a chancellor. The chief administrative officers for other campuses are either chancellors or provosts. Various faculty senates are advisory to the chancellors, provosts, president and the board of regents.

Equal Opportunity Policy. The University of Hawaii subscribes to, and complies with, all state and federal statutes, rules and regulations and any amendments thereto, promulgated from time to time, which prohibit discrimination in its policies and practices applicable to its campuses, programs and activities.

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**.

Undergraduates: Office of Admissions and Records, Bachman Hall 125, 2444 Dole Street, Honolulu, Hawaii 96822. *Graduate students:* Graduate Division Office, 2540 Maile Way, Honolulu, Hawaii 96822. *General studies:* College of Continuing Education and Community Service, 2500 Dole Street, Honolulu, Hawaii 96822. *Summer session:* Summer Session Office, Room 101, 2500 Dole Street, Honolulu, Hawaii 96822.

Other Campuses. *Hilo campus:* Hilo College, 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 Community College, 96-045 Ala Ike, 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 Manono Street, Hilo, Hawaii 96720.

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. Other programs conducted by the College of Continuing Education and Community Service are discussed in that section.

The **Computing Center** operates an IBM 7040-1401 system and an IBM 360/65 system, along with a supporting line of peripheral 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.

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 of the center are directed at obtaining evidence to assist educators in reaching decisions on educational practices. Major programs focus upon understanding of achievement motivation, of conditions influencing educational attainment of different ethnic and socio-economic groups, of social/moral status and development, 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 are primary concerns of the center.

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 **Environmental Center** was established in 1970 to stimulate, expand, and coordinate education, research, and service efforts of the University related to ecological relationships, natural resources, and environmental quality, with special relation to human needs and social institutions, with particular regard to Hawaii. The center attempts to make most effective the contribution of the University to the problems of determining and maintaining optimum environmental quality. Its membership is composed of those members of the University community actively concerned with ecological and environmental problems.

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, physical oceanography, solid earth geophysics, geology, soils, geochemistry, underwater acoustics, and tsunamis. The main laboratory of the institute is located at 2525 Correa Road on the campus. The institute also maintains two research vessels, a twin engine aircraft, a ship operations facility at Pier 18, Honolulu, and a seismographic observatory in upper Manoa Valley.

The **Hawaii Institute of Marine Biology**, established in 1948 with facilities on Coconut Island in Kaneohe Bay and at Kewalo Basin, has research programs in the marine biological sciences, including fisheries. In addition to the institute's research staff, it provides 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 aquaculture research under the Sea Grant Program.

The **Industrial Relations Center**, established in 1948, seeks to promote understanding of industrial relations and manpower development problems, techniques and policies. Organized to facilitate University instruction in the disciplines and professions related to industrial relations, it also serves labor, management and the com-



munity as the link in a continuing dialogue, reporting on changes in the field to enlarge understanding so that the public good is enhanced. In this endeavor the center functions through several channels, including a library containing the basic information services, as well as current publications; reference service; conferences, lectures and group discussions; and 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 **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, the institute maintains an observatory for planetary and stellar studies, equipped with an 88-inch and two 24-inch telescopes. A space astronomy program has obtained high resolution ultraviolet spectrograms of the sun from rockets, and is planning work based on satellites and space probes. The office of the scientific staff, laboratories for data reduction and instrument development, and shops for instrument construction and maintenance, are located on the mauka Manoa Campus.

The **Instructional Resources Service Center** is staffed by instructional and media specialists. Upon request they offer assistance and consultation to faculty in examination of instructional objectives, overall strategy planning, organization of instructional media, evaluation of media 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. Services and facilities offered in support of faculty and staff are many and varied. They include the following: Twelve multi-media auditoriums on the Manoa campus and Varsity Theatre just off campus. A closed-circuit television (CCTV) system in Kuykendall Hall where videotaping can be done for instructional analysis, micro teaching and the recording of instructional demonstrations. Graphic Media Design prepares and develops a wide range of graphic materials such as transparencies for projection, scientific and technical graphs, charts and diagrams. A Media Lab has facilities for faculty media workshops, self-paced materials for learning AV equipment operation, and reference materials. The reference materials include film and other media catalogs, manufacturer's AV equipment brochures and source articles giving ideas on innovative uses of media in the instructional process. Faculty wishing to make their own transparencies and other instructional materials are invited to use the self-service facilities where equipment and materials are provided. The preview evaluation and selection of films to be added to the University's film collection is coordinated by the center which strongly encourages the cooperative involvement of faculty members.

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 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 1943 to aid in legislative and governmental problems, is situated at the state capitol, 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.

Thomas Hale Hamilton Library, located on the Mall, near East-West Road, houses the main book, periodical and microform collections of the University of Hawaii Library. The open stacks contain approximately 730,000 volumes, including over 10,000 currently received periodicals. The library arrangement places humanities, social science and science-technology librarians near the reference materials and current periodicals of these broad subject areas to encourage maximum use of library resources. The four-story building has space for 955 readers and an open reading lanai on the top floor. Some special research collections, listed below, will remain in the Sinclair Library building until a planned addition to Hamilton Library is completed.

Gregg M. Sinclair Library, located at University Avenue and Campus Road, houses the undergraduate collection of 80,000 books and periodicals. It includes the Reserve Book Room (for graduate and undergraduate courses), a browsing collection with lounge furniture, a collection of college catalogs, an "architecture alcove," a Clearinghouse for Innovative Developments in Higher Education and the Listening Center. There are seats for 2,000 readers and a 24-hour study area. Special research collections also in the Sinclair Library building are the Asia Collection, (formerly the East-West Center Library), with over 240,000 volumes and additional serials and microforms, Hawaiian and Pacific Collections, Government Documents, Rare Books and Archives.

The **Listening Center** located in room 128 on the first floor of Sinclair contains 70 carrels modified for dial-access retrieval of programmed audio-tapes, 26 carrels equipped for individual tape playback, and another 50 carrels for optional use. Additionally, within the center, students and faculty may use small-group facilities for previewing any of the media in the University Library's collection including films, filmstrips, slides, etc., as well as records and tapes.

On the ground floor of Sinclair in room 16 is the film and equipment section of **Audio-Visual Services**. Films for instructional purposes may be scheduled in advance and audio-visual equipment for classroom use may be reserved. Film showings may be arranged for classes of up to forty students in Sinclair, room 4. AV Services also maintains decentralized pools of such equipment conveniently located in eight classroom buildings on campus. This library unit will assist any department on campus in obtaining maintenance service for departmental audio-visual equipment.

The **Harold L. Lyon Arboretum** occupies 124 acres in Manoa Valley, about 2.5 miles from the Manoa Campus. The facilities include two greenhouses (5,000 square feet), office-laboratory buildings (3,400 square feet) and approximately 6,000 accessions inventoried and maintained for instruction and research in botany, biology, zoology, agriculture, phytochemistry, pharmacology and medicine. An herbarium, of approximately 2,000 specimens and reference library, is also maintained. The altitude of the arboretum ranges from 450 to 1,300 feet above sea level; the annual rainfall averages 160 inches. The Lyon Arboretum is, for the Uni-



versity and community, an unrivaled facility for research and instruction.

The **Pacific and Asian Linguistics Institute** plans and conducts research on the languages of Asia, the Pacific Basin and the Americas, with special attention given to previously undescribed languages. The scope of the research includes the compilation of bi-lingual dictionaries, grammatical descriptions and pedagogical materials. Computer aids are used extensively for lexical storage and retrieval and for comparative linguistic purposes.

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 guided 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 sponsors and facilitates problem-oriented research on urban and planning problems, particularly those relevant to Hawaii, the Pacific Basin and Asia and participates in, coordinates with and supports related efforts throughout the University.

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 comparative studies, futuristic analysis, and quantitative methodology. The institute is developing new programs in Hawaii community studies, political leadership, automation and society, comparative legislative studies, and multi-disciplinary seminars. A program for the study of contemporary Korea is being assisted by the institute. 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 institute provides a variety of support services to social science faculty including computer consultation, manuscript typing, distribution of working papers and publications, information on social science research and grant assistance.

The **Social Welfare Development and Research Center**, located in the School of Social Work provides interdisciplinary continuing education, consultation, and research in social welfare, with special emphasis on problems of juvenile delinquency and youth development. It utilizes an educational model which treats planning, training and program evaluation as a part of a single interrelated process. The focus is primarily on new and innovative approaches and techniques.

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** is a laboratory which includes pan-Pacific educational communications via satellite, an audio-media communications workshop, and an interpersonal communication research facility. The center is used by faculty and students in communication and related areas for research, researcher training and instruction.

The **Survey Research Office** (formerly the Institutional Research Office) is responsible for providing survey technical facilities to campus researchers and for utilizing those facilities in generating and reporting data required for the planning, administration, and evaluation of the University system. Survey facilities include consultation on study design, questionnaire construction, sampling, data-collection, data-processing, analysis, and reporting. A data archive is maintained for purposes of secondary analysis. Faculty-course evaluations are offered to interested faculty members.

The **University Press of Hawaii** is a new publishing operation, the outcome of a merger of the lists and staffs of the University of Hawaii Press and the East-West Center Press. The new organization maintains the commitment of the two former presses to publish quality works in the areas of Pacific and Asian scholarship. All titles published carry the imprint "The University Press of Hawaii." Titles published for the East-West Center also carry the subimprint "An East-West Center Book."

The Press functions in much the same way as any other publishing house, although unlike commercial publishing firms, it operates on a nonprofit basis and the emphasis is on scholarly publication. It is a member of the Association of American University Presses and the Association of American Publishers. Books of general interest as well as scholarly monographs, and four scholarly journals, *Asian Perspectives*, *Oceanic Linguistics*, *Pacific Science*, and *Philosophy East and West*, are published.

Editorial control (final selection of manuscripts) is vested in a board made up of University of Hawaii faculty members appointed by the president. Faculty members are encouraged to submit booklength manuscripts to the director. Journal papers should be submitted to the respective editors.

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** plans and conducts research of both basic and practical nature related to Hawaii's water resources, assists and promotes instruction in water resources in several academic departments, and provides for training opportunities of engineers and scientists through 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 operates research laboratories and field research facilities.

INTERNATIONAL PROGRAMS

The international relations of the University are coordinated by the president. The All-University Advisory Council on the International Relations of the University of Hawaii provides for information exchange, cooperation and coordination among the units of the University. As necessary the Advisory Council provides reports and policy advice to the University community.

Currently more than 200 of the University's programs have an international dimension. The University of Hawaii ranks fourth nationally in number of foreign scholars and eleventh in foreign student enrollment.

The University also provides an academic house for the only nationally funded Center for Cultural and Technical Interchange Between East and West: the East-West Center, with institutes devoted to the study of communications, culture learning, food, population, and technology and development.

COOPERATING INSTITUTIONS

Through cooperative agreements with institutions listed below, the University has increased its research facilities and expanded its services to the state. 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 Experimental Farm near Hilo. The laboratory cooperates with the department of entomology, and other University and state agencies.

The **Hawaiian Sugar Planters' Association** provided, jointly with the Pineapple Research Institute, funds for building the Agricultural Engineering Institute shop

facilities for instruction and research. The association donated its Experiment Station arboretum—the renowned Lyon Arboretum—to the University. A dense botanical tree garden maintained by the HSPA since 1919, the arboretum is now used as an experimental laboratory by the UH botany department. HSPA has provided grants to the departments of agronomy and soils, and plant pathology. It has supported a graduate fellowship in entomology. HSPA Experiment Station staff scientists and engineers serve as members of the affiliate graduate facility, supervise graduate students in research, and work on joint research projects with the University.

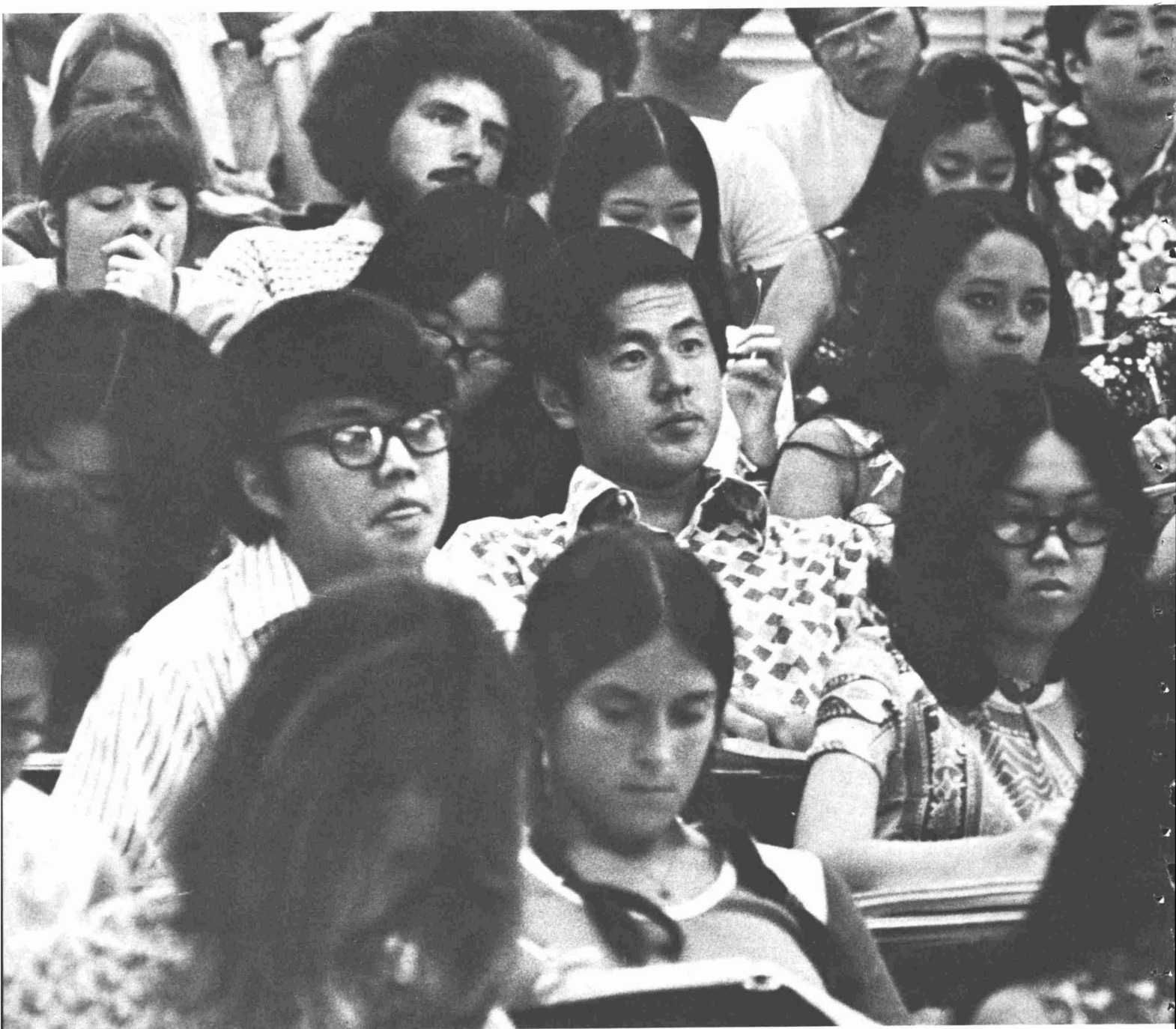
The **Honolulu Academy of Arts** features a world-renowned collection of Asian art treasures as well as outstanding Occidental holdings. The permanent collections are augmented by a diversified schedule of temporary exhibitions from world-wide sources and a research library for members, scholars and students. The Academy's extension for Japanese decorative arts, **Spalding House** and gardens provide the setting for lectures, programs, demonstrations and a center for the exhibition and study of Ukiyo-e woodblock prints.

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 staff of scientists on the affiliate graduate faculty of the University. Offices and laboratories are located on a 150-acre experimental farm near Wahiawa, Oahu.

The **Honolulu Laboratory of the National Marine Fisheries Service**, NOAA, U.S. Department of Commerce, 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, Honolulu Laboratory, National Marine Fisheries Service, P.O. Box 3830, Honolulu, Hawaii 96812.

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



Student Affairs

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 available include cultural/social activities, public affairs, educational experimentation, community service, publications/radio, and recreation. 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 completion of the new five million dollar Campus Center in 1973.

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 and a *Manoa Campus Directory*.

Other programs and activities of general interest to students are theatrical productions; about 150 different scholastic, honorary, professional, religious, social, departmental, special interest and residence organizations; the University band, chorus and orchestra; and sports, including intercollegiate athletics and intramurals.

Most of the above mentioned activities are funded through the activity fee paid by all full-time enrollees, and by any other student who voluntarily pays this fee. All fee payees are issued a student ID card.

Students interested in participating in any of these programs or who desire to find out what other organiza-

tions 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 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

An orientation program is held prior to the beginning of each semester. It is conducted by the Office of Admissions and Records and the Associated Students of the University of Hawaii. The purpose of orientation is to acquaint students with the academic programs, registration procedures, services offered by the Office of Student Affairs, and student life on the Manoa Campus.



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, badminton, or volleyball.

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, swimming, tennis, track/field, volleyball, wrestling. Interested students should contact the

athletic department for further information regarding participation in the intercollegiate program.

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 is open from 8:00 a.m. to 4:30 p.m., Monday through Friday; and 9:00 a.m. to 11:00 a.m. on Saturday. Physicians are present at the clinic from 8:30 a.m. to 11:45 a.m. and 12:30 p.m. to 4:15 p.m., Monday through Friday; and 9:00 a.m. to 11:00 a.m. on Saturday. 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 of \$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. The Student Health Service strongly endorses the ASUH sponsored health plan; the cost and benefits being far superior to most other commonly available health insurance plans open to student subscribers. Consult the Bureau of Student Activities or the Student Health Service for information.

The University requires that all newly registered daytime students undergo a complete medical examination, and the results of this evaluation must be submitted to the 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 hazard for all students. All students must have a TB skin test or chest x-ray performed six months prior to enrollment. Positive reactors of the skin test must follow up with a chest x-ray taken immediately and annually thereafter.

All foreign students will be skin tested upon arrival on campus. Positive reactors will be required to have a chest x-ray taken in Hawaii. A repeat chest x-ray is also required by the state of Hawaii of all students applying for visa renewals.

Residents of University housing must obtain a medical clearance from the 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.

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 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 few 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 or earlier for students who have a need for career planning assistance.

Counseling and Testing Center

The Counseling and Testing Center's staff consists of professionally trained psychologists, psychiatrists, psychometrists and interns. They function, as a team, on the University campus in 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.

International Student Office

The International Student Office serves both foreign and American students. It helps those from other countries attending the University, 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 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 944-8961 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.

Food Services

East-West Center Cafeteria. A complete food service in Jefferson Hall, including a cafeteria, snack bar and private dining rooms. Special parties and catered events can also be scheduled.

Gateway House Cafeteria. An unlimited-seconds meal program for breakfast and supper is provided Monday-Friday for students in residence halls, with a multiple choice of salads, desserts and beverages. Gateway also serves an a la carte lunch which is open to anyone.

Hale Aloha, a new cafeteria serving residence halls on a boarding program similar to Gateway and an a la carte lunch, is also open to residents and nonresidents.

Hemenway Hall Cafeteria. Plate lunches, sandwiches and snacks are served.

A Snack Bar in the northeast section of the campus.

Vending. Food vending machines are also located throughout the campus providing 24-hour service.

New Campus Center is under construction near Hemenway. It will provide special party rooms, banquet facilities, snack bar, and an a la carte dining room. The first phase of this new structure is expected to be completed in 1973.

Expenses

Minimum expenses per academic year are estimated to be approximately \$2,365 (plus \$510 for nonresidents) for students living in off-campus housing; \$1,970 (plus \$510 for nonresidents) for students living at a University residence hall; \$1,493 (plus \$510 for nonresidents) for a student living at home. These estimates do not include the costs related to dependents, transportation for out-of-state students, extensive medical/dental care or the tuition differential for nonresident students. They do include costs for board, room, resident tuition, books, supplies, fees other than those related to curricula, clothing, recreation and personal/miscellaneous.



STUDENT HOUSING

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Finding suitable housing has been a major problem for University of Hawaii students for several years; however, the first phase of a new residence hall complex opened in January 1972—its 500-bed capacity has somewhat reduced the problem.

For the 1972 Fall semester the problem will continue to be acute. The prospective student is reminded that acceptance to the University does NOT assure him of housing and that housing in Honolulu is scarce and expensive.

For the Fall semester there will be 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 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 expensive.

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

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

On Campus

Residence halls for University students administered by the housing office include:

Frear Hall and Hale Kahawai (for undergraduate women)—\$406 room and board per semester.

Johnson Hall and Hale Laulima (coed halls for undergraduates)—\$406 room and board per semester.

Hale Aloha (coed hall for undergraduates and graduates)—\$461 room and board per semester.

Gateway House (coed hall for graduates and upper division undergraduates)—\$436 room and board per semester.

Board includes 10 meals per week (Monday-Friday, breakfast and dinner).

All halls have double rooms except for fourteen single rooms in Hale Laulima, one single room in Johnson Hall at \$461 room and board per semester and ten single rooms in Hale Aloha at \$531 room and board per semester.

Off Campus

The housing office offers a free central listing service and maintains listings of rooms in private homes, a few apartments, shared accommodations, and room and board jobs. However, these listings are very limited and quickly exhausted. Moreover, these off-campus landlords must be contacted directly by the student. Because of rapid turnover, the names of landlords cannot be sent through the mail. 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. It is suggested that students plan to visit the housing office when they arrive on campus; it is open from 7:45 a.m. to 4:30 p.m., Monday through Friday.

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, rental contracts, etc.) to the satisfaction of the treasury office may be denied graduation, transcripts, and further registration.

Alcoholic Beverages. The sale and/or consumption of alcoholic beverages (including beer) is prohibited in dormitories, classrooms and social halls on the University campus.

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

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.

FINANCIAL AIDS

The fundamental purpose of the Financial Aids Program is to provide services to students partially or wholly self-sustaining or otherwise in need of assistance to meet the costs of their educational programs. Because students' educational and vocational plans very often involve more than monetary considerations the services provided include both financial aid and counseling. The operating philosophy is that parents have the primary responsibility to provide for the education of their children, and that financial aid is designed to fill the gap between parents' ability to pay and the actual educational costs.

Fiscal services are provided through the award of scholarships, grants, loans and student employment to the degree that is consistent with a student's needs and the availability of resources. Counseling services are provided on an individual and group basis as an extension of the educational experience.

The University subscribes to the College Scholarship Services (CSS) and utilizes the CSS form as a composite financial aid application for most of the student assistance programs it administers. The CSS forms are available at high schools, community colleges or the Financial Aids Office (1627-A Bachman Place, Honolulu, Hawaii 96822). The deadline for submission of the CSS forms to the appropriate CSS office (as indicated on the form itself) is March 1 of each year. Applications will be accepted after this date but there is always the danger on-time applicants will exhaust available funds.

Graduate students seeking fellowships or teaching assistantships should write to the Dean of the Graduate Division, 2540 Maile Way, Honolulu, Hawaii 96822.

Scholarships and Grants

State Government

State Scholarships: A number of tuition scholarships (value \$206) are awarded annually to full-time undergraduates who have resided in Hawaii five years prior to application. Because the awards are renewable, provided the recipient maintains a satisfactory record, the number available varies from year to year.

Board of Regents Tuition Waivers: A number of tuition waivers are awarded annually to full-time undergraduates with exceptional financial need, including 10 for foreign students.

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. Depending on the availability of funds, assistance up to \$2,500 annually is provided to all nursing students, full- or part-time, with financial need.

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
 James H. Couey, Jr. Memorial Journalism Scholarship
 John Fee Embree Memorial Scholarship
 Fushiminomiya Memorial Scholarship
 Charles R. Hemenway Scholarship
 Honolulu Civic Association Scholarship
 Samuel Wilder King Memorial Scholarship
 Robinson A. McWayne Scholarship
 Emma K. Mossman Scholarship
 N. Obermer Chamber Music Scholarship
 Harold S. Roberts Scholarship
 Joseph F. Smith Memorial Scholarship
 Stephen Spaulding Scholarship
 University of Hawaii Scholarship
 Kenji Yamaguma Memorial Scholarship
 Korean University Club Scholarship

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

Scholarships Based on Specific Majors:

For Engineering: American Society of Civil Engineers (Hawaii Section) Scholarship; Won Kiu Ahn Engineering Scholarship; Chi Epsilon Alumni Scholarship; Hawaiian Cement Corporation Scholarship; T. Y. Lin Scholarship; Edward K. S. Park Memorial Scholarship.

For Business Administration: Kazuo & Akiyo Totoki Scholarship.

For Art: Joseph Goldinger Memorial Scholarship; James G. Kelley Scholarship (for Architecture also); Gordon Mark Art Scholarship.

For Travel Industry Management: American Hotel & Motel Association Scholarship; Hawaii Club Managers Association of America Scholarship; William A. Patterson—United Airlines Scholarship (for juniors and seniors); Sky Chefs Scholarship; Sunset—PATA Scholarship; Western International Hotels Hard Corps Scholarship; Lorraine Yomes Memorial Scholarship.

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

For Miscellaneous: Judd-Larson Scholarship (for Medicine); Molyneux-Halford Scholarship (for Social Work, Nursing, Public Health, or Medical Technology, Speech Pathology & Audiology, Dental Hygiene); Music Department Scholarship; Kappa Alpha Theta (for Speech Pathology and Audiology), Helen Lee Ahn Scholarship for Asian Studies, Department of Drama Dance Scholarship; Kuuipo O Ka Aina (for female in agriculture), Shao Chang Lee Scholarship (for Asian Studies).

Other Scholarships: Leora Parmelee Dean (sponsored by the Women's Campus Club); Harold E. Hicks Memorial Scholarship Fund; Honolulu Chorale Society Scholarship; International Association of Machinists Union 1245; Brian Wallace Kong Memorial Scholarship; Robinson A. McWayne Scholarship; NAACP Scholarship; Palolo Lions Club; Superior Tea & Coffee Company Scholarship; Universal Scholarship; Antone Vidinha Scholarship; Wakaba Kai Sorority 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 Bettyon-National Association of Home Builders Scholarship; Brother David Paaluh; Central Maui Hawaiian Civic Club; Chinese Women's Club; "Chu" Baldwin Kahanamoku Foundation; Dole Scholarship; Ewa Beach Lions; Fashion Group, Inc., Honolulu (Dept. of Fashion Design, Textiles & Merchandising); 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 Airlines Scholarship; 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; Kailua High School; Kailani 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 So-



ciety; 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; Waiialua Hawaiian Civic Club; Waiialua 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: A no-interest program financed by donations from individuals and community groups/organizations and designed to meet small scale emergencies. On-the-spot applications are accepted at the financial aids office.

Federal Loan Programs: Included are the National Defense Student Loan, Nursing Student Loan (Professional and Technical), Medical Student and Law Enforcement Loan programs. These loan funds are available to qualified students and repayments (interest or principal) do not begin until nine to twelve months after their studies are terminated.

Students not eligible for the above loan programs, or who simply wish to do so, may borrow through the Federal Guaranteed Student Loan Program. The application for this type of loan must be processed through the designated agency in the state of the student's legal residence. Students who are residents of Hawaii process their applications through their parents' bank or credit union.

State Higher Education Loan Program: Available to full-time students who are residents of Hawaii. Payment of interest and principal does not begin until student status is terminated.

Student Employment

Many departments of the University employ students in a variety of jobs ranging from the unskilled to the semi-professional levels. Compensation is based upon job requirements and student qualifications.

The University also participates in the Federal College Work-Study Program. Under its provisions additional job opportunities are made available (both on campus and in the community) for qualified student employees.

In addition to the above, the financial aids office maintains a continuous liaison with the business community to assure a flow of jobs for students.

Despite these sources there are always more students seeking employment than there are jobs available. Priority for placement is accorded on the basis of financial need. In-coming students expecting to secure employment are advised to have on hand sufficient funds to defray expenses pending a job placement.



PRIZES AND AWARDS

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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 (freshmen men); Mortar Board Hui Pookela chapter (senior women); Alpha Lambda Delta (freshmen 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); Sigma Phi Alpha (dental hygiene).

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 excellence, 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 Hawaii 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.

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

Theater 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 Award, to an outstanding senior in UH Chapter of the American Home Economics Association.

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

Hawaiian Fashion Guild Award, to an outstanding senior in Fashion Design.

Human Resources Development Faculty Awards, to the freshman and senior in each dept. with the highest grade-point averages.

Stokely-Van Camp Silver Trivet Award, to a top-ranking senior with emphasis in foods.

Danforth Summer Leadership Training Scholarship, to an outstanding freshman.

Certificates of Merit, for services.

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

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

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:

	Resident	Nonresident
Tuition	\$85.00	\$340.00
General Fee	18.00	18.00
*Advance Partial Tuition Payment (applied to tuition at registration) All residents and continuing students		
	27.00	
New nonresidents only		
	90.00	
Course fees for applied music and institutes (see listings under appropriate colleges)		
Activities Fees† (for all undergraduate students)		
	13.25	13.25
Campus Center Fee‡	8.00	8.00

Part-time students (less than 12 credit hours)

Resident Tuition (maximum of \$85.00)—(per credit hour)	9.00	
Nonresident Tuition (maximum of \$340.00)—(per credit hour)		30.00
No General Fee		
No Activities Fees		
Campus Center Fee‡		
Students with 9 or more credit hours	8.00	
Students with 8 or less credit hours	4.80	

Summer Session Fees

	Resident	Nonresident
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 <i>Summer Session Bulletin</i> .		

College of Continuing Education Fees

Students registered in courses offered by the College 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)		

*All continuing and returning students are required to make an advance partial tuition payment of \$27.00. Resident new students are required to make an advance partial tuition payment of \$27.00; nonresident new students, \$90.00. This advance partial tuition payment is applied at registration time toward tuition for that semester. The payment is nonrefundable and nontransferable if the student does not register, except when the student is denied further registration by the University.

†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.

‡Pending final approval by Board of Regents. (As of April 6, 1972)

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 undergraduate and unclassified 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)	
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.

*The rental schedule set forth here is subject to change.

†Applications from outside Hawaii must be accompanied by a \$10.00 application fee (*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.

Refunds

In the event of complete withdrawal from the University or change to part time status before the fifth week of instruction, certain fees may be refunded as indicated below:

1. **Tuition and special course fees:**
 - a. 100% refund for complete withdrawal only if made before the first day of classes.
 - b. 80% refund if complete withdrawal or change to part time status is made within the first two weeks of instruction.
 - c. 40% refund if complete withdrawal or change to part time status is made during the third and fourth weeks of instruction.
2. **Student activities fee:**
 - a. 100% refund if withdrawal or change to part time status is made within two weeks after registration.
 - b. No refund if withdrawal or change to part time status is made later than the second week after registration.
3. If the withdrawal or change is precipitated by an action on the part of the University, refunds in addition to the above may be arranged.
4. **Summer Session:**
See *Summer Session Bulletin*.

Application for refund should be made at the Treasury Office after following the procedures on page 32, "Withdrawals and other Changes."

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 Education and Training to the Financial Aids office after completing registration.

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.

Residence Regulations

Students who do not qualify as bona fide residents of the state of Hawaii according to the University regulations in effect at the time they register, must pay nonresident fees.



An official determination of a student's residence status will be made at a time before he registers. Once classified as a nonresident, a student continues to be so classified throughout his term at the University of Hawaii until he can present satisfactory evidence to the residency specialist that proves otherwise. Some of the more pertinent residence regulations are given below. For further information or interpretation, contact the residency specialist in the Office of Student Affairs.

Statutory Exemptions

The following categories of nonresidents are exempt under statute from payment of tuition differential:

1. Persons who are residents of a state or foreign country which permits Hawaii residents to pay the same tuition fees at its public institutions of higher learning as are paid by its own residents.
2. United States military personnel and their authorized dependents during the period such personnel are stationed in Hawaii on active duty.
3. Persons domiciled in a district, commonwealth, territory, or insular jurisdiction, state, or nation which provides no public institution of higher learning.
4. Employees of the University and their spouses and legal dependents.

"Residents"—In General

1. The basic rule is that adult and minor students are resident students if the adult students, or in the case of minor students, their parents or guardians, have been bona fide residents of this state at least twelve consecutive months next preceding the first day of instruction at the University.
2. Residence in Hawaii and residence in another place cannot be held simultaneously.
3. Presence in Hawaii primarily to attend an institution of higher learning does not create resident status.
4. The residence of unmarried students who are minors follows that of the parents or of the legal guardians. A married minor may assume the residency of the spouse.
5. The residence of a wife may follow that of her husband.
6. Resident status, once acquired, will be lost by future voluntary actions of the resident inconsistent with such status. However, Hawaii residence will not be lost solely because of absence from the state while employed in the service of the United States, while engaging in navigation, or while a student at any institution of learning.

Academic Regulations

Applications for Fall 1973 will be accepted from December 1, 1972 to May 1, 1973.

STUDENT CLASSIFICATION

Persons attending classes at the Manoa Campus of the University of Hawaii may enroll in courses for academic credit or as auditors. Auditors are permitted to attend classes but receive no credit for the course. Students enrolled for credit may be designated as classified or unclassified, full-time or part-time.

Classified Students

A classified undergraduate student is one who is following a prescribed program of study leading to a 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.

A classified graduate student is one who has been accepted by the University's Graduate Division in one of three categories: regular, probational, or special. The student works toward an advanced degree or is in a special nondegree training or certificate program.

Unclassified Students

Students who are not seeking a degree or completion of a special Graduate Division program or undergrad-

uate degree or certificate program are termed unclassified. (Unclassified students are ineligible for student deferments by the Selective Service System.)

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. Ordinarily a full-time student carries a minimum of 12 credits. Graduate students are considered full-time or part-time according to Graduate Division regulations. (see *Graduate Catalog*).

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 Admission and Records
Bachman Hall 125
University of Hawaii
2444 Dole Street
Honolulu, Hawaii 96822

Because of admissions and enrollment limitation policies, applications will be processed for the 1972 Fall semester from *February 1 to May 1*, and for the 1973 Spring semester from *August 15 to November 15*. During these periods only complete applications will be con-

sidered. Applications should include official transcripts sent directly from the institution involved and all other necessary credentials. Applications, even those received before the closing deadline, will not be processed once enrollment is filled for the semester for which a student applies.

The University of Hawaii uses social security numbers as student numbers. Students are required to give their social security numbers 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 official scores on the Scholastic Aptitude Test of the College Entrance Examination Board, high school transcripts and recommendations from school officials as directed in the application form. A high rating in one factor will not ensure 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 no later than January of their 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
Berkeley, California 94701

or Box 592
Princeton, New Jersey 08540

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

Freshmen applicants to the University of Hawaii from outside the state must 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 will be given to students who arrive without an acceptance letter.

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

Minimum Unit Requirements for Admission

From a 4-Year High School	Subject	From a 3-Year High School
3	ENGLISH	3
1	ALGEBRA	1 (Not required if the student has had elem. algebra in the ninth grade.)
6	Credits to be earned from among the following: ENGLISH—in addition to 3-unit minimum requirement.	4 (If applicant offers elementary algebra this requirement is 5 units.)
	SCIENCES—Physical, biological, and social	
	MATHEMATICS—in addition to 1-unit minimum requirement in algebra	
	FOREIGN LANGUAGE	
5	Any other subjects (except physical education and ROTC) credited by the high school towards graduation provided that these subjects have been pursued in accordance with regular classroom procedure involving a reasonable amount of preparation in addition to time spent in class. Students must have no less than $\frac{1}{2}$ nor more than 2 units in any one subject.	4
15	TOTAL	12

Admission of Transfer Students

Because of admissions and enrollment limitation policies, application for candidates currently enrolled in other universities, colleges, or institutions of higher learning will be processed for the 1972 Fall semester from *February 1 to May 1*, and for the 1973 Spring semester from *August 15 to November 15*.

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 office of admissions and records. Each transcript must include a listing of courses taken, the grade received in each, and a note of good standing from the institution. These transcripts are not available for transference to another institution. A supplementary transcript of courses in progress must also be sent to the admissions and records office at the end of the semester. Candidates who have not completed at least 24 acceptable academic credits at any accredited college or university 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.

Students transferring from unaccredited institutions must meet University of Hawaii standards of admission for new freshmen students. Upon the completion of a minimum of 30 semester hours with an average of C or better, credit may be given for the courses completed 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 students who wish to apply for undergraduate admission to the University of Hawaii should request the application form and the *Information for Prospective Students from Foreign Countries* brochure from the office of admissions and records.

Because of admissions and enrollment limitation policies, applications will be processed for the 1972 Fall semester from *February 1 to May 1*, and for the 1973 Spring semester from *August 15 to November 15*. During these periods only complete applications will be considered. Applications, even those received before the closing deadline, will not be processed once enrollment is filled for the semester for which application is made.

Candidates must present evidence of having completed or received the equivalent of a U.S. high school diploma. Official transcripts of all secondary and post-secondary work as well as certified photocopies of the

results of any qualifying examination that have been taken (e.g., General Certificate of Education) must be submitted. Certified English translations must be attached to documents and transcripts written in a foreign language. These records are not available for transference to another institution.

Candidates must also submit official results of the Scholastic Aptitude Test (SAT) and of the Test of English as a Foreign Language (TOEFL). The SAT and TOEFL are normally required of all foreign applicants, including students who have either been admitted to or matriculated at other universities. Applications for the SAT may be obtained by writing to:

College Entrance Examination Board
Educational Testing Service
Box 1025
Berkeley, California 94701

or Box 592

Princeton, New Jersey 08540

Candidates must attain a minimal score of 450 on the TOEFL examination. Applications for the TOEFL may be obtained by writing to: Educational Testing Service, Box 899, Princeton, New Jersey, U.S.A. 08540.

Foreign applicants who are exempt from taking the TOEFL examination are: a) native speakers of English from Australia, Britain, Canada, or New Zealand; b) students who have received a bachelor's degree from an accredited university/college in the United States, Australia, Britain, Canada or New Zealand; c) students who have completed four years of high school and/or university education in the countries aforementioned.

All foreign students on non-immigrant visas are required to show proof of adequate health insurance before completing the registration process. Information on acceptable plans will be sent to students who are accepted for admission.

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. 43 for details.

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 degree candidates 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 are required of these candidates to the University. Such individuals must meet all special requirements for admission to such curricula as engineering, agriculture and nursing.

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 at the admissions office) to the office of admissions and records between *February 1 and May 1* for the 1972 Fall semester and between *August 15 and November 15* for the 1973 Spring semester. A request to re-enroll may be denied due to enrollment limitations. A student who has attended another institution subsequent to his attendance at the University of Hawaii, applies as a transfer student.

Admission of Professional Diploma Students

Candidates for admission to the Professional Diploma program should request the application form from the admissions and records office. Applications will be processed for the 1972 Fall semester from *February 1, 1972 to May 1, 1972* and for the 1973 Spring semester from *August 1, 1972 to November 1, 1972*.

Official transcripts from all institutions attended must be sent to the admissions and records office. Each transcript must include a listing of courses taken and the grades received in each. These transcripts are not available for transference to another institution. A supplementary transcript of courses in progress must also be sent to the admissions and records office at the end of the semester.

Applicants must also submit recommendation forms (available from the admissions office) to the admissions and records office.

Individuals residing on Oahu must arrange for a personal interview with the staff members of the division of student services, College of Education.

Admission of Unclassified Students

An individual who is not interested in enrolling in a degree program but is interested in taking University courses for professional or personal reasons may apply for admission as an unclassified student.

Admission may be allowed if the individual can either meet the same standards for admission as regular degree-seeking undergraduate or can submit official verification of a baccalaureate or advanced degree earned at an accredited college or university.

Because of admissions and enrollment limitation policies, priority for admission is generally given to classified students. Therefore, a request for enrollment as an unclassified student may be denied due to enrollment restrictions.

If an individual is only interested in taking a course offered by the College of Continuing Education and Community Service (CCECS) he should contact the student services of CCECS.

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 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

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 equivalents. Trigonometry is strongly recommended.

Early Admission

Qualified high school students may enroll in University courses. While completing their high school requirements, 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 deadlines for regular University admission also apply to the early admission program. 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 pursue advanced degree work at the University of Hawaii should obtain application forms from departmental offices or from:

Graduate Division Admissions Office
Spalding 352-A
University of Hawaii
2540 Maile Way
Honolulu, Hawaii 96822

Applicants should also write to the appropriate department for a departmental brochure.

The application form for admission to the Graduate Division, the \$10.00 application fee, two copies of official transcripts, test scores (if required in the particular field), and other supporting documents must be post-marked no later than *March 1* for the Fall semester, *September 1* for the Spring semester.

Consult the *Graduate Catalog* and departmental brochures for information regarding advanced degree programs and requirements. The catalog may be obtained by writing to: University of Hawaii Bookstore, 1760 Donaghho Road, Honolulu, Hawaii 96822. The price of the catalog, including postage and handling, is: \$1.25 surface mail and \$2.00 airmail to the U.S. and Canada; \$2.50 to Asia, Africa, Europe and South America; \$1.75 to Central America and the Caribbean.

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. 2). A schedule of courses stating the time and place of meetings for each course is issued by the admissions and records office prior to registration. Each course is described in this catalog under the various college sections. Instructions for registering are included in the schedule of courses and in circulars sent to entering students.

To help the University plan for all new and continuing students, an advance deposit on tuition will be collected. For continuing students, the advance tuition deposit is \$27; for new students, the deposit is \$27 for residents and \$90 for nonresidents. This nonrefundable and nontransferable deposit will be applied to the full tuition at registration.

Undergraduates. Each undergraduate may be assisted by an adviser assigned by his college to help him prepare an academic program which meets the goals he sets for himself. Tuition and fees except for the advanced tuition deposit 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.

Late Registration

A student may register for credit up to and including the day designated as the last day for registration for credit. See Calendar, p. 2, "Last day to register for credit." Similar restrictions apply to the summer session. There is a fee for late registration.

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 who request enrollment in more than 19 credit hours of work in any semester must obtain special approval of the dean of his college or his designate. Students may not register for courses in the College of Continuing Education, for credit or audit, in excess of the maximum registration allowed by the college in which they are enrolled.

Full-time Status. Students must carry a minimum of 12 credits to be considered full-time. Graduate students should consult the *Graduate Catalog*.

Class Attendance. 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.

Variable Credit Courses. Number of credits obtainable in most courses is stated in this catalog and in the schedule of courses. However, certain courses, designated by "v" or "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 (Not Complete Withdrawal)

A. To Add a Course. Courses may be added during the first two weeks following the regular registration period. A form may be obtained from the student services office of the student's college. There is a \$2.00 charge for each form processed.

B. To Drop a Course. Courses may be dropped without grade penalty up to the end of the third week of instruction (*see* Calendar) unless a later date is announced by the instructor. Withdrawal during the first three weeks is not indicated on the student's record. If a student withdraws after the first three weeks of instruction, a grade of *W* will be entered on the student's record if he has the approval of the dean of his college and his instructor. A student may obtain a "drop" form from the student services office of his college. There is a \$2.00 charge for each form processed.

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, CR* (Credit), *NC* (No Credit), or, if applicable, *W* or *I*. An instructor will award an *I* or *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, CR, NC, or W*.

Complete Withdrawal from the University

If a student completely withdraws from the University prior to the end of the third week of instruction, no record of the courses for which he registered is maintained. After that period he may receive a mark of *W* for each of his courses if he has the approval of the dean of the college in which he is registered.

To withdraw from the University, obtain an application for complete withdrawal at the admissions and records office, Bachman 125. Signatures as indicated on the form must be obtained and the completed form turned in to the treasury office, Bachman 110.

Refunds for withdrawals are noted in this catalog under "Tuition and Fees—Refunds". Such refunds as stated are made by the treasury office upon presentation of the completed and signed withdrawal form.

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 left with the dean of the college he wishes to enter. Changes of college, curriculum or major are not permitted during registration periods.

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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 one hour of classroom instruction. Laboratory or field work required in addition to the basic classroom instruction varies and may carry credit for the work (usually two hours in laboratory or field for 1 credit) or it may carry no additional credit. The normal division of time for classroom instruction and preparation is two hours in preparatory work for one hour in the classroom. Thus, a 3-credit course signifies that the class usually meets three hours a week and that the stu-

dent is expected to spend six hours in preparation of assignments.

Grades

Grades given in all courses are *A, B, C, D, F, CR, NC, 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 (see Calendar for specific dates). When the instructor records a grade of *I* on the final grade card, he must also record the grade which will replace the *I* 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 incomplete 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.

Credit-No Credit. The major purpose of the Credit-No Credit Option is to encourage students to broaden their education by venturing into subject areas outside their fields of specialization without hazarding a relatively low grade. Undergraduate students may with approval of their adviser, choose to take up to two courses a semester on a Credit-No Credit basis, provided they are not on academic probation and that the course is not required by the college in the student's "major requirement." The *CR* (credit) designation denotes *D* caliber work or better. 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 credit-no credit basis, but these courses do not count toward the two course maximum, and students on academic probation may take them. No more than 40 credit hours taken on a credit-no credit basis, in addition to the required *CR-NC* courses, may be counted toward the degree. A grade of *CR* (credit) is not computed in the grade-point average; neither is a grade of *NC* (no credit). The credits for a course in which a *CR* is obtained are listed as advanced standing on a student's grade report.

A course in which *CR* is earned 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 *CR-NC* grade.

Graduate students refer to *Graduate Catalog*.

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.

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, NC* or *CR* 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 published in the *Schedule of Courses* and also issued prior to the testing period by the office of admissions and records.

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 East Asian 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 validation test and placement, by regular credit by examination, by special credit by examination, or through the Advanced Placement Program.

Students who have taken the placement test (see above), and who subsequently complete Language 202 or higher, or who demonstrate the Language 202 or higher proficiency on the validation test, will be eligible to receive credits, not only for the course he has passed but, also for the prerequisite to that course, Language 201.

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 degree program which has no requirement) may receive credit for intermediate level foreign language study completed outside the University of Hawaii (up to 8 credits) 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 4 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 4 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.

To obtain credit by the above procedures, a student must make application at the College of Arts and Sciences student services office.

Credit by Examination. Students who wish to obtain credit by examination for basic courses in economics, calculus, general chemistry, psychology, or sociology and English literature should contact the Counseling and Testing Center. The student applies to the center, pays the fee (currently \$15) 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 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 at the end of the first summer session, a committee on 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 readmit-

tance 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 for the 1972 Fall semester from *February 1 to May 1* and for the 1973 Spring semester from *August 15 to November 15* and not later than April 1 for the following 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 student's college. Applications, even though received before the closing deadline, will not be processed once enrollment is filled for the semester for which a student applies.

Other Provisions. 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 Manoa Campus of the University currently offers curricula leading to the Master's degree in 64 areas (including the arts, sciences, fine arts, business administration, education, agriculture, engineering, nursing, public health, library studies, and social work). Doctoral programs leading to the

Ph.D. degree are presented in 34 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 catalog of the Graduate Division.

PROGRAMS LEADING TO THE BACHELOR'S DEGREE

36 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 69 academic fields, plus experimental programs which offer students an opportunity to study with interdisciplinary frameworks or to design their own interdisciplinary field of concentration instead of selecting a departmental 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 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 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 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; two-year certificate in dental hygiene.

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 interests. 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 and expressing his thoughts 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—described 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 six broad areas listed below. 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. A description of the equivalent "core" requirements for the Survival Plus Program is obtainable in the Survival Plus office, in Dean Hall, room 4.

Communications: Each student must show competence in expository writing appropriate for study at an institution of higher learning. The usual means of fulfilling this requirement is to pass any English course in the 100 series or (for foreign students) ESL 100. Any student who already has this competence may demonstrate it—and receive credit for the equivalent courses—by passing examinations offered by these departments.

Quantitative and Logical Reasoning: Ability to apply, understand or appreciate the uses of mathematics, or its philosophical base in logic may be demonstrated by passing any mathematics course at the university

level, or a course in logic, or any basic course in statistics or computers, such as those listed among the options for Arts and Sciences on p. 48, or by passing examinations equivalent to such courses.

World Civilizations: Adequate comprehension of the broad sweep of cultural development may be demonstrated by passing History 151-152, World Civilization, or its counterpart in the Honors Program, 161-162. However, with the concurrence of their academic advisers, students with an adequate understanding of Western civilizations may complete the requirement by passing one or more courses in history of Asia, such as History 241-242 (same as Asian Studies 241-242). *Conversely*, students with a satisfactory comprehension of Eastern civilizations may fulfill the requirement by completing one or more courses in Western history, most appropriately in European history, since American history is in large part derivative of it, or European Languages 161-162.

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 3 semester courses, distributed among 2 or more of the following 3 groups. The following list of courses is provided as a general guide. *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, 201; Religion 150, 151.
- III: (History, Theory of the Arts) Art 101, 270, 280; Asian Studies 241-2, 310; Drama 180, 260; English 320, 331, 335, 351-2, 360, 471-3; History 241-2, 281-2; Linguistics 102; Music 160, 170, 180, 190.

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 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 guide. *Substitutions may be made* upon the approval of the dean of the college in which the student is registered.

- Biochemistry 441; Biology 220; Botany 101, 130, 201, 450; Genetics 351; Microbiology 130, 351; Zoology 101, 450.
- Chemistry 100 and 101, 113 and 115, 114 and 116, 117 and 118 (each combination of lecture and lab is here considered one course); Geography 101; Geology and Geophysics 101, 102; Meteorology 101.
- General Science 121, 122, 123, 124; Information Sciences 301, 302 (not offered in 1972-73).
- Oceanography 201; Physics 100, 102, 110, 111, 151, 152, 170, 272, 274.

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 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 guide. *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; Asian Studies 312; Botany 105; Psychology 100, 110, 112, 320, 321, 322, 430; Sociology 100, 200, or any course at the 300 level except 362.

II: Economics 120, 150, 151; General Engineering 203 (same as IS 203); Geography 102, 151; Political Science 110.

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, at least a semester, and preferably a year, prior to graduation. The student must file a new Degree Application form if the date of graduation should change.

Graduate Credit for Seniors. Seniors at the University of Hawaii may earn credit toward an advanced degree for some courses completed during their last semester as undergraduates provided (1) that the courses taken are in excess of the requirement for the bachelor's degree and (2) that such courses may be used to fulfill requirements in the major field. To obtain such credit requires written approval of the dean of the appropriate undergraduate college and the Graduate Division when registering for the course.

Special Instructional Programs

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, mathematics, philosophy, political science, religion 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 atop 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

(Limited to SSP and Honors students)

- Hon 151-152 Science and Ideas (4-4) I, II**
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 (v) 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** **Weldon**
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 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.

Fifteen courses are administered by the Honors Program but are open to any qualified student.

IS 101 The College Experience Seminars (2) I, II

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 101. student leaders in 401.

IS 133 Man and His City (3) I, II

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.

IS 203 Technology and Society (3) I, II

Takahashi

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 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.

IS 291 Community Service Practicum (3) I, II

Blaylock

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

IS 293 Pre-Education Practicum (3) I, II

Joseph

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

IS 300 Field Study (v) I, II

Pre-arranged systematic investigation in the field of selected topics. Pre: permission of appropriate department chairman and dean.

IS 311-312 Independent Study Tutorial (v) 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 Director and appropriate faculty adviser.

IS 321-322 Seminar in International

Agriculture (1-1) I, II

S. Goto

Continuation of 221-222 with emphasis upon leadership problems.

IS 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.

IS 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.

IS 341 Enfranchising the Consumer (3) I, II

Busch

Systems of reconciliation between profits, as investment determinants, and public needs. Consumer protection devices: taxes, courts, warranties, education, consumer agencies, etc.

IS 351 Determinants of the Status of Women (3) I, II

D. Stein

Biological, cultural and historical determinants; possible social and political consequences of equal status.

IS 397 Legal Status of Women (3) I, II

J. Gething

Institutional and behavioral approach to current legal and political position of women in U.S. Common law, judicial decisions and federal-state legislation affecting women of various socio-economic groups.

IS 398 Pathobiology of Air Pollution (3)

Meteorology, sources and nature of air pollutants; bioeconomics, etiology and symptomatology; factors governing air pollution injury to organisms; resistance to and protection from air pollutants. Public health and demographic aspects. Pre: Biol 220-250. PP4th 411.

IS 401 The College Experience Seminars (4) I, II

Faculty-led seminars for leaders of the 101 groups. May be repeated. Pre: consent of instructor.

IS 433 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; methods, tools and models of different disciplines. Pre: 6 semesters in sciences. (Identical to Ed C1 433.)

IS 461 The Sea and Society (3) II

Craven

Evolution of societies as affected by marine technology, marine law and the geophysical relationship between land and water masses. Current changes, problems and policies involving marine law and technology covered with projections to the future. Pre: senior or graduate standing.

IS 463 Economics of Sea Systems (3) I, II

Davidson

Economic and social uses of coastal zone and ocean. Legal, social, ecological, economic problems. National and state goals; criteria and principles of resource development and use; ocean and coastal zone management systems. Pre: Econ 120 or 151.

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 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 751-752 Interdisciplinary Teamwork (2-2) I, II

Stringfellow

Seminar and supervised participation in interdisciplinary intervention with handicapped children and their families. Pre: consent of instructor.

Survival-Plus Program

Survival-Plus provides a student the opportunity to organize all his undergraduate training around the major socio-ecological crises that threaten extinction of the human race and other living things. The program is ecological in the sense that it examines the complex interactions of man and his environment, where "environment" is interpreted more broadly than is common. Students examine problems inherent in human alienation, war and peace, social and economic inequities, alternative socio-political systems, etc., as well as those of pollution, overpopulation, urban decay, and the depletion of natural resources. The program attempts to provide direction to students interested in answering the question: "How can the human race survive under conditions which might make survival worthwhile?" Emphasis is on both understanding and involvement, and students are encouraged to take an active part in the process of change.

Freshmen and sophomores may develop flexible curricula individually designed to provide a basic introduction to issues of contemporary importance, while ac-

quiring rudimentary tools with which to begin meeting society's problems. The Survival-Plus core courses provide an alternative to the University's general education requirements. Individual and group research projects and field work, under the supervision of a multidisciplinary staff, are available.

Juniors and seniors may choose among several "directional options" leading toward the granting of a *Certificate in Survival*, while pursuing either a major field of study or through the Liberal Studies Program. Active involvement in one of the traditional disciplines is encouraged, with the techniques drawn from these major studies focused on intensive investigation of particular relevant issues. Seminar courses allow students from diversified disciplines to pursue in-depth research of particular interest. Individual advising, seminars, independent and group projects and field work are available.

As the aim of the program is to reach the greatest number of individuals and promote awareness of ecological problems, students from outside the program are encouraged to participate in Sur courses if space is available. This program was introduced as an experimental program in Fall 1970 and is currently being reviewed. For further information visit the Survival-Plus office in Dean Hall, room 4.

Sur 101 Human Alienation (2) I, I, II, II*

Man's feeling of separation; brief introduction to theories, possible sources and forms of measurement. Some social, psychological and political effects.

Sur 102 Pollution and Depletion (2) I, I, II, II*

Origins, kinds and consequences of pollution. Consumption rates and reserves of recurring and nonrecurring resources.

Sur 103 Overpopulation (2) I, I, II, II*

Introduction to the problems of human population density and their relation to racial survival.

Sur 104 Social and Economic Inequity (2) I, I, II, II*

National and international maldistribution of income, space, opportunity, life expectancy. International economic sharing mechanisms; guaranteed income systems. Ethnic and religious discrimination. Gap-bridging devices.

Sur 105 Urban Decay (2) I, I, II, II*

Introduction to political, social, economic and physical problems of the modern city; possible lines of solution.

Sur 106 War and Peace (2) I, I, II, II*

Introduction to social-psychological and personal factors in movements toward war or peace.

Sur 123 Politico-Economics of Survival (3) I, II

Introduction to systems analysis of politico-economic problems on individual, national and international levels.

Sur 135 Living Systems (3) I, II

Pattern and process in biological systems: individual organisms, ecosystems, societies, cultures. Cybernetics and systems theory as ways of rethinking traditional approaches.

Sur 151 Ethics for Survival (3) I, II

Individual responsibility in post-industrial society. Examination of traditional religious ethics as cause of and possible solution to ecological crisis.

Sur 195-196 Independent Project (2-2) I, II

Research- or community-oriented projects of environmental concern. General faculty supervision.

Sur 233 Planning for Survival (3) I, II

Introduction to planning concepts and techniques; emphasis on planning for Hawaii now, on state and local levels. Pre: sophomore standing or consent of instructor.

Sur 295-296 Independent Project (2-2) I, II

Research- or community-oriented projects of environmental concern. General faculty supervision. Pre: sophomore standing.

Sur 299 Agricultural Practice (2) I, II

Agricultural practice on projects at Pearl City instructional facility, on such topics as food production, recycling of wastes, environmental beauty, organic farming, pesticide management, as well as transportation, financing and optimal production of food. May be repeated. (Cross-listed as AG 299.)

Sur 371-372 Seminar/Tutorial in Survival (3-3) Yr.

Advanced seminar in selected environmental topics such as power generation for Hawaii, solid waste disposal, liquid waste disposal, food supply, transportation system, etc. Pre: 102, 3 others of 101-106, prior or concurrent registration in a basic science course (as required in the University core).

Sur 395-396 Independent Project (2-2) I, II

Research- or community-oriented projects of environmental concern. General faculty supervision. Pre: junior standing.

Sur 397 Problems in Ecological Activism (3) I, II

Problems in securing community action on environmental issues will be surveyed from an interdisciplinary approach. Pre: previous or concurrent enrollment in any two courses of 101-106.

Sur 495-496 Independent Project (2-2) I, II

Research- or community-oriented projects of environmental concern. General faculty supervision. Pre: senior standing.

Freshmen Seminar Program

This unique program allows freshmen to learn in small seminars under the guidance of qualified senior students. Each class is limited to eight, so that the student does not sit passively listening to a lecture, but joins in with the seminar members in making the material relevant to his life. Each freshman, therefore, has the opportunity to make learning both enjoyable and valuable.

The seminar leaders, who receive 6 credits for participating, are selected from their respective academic departments according to academic record, faculty recommendations, group experience and interest in teaching. Seniors who may be contemplating a career as educators are provided with first-hand experience in college teaching, under the tutelage of faculty members.

Freshmen are selected on a first-come, first-served basis. In order to participate fully, they are required to enroll in two or three of the six courses offered in the seminar program—English, psychology, anthropology, religion, sociology, and speech. They select the rest of their curricula from the regular University offerings.

Because enrollment is limited, interested freshmen and prospective leaders should contact the program director or the course instructor as far in advance of the beginning of the semester as possible. This program was introduced as an experimental program in Fall 1967 and is currently being reviewed. More information and pre-registration forms are available at Johnson Hall B-7, telephone 944-7141.

*101-106 are half-semester courses, offered twice each semester.

Liberal Studies B.A. Program

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 which leads to a bachelor of arts degree in liberal studies from the College of Arts and Sciences.

The Liberal Studies Program permits a qualified undergraduate to construct his own multi-disciplinary major-equivalent with the advice and consent of the program director 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 director in Sinclair Library. 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, 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.

Hawaiian Studies

The University is unique in the scope it offers to students interested in the Pacific region generally and in Hawaii particularly. A "major" in Hawaiian Studies may be designed within the Liberal Studies Program under the general supervision of a faculty committee which helps the student to achieve some integration in his selection from the wide variety of courses available. Students must achieve competence in the Hawaiian language. Although not designed to meet specific postgraduate needs, the suggested curricula will help prepare students for further study, research or employment in such fields as education, social work, anthropology, Pacific Islands studies, linguistics, the translation of laws and historical documents, or in the tourist industry. For further information, consult the Director of Liberal Studies, or Professor Jack H. Ward of the department of Indo-Pacific languages, Webster Hall, room 311.

Ethnic Studies Program

The variety of its citizens' racial backgrounds makes Hawaii a fertile field for the study of ethnic groups and race relations, and for the exploration of cultural assumptions and ethnic identity. The Ethnic Studies program was under review when this catalog went to press; information is available from the office of the Dean for Student Services, College of Arts and Sciences, Bachman Annex 10.

New College

The New College program was under review when this catalog went to press. More information is available from the office of the Dean of Student Services, College of Arts and Sciences, Bachman Annex 10.

NC 101 The Modern World (v) I

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

NC 102 Gods and Men (v) II

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.

NC 202 The World's Future (V) II

Attempt to predict the future 30 years hence, based on use of various tools of inquiry developed by New College students during their first three semesters. Special attention to technological and scientific factors: computer, genetic codes, ecology. If there is discrepancy between the "what-will-be" and an individual student's version of "what-ought-to-be," the student will be asked to determine how and if the discrepancy can be overcome.

NC 203-204 Second Culture, Introduction to (v) I, II

Multi-disciplinary study of a second culture. Geography, history, literature, art and religion of the culture or subculture in question. Students may also receive intensive language training through intermediate level. Proposed target cultures include: France, Germany, Mexico, Spain, Sweden, India, Indonesia, Japan, U.S.S.R., and U.S. subcultures. Arrangements for a summer's, semester's, or year's living-learning experience in chosen culture or subculture.

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

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

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

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

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

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

NC 399 Directed Work (v) I, II

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

NC 499 Directed Work (v) I, II

Continuation of 399 for seniors.

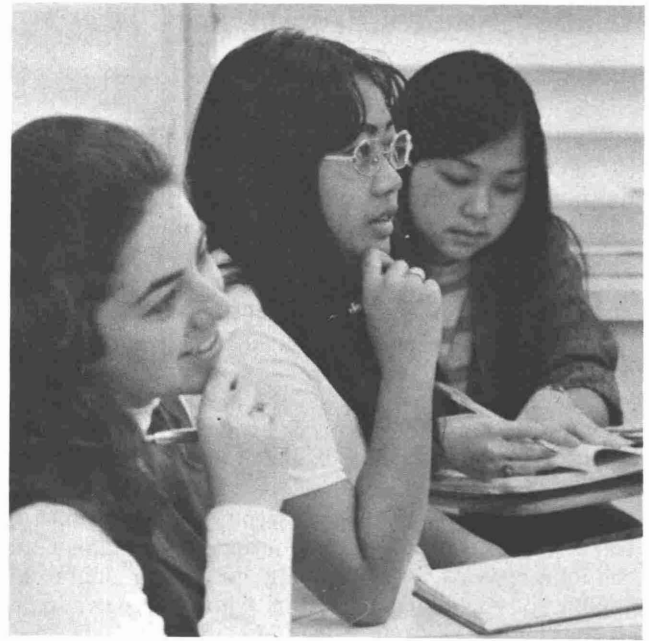
National Student Exchange

The National Student Exchange (NSE) Program was established to provide students with opportunities to become acquainted with social and educational patterns found in different parts of the United States. University of Hawaii students 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 NSE institution.

To be eligible, students must be sophomores or juniors who have a 2.5 cumulative grade-point average at the time of exchange and are in good standing at the University.

Institutions in the NSE are the universities of Montana, Ohio, Alabama, Nevada (Reno), Idaho, Oregon, Massachusetts, Wisconsin (Green Bay), Maine (Fort Kent), South Florida, Illinois State, Montana State, and Portland State. Also included are Towson State College, Morgan State College, and William Patterson College of New Jersey.

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



appropriate college. Academic departments may assume the responsibility of waiving any or all of a foreign *graduate student's* recommended ELI courses. Signed waiver forms must be submitted to the ELI office in Moore Hall, room 570.

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 as waivers apply. Because of their special purposes, 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 Course Work. 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. Such students may be eligible for H.E.L.P. (Hawaii English Language Program); for information write to H.E.L.P., College of Continuing Education and Community Service, University of Hawaii, 2500 Dole Street, Honolulu, Hawaii 96822.

English Language Institute

For ELI course descriptions see "College of Arts & 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 course work. 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 course work 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. *Undergraduate students* may be waived from advanced-level ELI courses (ELI 80, 81, 82, 83) at the discretion of the dean of student services of the

Military Studies Program: ROTC

Military Science (MS)

The Army Reserve Officer Training Program (ROTC) is designed to give male students on campus training and experience in the art of organizing, motivating and leading others. Successful completion of the prescribed training program qualifies the participant for a commission as a second lieutenant in the U.S. Army. Once commissioned, graduates enter active duty, or if selected, may elect to pursue an advanced degree on an educational delay status. Two program options are available to the student at the University of Hawaii, the *four-year* and the *two-year* programs.

The *four-year program* is a voluntary program consisting of training conducted during the freshman through senior years. The first phase of training, the basic course, is administered during the freshman and sophomore years. All physically fit male students are eligible for enrollment. Students who have participated in the Junior Division ROTC program 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 second phase of training, the advanced course, is administered during the junior and senior years and includes a six-week summer camp between the junior and senior years at a mainland military installation. Subsistence pay of \$100 per month is paid to students enrolled in the advanced course. Pay while at summer camp is approximately \$265 per month. 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 director of military science program; (3) successfully complete the first two years (basic) course of a Senior ROTC 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 approximately \$288 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 \$100 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 scholar-

ship. For further information, inquire at the office of the director of military science program.

For course listings, see *Schedule of Courses*.

Aerospace Studies (AS)

Aerospace Studies (AS) is part of the Air Force Reserve Officer Training Corps (AFROTC) program. Its purpose is to prepare college students for managerial and leadership positions as Air Force officers.

Students who volunteer, meet selection criteria, obtain an undergraduate degree, and successfully complete the prescribed courses are commissioned as second lieutenants in the United States Air Force. They will then serve on active duty, or may, in some cases, obtain an educational delay designed to allow advanced university study. Women are eligible for the program and commissions, and the academic courses are open to any student.

The University of Hawaii AFROTC program consists of two academic years. Normally, juniors and seniors are enrolled, however sophomores and graduate students may qualify in certain instances. Applicants receive six weeks training at a mainland Air Force base before entering the program. Once enrolled, students study the development of the Air Force, space operations, and Air Force leadership and management in an academically free student-centered atmosphere. Seniors who qualify medically will receive flight instruction which can qualify them for a private pilot flying certificate.

All cadets accepted in the AFROTC program receive \$100 monthly and are paid while attending the six week mainland training session. Scholarships covering tuition, fees, and a book allowance are also available on a competitive national basis.

Interested students should contact the director of Aerospace Studies early in their freshman year for information.

For course listings, see *Schedule of Courses*.

Population Studies Certificate

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

Population Studies is an interdisciplinary certificate program, involving faculty from several University departments, under the supervision of a Population Studies Committee composed of the program director and the chairmen of the departments of anthropology, economics, geography and sociology. The program is designed primarily for students who are candidates for an advanced degree—M.A., M.S., M.P.H. or Ph.D.—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 various aspects of population study. 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 special reference to the Asian and Pacific area. Special attention is paid to training in techniques of demographic analysis appropriate to deficient or limited data.

Students who successfully complete 15 credits drawn from an approved list of courses, offered by the program and by several departments, and who pass a comprehensive examination, will be eligible to receive a Certificate in Population Studies.

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 396 Varieties of Imperialism (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 403 Marxist Philosophy (3)
 Russian Literature 311-312 Introduction to Russian Literature and Civilization (3-3)
 European Languages 331 19th-C. Russian Novel (3)
 European Languages 332 20th-C. Russian Literature (3)
 Russian 411-412 Literature of the 19th-C. (3-3)
 Russian 413-414 Literature of the 20th-C. (3-3)
 Russian 418 Advanced Composition and Stylistics (3)
 Russian 419 Advanced Reading in the Daily Press (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 John A. White, Committee on Russian Studies, Crawford 310, ext. 8497 (Department of History).

Marine Option Program

A certificate in Marine Studies, signifying the completion of certain requirements in addition to a regular major, is offered for undergraduate students from any academic discipline by the Office of Marine Programs of the University of Hawaii.

The certificate is awarded upon graduation to the student who completes (a) an academic core of 12 credits of work in marine-related courses, consisting of:

1. Oceanography 201 or equivalent
2. One 3-hour marine interdisciplinary course
3. Two 3-hour courses in the student's major field having a marine orientation

and (b) the acquisition of a marine skill, defined as a level of proficiency attained through repetitive exposure to and practice of a specific marine-related technique. No credit is given for the acquisition of a marine skill. An internship fund has been established to aid selected students to acquire a marine skill.

For further information, contact the Director, Marine Option Program, Office of Marine Programs, Spalding Hall, room 255, telephone 944-7331.

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Tutoring and Services to Handicapped

A tutoring service is maintained by the University in its *Kokua* program. This service assists students who need special, but temporary, assistance in a particular subject. Students may be referred to *Kokua* by an academic adviser or by an instructor; self-referrals are also accepted.

Aids to students who have physical impairments are offered by the University, also through *Kokua*. Students who will need special assistance because of physical handicaps should apply as early as possible to this 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.



College of Arts and Sciences

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 (page 28). 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. 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. (See page 35).

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 Education. 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 (p. 37) 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.

These services apply primarily to freshmen and sophomores. When the student has completed 55 credits (junior standing), he selects a major field, at which time his records are transferred to his major department and he is assigned an adviser from that department's faculty. In addition to their departmental adviser, juniors and seniors 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 Programs

Basic Requirements

Students must complete College requirements in written communication (one course from English 100, 110, 120, 130, 140, 150, 160, 170); in quantitative or logical reasoning (one course from Anthropology 400, Economics 321, Philosophy 210, Philosophy 445, Psychology 113, Speech-Communication 406, Mathematics 100 or above, excluding Math 111, BAS 301-302, BAS 351, Educational Psychology 429, Information Sciences 301-302, Agricultural Economics 434, Agricultural Economics 480); and in world civilizations.

The College requirement in written communication is strongly urged for the freshman, since he develops skills here that should aid him in many of his other subjects.

In addition, students must complete a language/culture requirement that specifies at least a first-level proficiency (i.e., through 102 or equivalent) upon entrance to the University followed by:

1. satisfactory completion of second-level (i.e., through 202 or equivalent) study of the same foreign language, or
2. approved study abroad, or
3. two semester courses in the culture of the target language, as approved either by the appropriate language department or by the College.

Area Requirements

Humanities: 6 semester courses, 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. (Creative Endeavor) *Note: most of these courses have limited enrollment.* Art 105, 106, 107, 108; Drama 221-2, 240, 281-2, 283-4, 490; East Asian Languages 141; English 313; Music 123-4, 125-6, 127-8, 129; Speech 231.

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.

American Studies. *Major requirements:* 30 semester hours of upper division courses. *Required courses:* 381-382; 481-482. The remaining 18 semester hours, taken from courses in American studies and allied fields of the humanities and social sciences, will be arranged on an individual basis between each student and the assigned American studies adviser.

Students planning to major in American studies must pass a qualifying examination. Information concerning the examination is available in the departmental office.

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. *B.A. Art History required courses:* Art 101, 12 hours introductory studio and 24 hours art history. *B.A. Studio required courses:* Art 101, 12 hours introductory studio, 12 hours art history, and 12 hours of studio art from the following: ceramics, drawing, painting, printmaking, sculpture, textile design, weaving, or visual design.

Asian Studies. *Major requirements:* 36 semester hours. *Required courses:* 241-242 (same as History 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. *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 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 required.

Chinese. *Major requirements:* (a) *Language Emphasis.* 36 hours above 201-202, including 301-302, 401-402 and 6 hours from a list of approved courses in Chinese literature or civilization. (b) *Literature Emphasis.* 36 hours above 201-202, including Chinese Literature 261-262, 341-342, 441-442, 451, East Asian Literature 491, plus Japanese Literature 261 or 262, Korean Literature 261 or 262 and Chinese 301-302 or 321-322.

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. 37) 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.

Economics. *Major requirements:* 24 semester hours of upper division courses. *Required courses:* 150-151, 300, 301, 321, 340.

English. *Major requirements:* 27 hours of upper-division courses. *Normally required:* 3 hours in Shakespeare; 3 hours of each of five of the following areas: Medieval, Renaissance, Restoration and Eighteenth Century, Romantic and Victorian Periods, Modern Literature, American Literature, Language, Imaginative Writing; 3 additional hours in one of these five chosen areas; 6 additional hours in courses numbered 300-499. *Special major programs:* 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. Such a program must be approved before the beginning of the senior year.

French. *Major requirements:* 30 semester hours, exclusive of 101-102, 201-202. Required are 331 and 332, one of which must be completed as prerequisite to courses numbered 400 and above.

Geography. *Major requirements:* 30 semester hours. *Required courses:* 101, 151, 375, 380, 390, 490, and four additional geography courses at 300 or 400 level of which at least three must be in systematic human or physical geography and at least one from each grouping. *Related courses required:* 9 non-introductory credits in related field(s) approved by the department. In choosing courses under the College area requirements, students are advised to select Anthropology 150 or 200 and Economics 151 under the Social Sciences options, Mathematics 134 and 201 or 205 under the Basic Requirements, 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 301, 302, 303, and 305. 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.

Greek. *Major requirements:* 24 semester hours exclusive of 201-202. *Required courses:* Latin 101-102.

History. *Major requirements:* 28 semester hours of courses over 200. *Required courses:* 496 and at least one course (3 credits) in each field (United States, Pacific and Asia, Europe). Honors program students take 493-494 instead of 496. 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 toward the major.

Japanese. *Major requirements:* (a) *Language Emphasis.* 36 hours above 201-202, including 301-302, 401-402 and 6 hours from a list of approved courses in Japanese literature or civilization. (b) *Literature Emphasis.* 36 hours above 201-202, including Japanese Literature 261-262, 341-342, 441-442, 451, East Asian Literature 491, plus Chinese Literature 261 or 262, Korean Literature 261 or 262 and Japanese 301-302 or 321-322.

Journalism. *Major requirements:* 35 semester hours. *Required courses:* 205, 206, 255, 305, 306, 350; and 15 credits in a discipline of choice.

Latin. *Major requirements:* 24 semester hours exclusive of 201-202. *Required courses:* Greek 101-102; Latin 301-302.

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

Microbiology. *Major requirements:* 24 semester hours. *Required courses:* 351 and three of the following: 431, 441, 451, 461-462, 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, Biology 220-250; Chemistry 133-134 or 351; Mathematics 206; and Physics 151-154 or 170-273.

Music. The degree may be obtained in one of three emphases—ethnomusicology, music literature, or music theory.

Major requirements: 38 semester hours. *Required courses:* 181-182, 183-184, 265-266. For *literature or theory* emphasis, 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 music theory courses in the 480 series, as advised, plus either 464, 470, or 485. 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. For *ethnomusicology* emphasis, 271-272, 273-274, 14 hours of upper division music courses including 470, 471, and 479, and 6 hours in performance activity representing a minimum of 3 cultures. All students tentatively planning to major in music should consult with the chairman of the music department immediately upon entering the University of Hawaii.

Non-major Program (Liberal Studies): see p. 42.

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, 310, 350, 405, 430 or 450, 460, 480-481. The following in mathematics: 205-206, 231, 232, or 402, and Chemistry 113 through 116 or 117-118 are also 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 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.

Psychology. *Major requirements:* 24 semester hours. *Required courses:* The student must select at least one course from four of the following five groups. Group A: 110, 424, 426, 491. Group B: 215, 317, 318. Group C: 214, 320, 401, 430. Group D: 112, 113, 216, 319. Group E: 321, 322, 428, 471. It is strongly recom-

mended that students who are considering applying to graduate schools enroll in 112 and 113.

Religion. *Major requirements:* 24 semester hours. *Required courses:* 200, 201, 482-483, 486.

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

Sociology. *Major requirements:* 25 semester hours. *Required course:* 200.

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:* (a) *Communication Emphasis:* 30 semester hours in Communication courses. *Required:* Communication 200, 201, 384, 406. *Additional requirements:* one of the following: Psychology 322, Sociology 322, Sociology 342, Anthropology 330; and also one of the following: Psychology 430, Educational Psychology 311, Psychology 320. (b) *Speech Emphasis:* 30 semester hours in Sp courses. *Required courses:* 211, 231, 251 or 253, 385, 491. *Additional requirements:* 6 hours in a related field such as anthropology, communication, drama, linguistics, sociology, as approved by major adviser.

Zoology. *Major requirements:* Biology 220; or Zoology 101 and Botany 201 or Botany 101. In addition at least 20 credits including the following: Zoology 430 (or Biology 250); Zoology 490; 3 or more additional zoology courses 200 or above two of which must be laboratory courses. Other courses outside of the zoology department acceptable toward the 20 credits: Genetics 451, 452; Entomology 261, 361, 362, Botany 450 (cross-listed as Zoology 450). *Related required courses:* One year of introductory chemistry (Chemistry 113-116 for students with high school chemistry, or 117-118); one year of organic chemistry, or one semester of organic chemistry and one semester of biochemistry; Mathematics 134.

The beginning student intending to major in zoology should consult a departmental adviser at his earliest convenience. The recommended procedure is to meet prerequisites for and take Biology 220 (see "Biology" for course description) as soon as possible. Alternatively, the student may take Zoology 101 and Botany 201 or Botany 101 without prerequisites and fulfill the chemistry and mathematics requirements later.

Students planning to continue their professional education beyond the B.A. degree should also include a course in genetics, botany, one year of physics, mathematics through calculus, and proficiency in an acceptable foreign language to at least an intermediate level. In addition, a candidate for a master's degree in zoology at the University of Hawaii is required to have taken vertebrate zoology (including comparative anatomy), embryology, and physiology.

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 normally include a maximum of 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 environmental design professions which prepare students to participate at both the professional* and non-professional levels in the decision-making processes that shape our physical environment. Undergraduate majors may be selected from the following programs: pre-architecture, environmental design, interior design, landscape architecture, and urban/regional design.

**Architecture:* Offered at graduate level only.

**Pre-Architecture: Major requirements:* 74 credit hours. *Required courses:* one of 113, 114, 115, or 116; 271; 273; 274; 275; 276; design sequence of 331, 332, 333; 6 credits of 400 and/or equivalent, 301, 302, 303, 311, 312, 321, 322, 341 or 342, 351, 371, 372; Mathematics 205, Physics 151-152.

**Architectural Engineering and Technology:* 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. *Required courses:* 271, 273, 274, 275, 276.

Interior Design: Major requirements: 65 credit hours. *Required courses:* 114; 115; 271; 273; 274; 275; 276; 311; 312; design sequence of 361, 362, 363; 3 credits of 400 and/or equivalent; 371; 471; 476; Art 270; Art 280; FSA 181; FDM 213; HE 255; TIM 334. *Suggested electives:* TIM 301, 331; RE 351; Law 300; Art 475, 476, 483, 385, 491, 495, 496.

Landscape Architecture: Major requirements: 65 credit hours. *Required courses:* 115; 116; 271; 273; 274; 275; 276; 301; 311; 312; design sequence of 351, 352, 353; 6 credits of 400 and/or equivalent; 341; 372; 375; Geography 310; Horticulture 262, 350; RE 300.

**Tropical and Development Studies:* Offered at graduate level only.

**Urban/Regional Design: Major requirements:* 64 credit hours of urban and regional design courses, recommended related courses or approved equivalents. *Required courses:* 271, 273, 274, 275, 276, 341, 342, 343. *Recommended electives:* 400 and/or equivalent.

*See Graduate Catalog for professional and graduate degrees.

Bachelor of Music Degree Programs

Basic Requirements

Completion of College basic requirements in written communication, in quantitative or logical reasoning, and in world civilizations (see p. 48). For students concentrating in voice, French 101-102 and German 101-102 are required.

Distributive Requirements

- A. Humanities: one course from the following:*
 1. English 251, 252, 253, 254, 255, 256; Drama 160; literature courses 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

Composition. Basic theory: 180, 181-182, 183-184, 281-282, 283-284; music history: 265-266; applied music: 5 credits in 135-136, 235-236, 335 and 2 credits in 431, in major performance field; secondary piano: 115-116, 215-216; music literature: 4 credits from 461, 462, 463, 464, 465, 466 or 469; advanced theory: 481-482, 483, 485-486; composition: 487-488, 489-490; conducting: 325-326; instrumental and vocal methods: 12 credits from 151-152, 153, 154, 155, 452, 458; ensembles and organizations: 7 credits from 401, 402, 404, 405, 409; music electives: 6 credits; free electives: 6 credits.

Orchestral Instruments. Basic theory: 180, 181-182, 183-184, 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 piano: 115-116, 215-216; music literature: 4 credits from 461, 462, 463, 464, 465, 466, or 469; advanced theory and composition: 481-482, 485-486, 487; conducting: 325-326; organizations: 8 credits in 405 and 409; ensembles: 6 credits in 401; music electives: 6 credits; free electives: 6 credits.

Piano or Organ. Basic theory: 180, 181-182, 281-282, 183-184, 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 for piano: 2 credits from 131, 231, 123-124; secondary performance for organ: 2 credits in 231(21) and 123-124; music literature: 469, 4 credits in 420(21) for piano, 4 credits in 420(22) for organ, 4 credits from 461, 462, 463, 464, 465, 466, 467, 468, advanced theory: 481 for piano only, 483, 485-486; methods & pedagogy: 358-359 for piano, & 357 & 421 for organ; conducting: 325; keyboard ensembles: 2 credits in 401 (21), one credit in 401(22) for piano, and one credit in 401(23); organizations and other ensembles; 6 credits from 401, 402, 404, 405, 409; music electives 6 credits for piano, 2 credits for organ; free electives: 6 credits for piano, 14 credits for organ.

*This requirement is supplemented by Music 180 and 265-266 required in the music concentration.

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, 467, 468, 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

Completion of College basic requirements in written communication, in quantitative or logical reasoning, and in world civilizations (see p. 48). Also required are Chemistry 114-116 or 117-118; Mathematics 205-206; Physics 170 through 273, or 151-154.

Distributive 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 Biology 220; Biology 250; and approved courses in genetics, physiology, ecology, biochemistry, statistics or computer language, and geosciences. Chemistry 243-246 and Physics 151-154 or Physics 170-275 and Mathematics 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, mathematics or geosciences 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.

Chemistry. *Major requirements:* 37 semester hours, in addition to 114-116 or 117-118; including 133-134, 243-245, 244-246, 333, 351, 352, 353, 422, 444 and a minimum of 6 semester hours from the following: 399, 445, 622, 623, 631, 632, 633, 641, 642, 651, 652, 653, 655 and Biochemistry 601-602.

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

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

Geology and Geophysics. Undergraduate specialization may be in geodesy, geology, geophysics or hydrology, and shall be stipulated at the beginning of the third year. A suitable program of courses, selected with departmental approval can lead from these specializations to future professional work in geochemistry, geodesy, geology, geophysics, hydrology, or oceanography.

Major requirements: 38 semester hours, including 101-102 or the equivalent, from among appropriate offerings in geology and geophysics and in departments of natural sciences, mathematics, and engineering. As related courses, Physics 274-275 are required, except for geology majors, who may substitute GG 360 or 465-466.

Meteorology. *Major requirements:* 38 semester hours from among appropriate offerings in meteorology (courses 300 through 400), and in departments such as engineering, geography, geology and geophysics, information sciences, mathematics, oceanography, physics and soil science.

As related courses, Physics 170-171 and 272-275 are required.

Physics. *Major requirements:* 35 semester hours, including 170-171, 272-273, 274-275, 310-311, 350, 405, 430 or 450, 460, 480-481. The following in mathematics: 205-206, 231, 232, and 402, and Chemistry 113 through 116, or 117-118 are also required. Upon recommendation of a physics department adviser, the requirements 170 through 273 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

It is recommended that entering students who have had high school courses in mathematics through pre-calculus, take the following courses during their freshman year:

Chem 113-116 or 117-118; English Composition; Math 205 and perhaps Physics 151-154 or 170-171.

If the student does not have a high school course equivalent to Mathematics 134 (pre-calculus), he may take this course at the University during a prior summer session. Otherwise Mathematics 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.

The College maintains a Premedical Sciences Committee 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.

Students interested in preveterinary medicine should see "College of Tropical Agriculture."

"Nonmajor"

See "Liberal Studies Program" on page 42.

ARTS AND SCIENCES COURSES

See p. 3 for a discussion of course descriptions.

American Studies (AmSt)

Professors: Brown, Denney, Lutzky, Matson.
Associate Professors: Bertelson, Gurian, McCutcheon, Neil.
Assistant Professors: Helbling, Meyerson, Ogawa.
Instructors: Alcantara, Boylan.

- 201-202 Introduction to American Civilization (3-3) Yr.** Helbling
 Central themes of American life and experience studied in the perspectives of history, literature and the social sciences.
- 295 Culture of the American Indian (3) I or II**
 Examination of the American Indian from a historical and anthropological view.
- 301-302 Man in Society (3-3) Yr.** Neil
 Some basic problems and processes of contemporary society, jointly examined by several social sciences. 301: Man and land in America including European influences. 302: Man and land in Hawaii including European and Asian influences. Pre: sophomore standing or consent of instructor.
- 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.
- 381-382 Junior Seminar (3) Yr.** Boylan
 Materials and methods for the study of American life and thought. Pre: consent of instructor.
- 390 Introduction to Contemporary America (3) I, II** Lutzky
 Survey of people, society, arts and sciences, business and government for foreign students only. Pre: consent of instructor.
- 403 American English: Its History and Development (3) I, II**
 Linguistic, regional, and cultural developments of American English from the Colonial period to the present in literary works. (Cross-listed as English 403.)
- 421 The West in the American Consciousness (3) I, II** McCutcheon
 In-depth exploration of the impact of Western myth and actuality on the American consciousness, with particular emphasis on politics and national character.
- 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, Communistic Utopianism, Anarchism. (Not offered 1972-73.)
- 460 Myths in American Development (3) II** McCutcheon
 Examination of major American myths—success and failure, individualism, equality, progress, concept of wilderness and frontier and the American sense of mission.
- 465 Popular Culture in America (3) I, II** Matson
 Examination of 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) I, II** Neil
 Study of popular attitudes towards arts, travel, fashions, craft and industrial productions, and recreation. Past used to explain present.
- 479-480 Foreign Policy and the American Personality (3-3) Yr.** Meyerson
 Historical factors in American society that have shaped the personalities of individual makers of foreign policy and how these factors continue to influence policy making today.
- 481-482 Senior Seminar (3-3) Yr.**
 Further considerations of and individual research into problems of American life and thought. Pre: consent of instructor.
- 485-486 Contemporary American Civilization (3-3) Yr.** Brown
 Recurrent controversies in public policy: racial discrimination, public order, urban decay, freedom of information and the national economy.
- 490 Special Topics (3) I, II**
 For 1972-73, the following sections will be offered:
 1. Images of Men and Women in American Thought Bertelson
 2. Japanese-Americans Ogawa
 3. Filipino-Americans (Spring 1973) Alcantara
- 495 Black Americans and American National Character (3) 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.
- 497 Blacks in Literature (3) I** Helbling
 The image of the Black in Western consciousness as seen in European and American literature from Shakespeare to Styron.
- 499 Readings in American Studies (v) I, II**
 Directed readings and research for majors in the field.
- 615 Leaders and Movements in American Thought (3) I, II** Brown
 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.
- 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.
- 651 Seminar in the Interaction of Asia and America (3) I, II** Alcantara, Ogawa
 Effect of inter-cultural exchange of ideas, values, and techniques between peoples of Asia and U.S. Pre: consent of instructor.
- 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. 1st semester topic: The Election of 1972.
- 670 Seminar: Comparative Social Structures (3) II** Denney
 Concepts, definitions and classifications developed in the social sciences applied to materials dealing with institutions of sociability and hospitality in the U.S.
- 690 Seminar: Special Topics (v) I, II**
 Seminar on problems of contemporary relevance, e.g., Emerson and the greening of America, Anglo-American cultures, communication and the Japanese-Americans.
- 701-702 Proseminar (3) I, II** Bertelson
 Training in bibliography, research methods and readings in American studies. (For degree candidates only.)

- 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 cultural studies. Pre: consent of instructor.
- 713 American Technology and Society (3) I** **Matson**
Intensive readings concerned with 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.
- 799 Directed Research (v) I, II**
Pre: graduate standing; consent of instructor.
- 800 Thesis Research (v)**

Anthropology (Anth)

Professors: Dewey, Howard, W. Lebra, Lieban, Luomala, Maretzki, Oliver, Solheim.

Associate Professors: Boggs, Finney, Gould, T. Lebra.

Assistant Professors: Agar, Griffin, Hanna, Pietrusewsky, Tuggle, Watson.

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, archaeology 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 archaeology; 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.
- 306 Foundations of Anthropological Method (3) II**
Empirical and logical bases of the social sciences applicable in anthropological inquiry. Pre: 200.
- 310 Human Evolution (3) II**
Human genetics, principles of evolution related to evidence from prehistoric man. Variations in contemporary populations. Pre: 215.
- 320 Archaeological Theory and Interpretation (3) II**
Intensive examination of theory in archaeology with consideration of methods in the field and laboratory and their relation to archaeological interpretation and cultural-historical reconstruction. Pre: 210.
- 330 Social Organization (3) II**
Systematic study of human social institutions; general principles of social interaction formulated from ethnographic data. Pre: 200.
- 340 World Ethnography (3) I**
Comparative study of selected tribal, folk, peasant, urban societies of the world. Pre: 200.
- 350 Oceania (3) I**
Introduction to native cultures of Polynesia, Micronesia, Melanesia, Australia. Pre: 200.
- 355-356 Asia (3-3) Yr.**
Introduction to native cultures of Asia. Emphasis on tribal, folk, and peasant cultures. Pre: 200. 355 is prerequisite for 356.
- 370 Ethnographic Field Techniques (3) II**
Problems and techniques of cultural and social anthropological field work; ethnographic literature and work with informants. Pre: 200.
- 380 Archaeological Field Techniques (3) I**
Archaeological survey and excavations; week-end field trips, mapping, photography, recording. Pre: 210.
- 381 Archaeological Laboratory Techniques (3) II**
Laboratory analysis and evaluation of field data; preservation and restoration of artifacts. Preparation of materials for publication. Pre: 210.
- 384 Human Osteology (3) I**
Descriptive study of the human skeleton, including quantitative and qualitative notion of skeletal morphology, dental observations, determination of age and sex of skeletal remains, palaeopathology, reconstruction of populations, and determination of inter-population differences. Pre: 215 and written consent of instructor.
- 385 Undergraduate Proseminar (3) I, II**
Reporting and discussion of selected problems in current research. (1) Archaeology, (2) ethnography, (3) social anthropology, (4) applied anthropology, (5) psychological anthropology, (6) biological anthropology. Pre: written consent of instructor. May be repeated.
- 399 Directed Reading or Research (v) I, II**
Pre: 2.7 grade-point ratio, or 3.0 grade-point in anthropology, or written consent of instructor.
- 400 Anthropological Statistics (3) I**
Introduction to statistical methods and their use in analysis of anthropological data. Pre: 200, 210, or 215.
- 414 Introduction to Linguistic Anthropology (3) I**
Introduction to the ethnographic study of speech and language. Pre: written consent of instructor. (Same as Linguistics 414.)
- 415 Ecological Anthropology (3) I**
Study of relationship of man with his natural environment, particularly emphasizing role of culture as dynamic component in ecological systems. Pre: 200.
- 416 Economic Anthropology (3) II**
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 1972-73.)
- 417 Political Anthropology (3) I**
Character of political institutions and their development in non-Western and non-industrial societies. Pre: 200.
- 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

Comparative, structural, and functional analysis of supernaturalism, primarily in tribal and folk societies. Anthropological theories of religion and magic. Pre: 200. (Cross-listed as Religion 422.)

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 historical features and social processes of colonialism. Pre: 200.

425 Medical Anthropology (3) I

Study of social and cultural aspects of medicine: the relationship of medicine to the beliefs, social systems, ecological adaptations and cultural changes of human groups.

445 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 480.)

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 1972-73.)

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 anthropological viewpoint. All ethnic and social groups of modern Hawaii 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

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 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 (v) 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. 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, (6) psychological anthropology, (7) biological anthropology. Pre: classified graduate standing and written consent of instructor. May be repeated.

800 Thesis Research (v) I, II

Architecture (Arch)

Professors: Etherington, Terazaki.

Associate Professor: Burgess.

Assistant Professors: Denney, Minerbi, Toth.

Instructors: Brooking, Liu, Rummel, Yanoviak.

Lecturers: Anderson, Haines, Hara, Ishihara, Kapololu, Kosko, R. Lee, R.K.K. Lee, Mark, Morrison, Oda, Palmer, Sidener, Wolbrink, Yamamoto.

Colleagues: Creighton, Mahoney, Merrill, Preuss, Wiederholt.

Completion of required architectural courses numbered 100 to 199 is prerequisite to all courses numbered 200 to 299, except as noted.

The department may retain any student work for departmental use.

An asterisk () indicates professional degree emphasis area—see Graduate Catalog.*

BASIC DESIGN STUDIES

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

Basic Visual Design Courses

101 Introduction to the Visual Arts (3) I, II Etherington, 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

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 or IS 131 (may be taken concurrently). Offered only as CR/NC. (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 CR/NC. (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 CR/NC. (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 CR/NC. (Cross-listed as Art 116.)

*Required Basic Environmental Design Courses***271 World of Environmental Design (3) I, II****Lee**

World-wide survey of man's attitude to the provision of shelter and the environmental setting of his life from prehistoric times to present day.

273 Design Processes (3) I, II (2L, 1Lb)**Hayden**

Introduction to environmental design, theory, methodology, and programming including use of the computer.

274 Communication and Presentation (3) I, II (2L, 1Lb)**Boone**

Basic graphic and written techniques for environmental design communication. Models, structural systems and photography.

275 Introductory Seminar (2) I, II**Palmer**

Study of the professions contributing to the field of environmental design.

276 Basic Environmental Design (3) I, II (3 2-hr Lb) Yanoviak

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.

***ARCHITECTURE**

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

331 Architectural Design "A" (3) I, II (3Lb)**Hara, Oda**

Site planning and the relationship of building forms to existing natural and man-made environments in terms of housing. Studio labs with lectures, assigned projects, sketch problems, as well as student-generated project and weekly seminar on site planning and systems housing. Pre: 274, 276 and consent of instructor and program adviser.

332 Architectural Design "B" (3) I, II (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 student-generated project and weekly seminar on quantitative architectural design. Methodology including programming, industrialization techniques, computer applications and systems theory. Pre: 331 and consent of instructor and program adviser.

333 Architectural Design "C" (3) I, II (3Lb)

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 student-generated project and weekly seminar on psychological, sociological and anthropological determinants of architectural design. Pre: 332 and consent of instructor and program adviser.

371 Principles of Architectural History and Theory (3) I (3L)

Emphasizes knowledge of the theory of architecture in light of architectural history through lectures, slides, and individual projects. Pre: 271, 272 or equivalent.

411 Building and Zoning Codes (3) I, II (2L, 1Lb)**Rummell**

Study of building codes and ordinances as they restrict and define architectural design. Pre: 312 or equivalent.

412 Working Drawings, Estimating and Specifications (3) I, II (2L, 1Lb)**Rummell**

Feasibility and programming studies of construction. Documents for current building construction practices and methods using a team approach on actual project. Pre: 411.

431 Architectural Design "D" (4) I, II (3Lb)

Advanced site planning and building design. Emphasizes 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 of 400 or equivalent.

432 Architectural Design "E" (4) II (3Lb)

Development of design projects 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. Pre: 431 or equivalent.

616 Professional Practice (3) I**Haines**

Ethical and economic problems of professional practice. Pre: consent of instructor.

***ARCHITECTURAL ENGINEERING & TECHNOLOGY**

Adviser, T. David Terazaki, R.E., Grg. Annex B-7

301 Architectural Structures "A" (3) I, II**Hubbard**

Introduction to basic mechanics, force systems, equilibrium, truss systems, frames and arches. (Identical to GE 301) Pre: Math 205.

302 Architectural Structures "B" (3) I, II**Hubbard**

Mechanics of materials. Design of simple beams, columns, and trusses in various materials. (Identical to GE 302) Pre: 301.

303 Architectural Structures "C" (3) I, II

Structural systems for buildings. Relationship of architectural forms to structural functions. Beam diagram method. Floor systems. Restrained beams. Design of reinforced concrete and steel structures and the sizing of structural members. Pre: 302.

311 Construction Materials (3) I (3L)**Rummell**

Properties and uses of construction materials. Reading and interpretation of construction drawings and plans.

312 Basic Drafting and Site Surveying (3) II (3Lb)**Rummell**

Skills and techniques needed to survey and record existing site conditions as well as preparation of drawings and details to describe site design. Pre: 311 or equiv. and concurrent registration in a design studio.

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

Applications of mechanical and electrical engineering in building. Water and supply systems. Fire protection facilities. Plumbing. Environmental comfort and heat transmission. Air conditioning and ventilation. Heating. Lighting and fundamentals and design. Electric distribution system and wiring design. Pre: Phys 151-152.

401 Architectural Structures "D" (4) I

Architectural and structural synthesis. Continuous beams and frames. Design of building structures using ACI and AISC standards. Flat slab construction. Wind load analysis. Commentary on steel structures. Topics of structural behavior and configuration. Pre: 303.

402 Architectural Structures "E" (4) II**Toth**

Basic soil mechanics and foundation design. Retaining walls. Use of prestressing in structural systems. Composite action. Basic plastic analysis and ultimate strength design method. Arches. Commentary on timber and concrete structures. Seismic loading. Characteristics of various structural systems and the effects of structure on architectural design. Computer applications. Pre: 401.

- 413 Construction Technology and Management (3) I (2 3-hr L-Lb)** **Toth**
Construction planning, scheduling, and management. Methods and programming. Material testing and inspection. Exploration of new products and systems.
- 421 Environmental Control (3) II** **Terazaki**
Micro-ecology of environmental components in architectural space. Design process. Physiology and psychology of building environments. Architectural acoustics. Bioclimatic design and heliothermic planning. Application of air conditioning systems in architectural planning. Design for elevators and escalators. Integration of building sciences and systems.
- 601 Architectural Kinetics (4) II**
Synthetic planning towards industrialization. Materials and products. Structural morphology and articulation. Integrated system building. Survey and evaluation of various building systems. Kinetic structures. Large span structures. Maritime architecture. Sky-scrapers and urban mega-structures. Pre: 402.

GENERAL ENVIRONMENTAL DESIGN

Adviser, A. Bruce Etherington, A.I.A., Grg. Annex B-I

Electives

- 374 Introductory Computer Applications (3) I or II (2 3-hr L-Lb)** **Toth**
Basic knowledge of computers. General and potential use in the environmental professions. Flow chart technique. Simple programming.
- 375 Environmental Design with Nature (3) I or II (3L)** **Burgess**
Problems, techniques, and implications of creating a nature-related built environment in man's contemporary urban and suburban settings. Special emphasis on problems of visual pollution. Pre: consent of instructor. For majors and non-majors. (Cross-listed as SS 390.)
- 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 or II** **Staff**
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.
- 471 Environmental Psychology (3) I or II (3L)** **Burgess, Weaver**
Psychological aspects of problems of ecology, environment, and the future. (Cross-listed as Psy 471.) Pre: Psy 100.
- 474 Advanced Computer Applications (3) II** **Toth**
Preparation of software (Programma 101, basic) for the broad field of architectural and urban regional design. Applications of existing software (stree, studel). Development of design tables, charts for office use and publications. Future uses of computers (computer graphics, surveys, quantitative analysis). Pre: 374.
- 476 Architectural Archetypes (3) I or II (3L)** **Burgess**
Studies of primordial architectural imagery expressed in myths, rituals and symbols. Meanings of the entrance, cave, circle, wall, tower, opening, garden, labyrinth, directional light, fire, water, and rites of passage as they are reinforced in the design of architectural form and space. (Offered Spring '73) Pre: consent of instructor.
- 477 Research Seminar (v) I, II** **Staff**
Research methodology for the qualitative development of an optimum environment for man. May be repeated.
- 488 Design Internship (v) I or II**
Internship program providing professional experience working with professional architects, engineers, landscape architects, planners and interior designers on actual projects for community development. Pre: advanced standing and consent of instructor. May be repeated.

- 496 Field Studies (v)** **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.)
- 671 Advanced Environmental Psychology (3) II** **Burgess, Weaver**
Psychological aspects of problems of ecology, environment, and the future. (Cross-listed as Psy 671.) Pre: 471.
- 672 Environmental Design in Hawaii (3) II (3L)**
Seminar on architectural aspects of American life, generally with contemporary emphasis. (Not offered 1972-73.)
- 699 Directed Work (v) I, II** **Staff**
Pre: consent of instructor and program chairman.
- 800 Thesis Research (v) I, II**

INTERIOR DESIGN

Adviser, A. Bruce Etherington, A.I.A., Grg. Annex B-I

- 361 Interior Design "A" (3) I** **Kosko**
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.
- 362 Interior Design "B" (3) II**
Functional interior design in quantitative terms as it relates to single activity interior spaces. Studio labs with lectures, assigned projects on sketch problems, as well as a weekly seminar on quantitative design methodology, including programming, industrialization, computer uses and systems theory. Pre: 361 and interior design faculty recommendation.
- 363 Interior Design "C" (3) I**
Human factors as it relates to interior spaces containing multiple activities. Studio labs with lectures, assigned projects and sketch problems, as well as weekly seminar on psychological, sociological, and anthropological determinants of interior design. Pre: 362 and recommendation of the interior design faculty.

LANDSCAPE ARCHITECTURE

Adviser, Joan Brooking, Grg. Annex C-I

- 351 Elements of Landscape Architecture (3) II**
Survey of principles and theories of landscape architecture.
- 352 Landscape Architecture "B" (3) I** **Kapololu**
Landscape design solutions for public and semi-public institutions. Pre: 351.
- 353 Landscape Architecture "C" (3) II** **Wolbrink**
Landscape architecture, management and modification of private, public and semi-public land. Pre: 351 and 352.

*TROPICAL AND DEVELOPMENT STUDIES

Adviser, A. Bruce Etherington, A.I.A., Grg. Annex B-I

- 321 Architectural Climatology (3) I, II (2L, 1Lb)** **Utzon**
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.
- 621 Seminar on Tropical Architecture (3) I** **Etherington**
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) II** **Etherington**
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.

*** URBAN/REGIONAL DESIGN**

Adviser, Luciano Minerbi, A.A.I.P., Grg. Annex B-6

- 372 Principles of Planning and Land Use (3) II (3L)** **Sidener**
Arrangement and disposition of buildings and exterior spaces to provide appropriate and effective relationships of traffic control, natural features and climate, including relationships between architecture and urban problems. Pre: 271 or equivalent.
- 441 Strategy in Urban & Regional Design (4) II** **Minerbi**
Review of major theoretical contributions of urban and regional design to planning strategies.
- 442 Methods of Urban & Regional Design (4) II** **Minerbi**
Methods for descriptive, predictive, prescriptive, implemental and managerial phases of the development and design of urban and regional patterns.
- 451 Elements of Planning Problems (3) I, II** **Mark**
Introduction of urbanism and planning through study of forces which shape the environment.
- 452 Elements of Planning Process (3) I or II** **Yamamoto**
Planning as decision making process for infra-urban and supra-urban environmental situations. Pre: consent of instructor.
- 453 Elements of Urban & Regional Design (3) I, II (3-hr L-Lb)** **Sidener, Preuss**
Planning structure and function of urban and regional communities in relation to social change and technological innovation. Pre: consent of instructor.
- 641 Urban/Regional Design Studio (4) I or II (4-hr L-Lb)** **Staff**
Application of research methods and techniques involving decision making processes, design and evaluation of alternative future scenarios and sequential patterns of development. Pre: 441, 442 or consent of instructor.
- 645-646 Development Planning I and II (3-3) Yr.**
Interdisciplinary two semester course for students with strong interest in development. Emphasis on development planning at regional level. 1st Semester: regional planning theory and problems within the context of national policy and procedures for planning of regional infrastructure. 2nd Semester: simulation of the behavior of a developing country in terms of decision making process for regional development and control. Use of operation research techniques, quantitative methods and computer applications. (Identical to CE 645-646 and Plan 645-646.)
- 699 Directed Work (v) I, II** **Staff**
Pre: consent of instructor and program chairman.

Art (Art)

Professors: Anderson, Horan, Kimura, Kingrey, Neogy, Norris, Robinson, Stasack, Turnbull.
Associate Professors: Ecke, Kowalke, McVay, Preble.
Assistant Professors: Bushnell, Creekmore, Dunn, Everson, Junkin, Sato, Waite, Wisnosky, Wolfe.
Instructors: Beaver, Davidson, Gilbert, Roster, Scott, Shapiro.

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. Offered only as CR/NC. (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 towards 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 CR/NC. (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 CR/NC. (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 CR/NC. (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 CR/NC. (Cross-listed as Arch 116.)
- 399 Directed Work (v) I, II**
Pre: consent of instructor and chairman.
- 400 Special Projects in Art (v)**
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 (v) I, II**
Not more than 3 credits per semester for a total of 12 credits maximum. Pre: consent of instructor and chairman.
- 800 Thesis Research (v) I, II**

ART HISTORY

- 270 Aspects of European and American Art (3) I, II** **Scott**
Major developments in arts of Europe and America.
- 280 Aspects of Asian Art (3) I, II**
Major developments in arts of Asia.

- 370 Ancient Art (3) I**
Arts of Mediterranean Basin, paleolithic through Egyptian. (Alt. yrs., offered 1972.) Pre: 270.
- 371 Medieval Art (3) II** Scott
Arts of Europe from early Christian era to Renaissance. Pre: 270.
- 373 Classical Art (3) I** Scott
Arts of Greece and Rome. (Alt. yrs., not offered 1972.) Pre: 270.
- 376 Arts of the 19th Century (3) I** Turnbull
Architecture, sculpture and painting of Europe. Pre: 270.
- 384 Art of Japan and Korea (3) I**
Major developments in arts of Japan and Korea. Pre: 280.
- 385 Early Chinese Sculpture (3) I** Ecke
Secular and religious sculpture of China from the prehistoric period to the 10th C.: bronze, jade, stone, wood and clay. Pre: 280.
- 391 Art of South Asia (3) I** Neogy
Characteristics of South Asian art. Cultural and historical contexts. Pre: 280.
- 470 Renaissance Art (3) I** Scott
Architecture, sculpture and painting of Europe during Renaissance. Pre: 270.
- 471 Baroque and Rococo Art (3) II** Turnbull
Architecture, sculpture and painting of Europe in Mannerist, Baroque and Rococo periods. Pre: 270.
- 472 American Art (3) II** Scott
Arts of North America with emphasis on 18th and 19th centuries. Pre: 270.
- 473 Contemporary Art (3) II** Turnbull
Arts of Europe and America. Pre: 270.
- 474 Arts of the 20th Century (3) I** Turnbull
Architecture, sculpture and painting of Europe & America. Pre: 270.
- 475 Arts of the Pacific (3) II**
Stylistic and aesthetic characteristics of indigenous arts of Oceania, including Australia, Indonesia, Micronesia, Melanesia, Polynesia.
- 476 Primitive Art (3) I** Waite
Survey of styles and aesthetic characteristics of arts of pre-literate cultures.
- 477 Primitive Arts of the Pacific Rim (3) II** Waite
Survey and comparative study of aesthetic and stylistic characteristics of prehistoric and tribal arts of areas bordering the Pacific.
- 478 Arts of Melanesia (3) II** Waite
Stylistic and aesthetic characteristics of the arts of New Guinea and Melanesian islands and their relationship to arts of adjoining areas. Pre: consent of chairman and instructor.
- 483 Applied Arts of Japan (3) II**
Architecture, gardens, lacquer, ceramics, textile, metal work. Pre: 280.
- 485 Applied Arts of China (3) I** Ecke
Architecture, furniture, landscaping, ceramics, metal work, lacquer, textiles. Pre: 280.
- 492 Comparative Aspects of Art (3) II** Neogy
Comparisons in modalities of form in art. Methodological concerns: experiential, descriptive, semantic, structural, historical. Pre: 270, 280, or consent of instructor.
- 495 Art of Southeast Asia (3) I** Waite
Examination of sculpture, painting, and architecture of metropolitan civilizations of Vietnam, Cambodia, Laos, Burma, Thailand, Malaysia, and Indonesia. Pre: 280.
- 496 Art and Architectural Field Studies (v)**
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**
Stylistic and aesthetic characteristics of arts of ancient Hawaii, their relationship to arts of Polynesia. Pre: consent of chairman and instructor.
- 677 Tribal Arts of Indonesia and South Asia (3) I** Waite
Stylistic and aesthetic characteristics of tribal arts of India, Southeast Asia and the Indonesian area. Pre: consent of chairman and instructor.
- 685 Early Chinese Painting (3) II** Ecke
From earliest times through Sung dynasty. Pre: 385 or consent of chairman and instructor. (Alt. yrs.; offered 1972-73.)
- 686 Later Chinese Painting (3) II** Ecke
From end of Sung dynasty to present. Pre: 385 or consent of chairman and instructor. (Alt. yrs.; offered 1973-74.)
- 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 Art of South Asia (3) I** Neogy
Antecedents; early characteristics; the Buddha image; development and regional variations; relationship to Hindu art; residual continuation. Pre: consent of chairman and instructor.
- 792 Hindu Art of South Asia (3) II** Neogy
Antecedents; early characteristics; relationship to Buddhist art; continuities and changes; traditional uses of art. Pre: consent of chairman and instructor.

CERAMICS

- 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**
Intermediate wheel throwing and hand building. Operation and care of kilns. Seminars. Pre: 243. May be repeated.
- 341 Advanced Ceramics (3) I, II** McVay
Wheel throwing or hand building. Individual development. Seminars. Pre: 244. May be repeated.
- 342 Glaze Calculations (3) I, II** Beaver
Molecular formulae of glazes; temperature effects. Analysis of quality of glazed clay bodies. Seminars. Pre: 244. May be repeated.
- 646 Ceramics (3) I** McVay
Individual problems in advanced ceramics using hand building techniques. Seminars. Pre: consent of chairman and instructor. May be repeated.
- 647 Ceramics (v) II** McVay
Individual problems in advanced ceramics using potter's wheel. Seminars. Pre: consent of chairman and instructor. May be repeated.
- 648 Ceramic Glazes and Clay Bodies (3) I** Horan
Individual problems in glazes and firing techniques. Seminars. Pre: consent of chairman. May be repeated.
- 649 Ceramics (3) II** Horan
Individual problems in clay bodies and firing techniques. Seminars. Pre: consent of chairman and instructor. May be repeated.

DRAWING

- 213-214 Life Drawing (3) I, II**
Drawing from the model. Pre: 213 is prerequisite to 214. 214 may be repeated.

- 313 Advanced Drawing Studio (3) I, II**
Creative projects in drawing, graphic techniques. Pre: 213 and 214. May be repeated.

GLASS BLOWING

- 401 Glass Blowing (3) I, II** Horan
Forming of glass while in a molten condition using off hand blowing and tooling techniques. Decorative techniques as applied both on the hot workable glass as well as the cooled annealed glass. Pre: 341 or 353 or consent of instructor.
- 402 Glass Blowing (3) I, II** Horan
Continuation of 401. The designing, construction and using of molds to blow glass in, for utilitarian and sculptural objects. Construction of glass furnaces and lehrs.

PAINTING

- 220 Materials and Techniques (3) I, II** Gilbert
Painting studio with emphasis on materials and techniques.
- 223 Painting "A" (3) I, II**
Painting from studio and outdoor subject matter. Elements of pictorial style.
- 224 Painting "B" (3) I, II**
Painting from identifiable sources; emphasis on expression and structure. Oil and related media. Pre: 223.
- 225 Painting "C" (3) II**
Emphasis on water-soluble media, including contemporary developments. Pre: 220.
- 320 Brush Art of the Far East (3) II** Ecke
Studio course in historical development of brush technique in the art of painting and calligraphy in classical tradition. Pre: consent of instructor.
- 323 Advanced Painting (3) I, II**
Development of independent expression with considerable freedom of choice. Seminars. Pre: 224 or 225. May be repeated.
- 624 Painting (3) I, II**
Individual problems in advanced painting. Seminars. Pre: consent of chairman and instructor. May be repeated.

PHOTOGRAPHY

- 207 Photography A (3) I, II** Shapiro
Camera as tool of expression and photography as basic art form. Student required to have own camera.
- 208 Photography B (3) I, II** Shapiro
Development of form in photography. Pre: 207.
- 209 Basic Cinematography (3) I** Shapiro
Introduction to 8 and 16 mm film production. Pre: basic still photography experience. Students supply own cameras.
- 309 Intermediate Cinematography (3) II** Shapiro
Individual projects in film production. Developing a personal language and technique of film. Pre: 207 or equivalent knowledge and 209.
- 407 Advanced Photography (3) I, II** Shapiro
Individual problems in advanced photography. Seminars. Pre: 208. May be repeated.

PRINTMAKING

- 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.

- 216 Printmaking—Lithography (3) I, II** Davidson
Technical controls; development of concepts appropriate to lithography.

- 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** Kowalke
Individual problems in intaglio, relief and planographic processes. Seminars. Pre: consent of chairman and instructor. May be repeated.

SCULPTURE

- 253 Sculpture (3) I, II** Roster, Sato
Study of form and structure, using variety of materials and techniques. Seminars.
- 254 Intermediate Sculpture A (3) I, II** Roster
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** Roster
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** Sato
Individual projects stressing experimentation and subjective approach to form. Seminars. Pre: 254, 255. May be repeated.
- 653 Graduate Sculpture (v) I, II** Sato
Pre: consent of chairman and instructor.

TEXTILE DESIGN

- 230 Textile Design (3) I, II** Everson
Design problems for production of printed fabric utilizing silk screen techniques. Seminars.
- 330 Advanced Textile Design (3) I, II** Everson
Design and execution of printed fabric, utilizing photographic processes and combined techniques of silkscreen printing. Seminars. Pre: 230 (exception: visual design majors). May be repeated.
- 630 Textile Design (3) I, II** Everson
Individual problems in areas of specific interest within textile field. Seminars. Pre: consent of chairman and instructor. May be repeated.

VISUAL DESIGN

- 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** Creekmore
Design and communication. The letter as visual symbol and element in design organization.
- 362 Typography (3) II** Creekmore
Development of letter form in calligraphy and typography. Pre: 361.
- 463-464 Visual Communication (3-3) Yr.** Creekmore
Experimental problems of visual design which communicate creation of new images and symbols. Pre: consent of chairman and instructor.

- 665 Advanced Typography (3) I** Anderson, Kingrey
Individual problems in typography. Seminars. Pre: consent of chairman and instructor. May be repeated.
- 773-774 Visual Design Research (v) Yr.** Anderson, Kingrey
Advanced design and communication. Emphasis on problem-solving incorporating research. Seminars. Pre: consent of chairman and instructor. May be repeated.

WEAVING

- 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** Robinson
Experimentation with techniques and study of pattern drafting. Designing for specific problems. Seminars. Pre: 238.
- 338-339 Advanced Weaving (3-3) Yr.** Robinson
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.** Robinson
Individual problems in advanced weaving. Seminars. Pre: consent of chairman and instructor. May be repeated.

Asian Studies (Asian)

Faculty from the departments of: anthropology, art, drama and theatre, East-Asian languages, East-Asian literature, economics, geography, history, Indo-Pacific languages, linguistics, music, philosophy, political science, religion, sociology.

- 241-242 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.)
- 310 Asian Humanities (3) I**
Inquiries through the colloquium and occasional lectures into Asian works of imagination, faith, and enduring value. Pre: 241-242 or equivalent.
- 312 Contemporary Asian Civilizations: Problems and Topics (3) II**
Examination by means of problems and topics into modern and contemporary experiences of Asian societies. A multidisciplinary approach encompassing the social sciences. Pre: 241-242 or equivalent.
- 499 Directed Reading (v) I, II**
- 601 Contemporary Chinese Studies Seminar (3) I, II**
Readings and research into selected aspects of modern and contemporary China. Research paper required. Pre: Hist 409-410 or equivalent.
- 603 Contemporary Japanese Studies Seminar (3) I, II**
Critical examination and study of selected aspects of modern and contemporary Japan. Research paper required. Pre: Hist 413-414 or equivalent.
- 605 Contemporary Korean Studies Seminar (3) I, II**
Critical examination and study of selected aspects of modern and contemporary Korea. Pre: Hist 418 or equivalent.
- 750 Seminar in Asian Studies (3) I, II**
(1) East Asia I, II. (2) Southeast Asia I, II. (3) South Asia II.
- 799 Directed Research (v) I, II**
Individual problems and research. Pre: consent of instructor.
- 800 Thesis Research (v) I, II**

Biological Sciences

Biology (Biol)

A program offered by the departments of botany, microbiology and zoology.

Professor: Townsley.

Associate Professors: B.Z. Siegel, C.W. Smith.

- 220 Biology (5) I (3L, 2Lb)** Siegel, Smith, 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 (3L, 1Lb)** Siegel
Cell structure and function. Patterns and operation of biological 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.
- 310 Symbiosis (2) I (2L)** Smith
Relationship between organisms in symbiotic association emphasizing physiological and biochemical interactions. Evolution of each symbiotic association discussed in terms of its adaptive significance. Pre: 250.
- 401 Molecular Basis of Cell Function (2) II (2L)** 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.
- 421 Developmental Biology (3) II (3L)** J. Arnold, Staff
Analysis of the development of organisms emphasizing cellular role in organization. Animal and plant systems compared and contrasted. (Cross-listed as Zool 421, Micro 421, Bot 421.) Pre: 220, 250 or equivalent.
- 440 Environmental and Space Biology I (2) I (2L)** 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 243-246; and consent of instructor.
- 499 Biological Problems (v) I, II**
Directed reading and research. Limited to senior majors in biology (B.A. and B.S.) with 2.7 grade-point ratio or 3.0 in biology courses. For seniors whose research interests are not served by Micro 499, Zool 499, or Bot 399. Pre: senior status.

Botany (Bot)

Professors: Baker, Cooil, Doty, Friend, Kefford, Lamoureux, S. Siegel.
Associate Professors: Mueller-Dombois, Putman, C. Smith, Theobald.
Instructor: Gay.
Lecturers: Hirano, Krauss, Nagata.

- 101 General Botany (4) I, II (3L, 1Lb)** 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.

- 130 Plants in the Hawaiian Environment (4) II (3L, 1Lb)** **Theobald**
Introduction to plant communities and species of the Hawaiian Islands and their interactions with man and the Hawaiian environment. Laboratory will stress field observations of the native and introduced flora and the basic principles of identification and classification.
- 160 Identification of Tropical Plants (2) II** **Nagata**
Non-technical course in identification of common plants of tropics. Not open to students who have had 461, not credited for botany major.
- 201 The Plant Kingdom (4) II (2L, 2Lb)** **Siegel, Smith**
Comparative studies of structure and physiology of plants with reference to distribution and classification. Pre: 101 or Biol 220.
- 399 Botanical Problems (v) I, II**
Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in botany. May be repeated.
- 410 Plant Anatomy (3) I (2L, 1Lb)** **Lamoureux**
Structure of vascular plants; origin and differentiation of tissues; relation of structure to function. Pre: 201 or equivalent. Recommended: 470.
- 412 Microtechnique (3) I, II (2L, 1Lb)** **Lamoureux**
Preparation of plant materials for histological and cytological study, photomicrography. Pre: 410 or consent of instructor.
- 421 Developmental Biology (3) II (3L)** **Arnold, Smith**
Analysis of the development of organisms emphasizing the cellular role in organization. Animal and plant systems compared and contrasted. Identical with Biol 421, Micro 421, Zool 421.
- 430 Mycology (3) I (2L, 2Lb)** **Baker**
Morphology, physiology, ecology of fungi; their identification. Pre: 201 or Biol 220 or consent of instructor.
- 436 Medical Mycology (3) II (2L, 2Lb)** **Baker**
Diagnostic morphology and physiology of fungi pathogenic to man. Pre: 430 or Micro 351, or consent of instructor. (Alt. yrs.; offered 1972-73.)
- 450 Natural History of the Hawaiian Islands (2) II (2L-Lb)** **Kay, 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. Identical with Zool 450.
- 453 Physiological Ecology (4) I (2L, 2Lb)** **Friend, Mueller-Dombois**
Influence of natural environments on plant behavior (autecology). A field oriented course designed to complement 454, Vegetation Ecology. Recommended that 453 precede 454. Pre: 201 or Biol 220.
- 454 Vegetation Ecology (4) II (2L, 2Lb)** **Mueller-Dombois**
Analysis and synthesis of plant communities and ecosystems (synecology). Field trips to develop local examples. Integrated with 453, Physiological Ecology. Pre: 201 or Biol 220. Recommended: 453.
- 461 Systematics of Vascular Plants (4) I (2L, 2Lb)** **Theobald**
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 (3L, 1Lb)** **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 (1L, 2Lb)** **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** **Theobald**
Study and discussion of significant topics and problems in botany.
- 612 Advanced Botanical Problems (v) 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) II (2L, 1Lb)** **Sagawa**
Structure and function of cell components. Pre: Biol 250 or equivalent or consent of instructor.
- 619 Seminar in Biology Teaching (1) I, II** **Staff**
Consideration of effective teaching methods, including organization of courses, preparation of lectures, development of laboratory exercises, development and evaluation of examinations. Open to doctoral candidates in the biological sciences.
- 620 Origin, Evolution and Distribution of Flowering Plants (4) I (3L, 1Lb)** **Staff**
Survey of evolutionary history of flowering plants and significance of their geographic distribution. Pre: 201 or Biol 220 or equivalent and consent of instructor. Recommended: 410, 461.
- 631 Marine Phytoplankton (3) I (2L, 1Lb)** **Staff**
Identification, systematic morphology, autecology, distribution and abundance. Pre: graduate standing or permission of instructor.
- 637 Physiology of Fungi (4) II (2L, 2Lb)** **Baker, Patil**
Comprehensive investigations of fungal physiology based on lectures, discussions, and individual laboratory projects, covering metabolic processes related to growth and reproduction of fungi. Pre: 430 or Micro 431 or AgBio 402-403 or consent of instructor. (Identical with PPath 637.)
- 640 Environmental and Space Biology II (v) 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 Ecology Seminar (1) II** **Mueller-Dombois**
Literature reviews of concepts and methods in physiological and vegetation ecology. Pre: graduate standing, or well-prepared undergraduates with consent of instructor. May be repeated.
- 651 Dynamics of Marine Productivity (3) II (2L, 1Lb)** **Staff**
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 (2L, 2Lb)** **Theobald**
Principles of plant speciation and biosystematics with emphasis on modern techniques for gathering data. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 665 Nomenclature Seminar (2) II** **Doty**
Code of botanical nomenclature and its application, determination of correct scientific names. Pre: 461. (Alt. yrs.; not offered 1972-73.)
- 670 Plant Nutrition and Water Relations (3) I (3L)** **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 (3L)** **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 1972-73.)
- 672 Techniques in Physiology (2) I (2Lb)** **Putman**
Nutrient absorption and composition; osmotic relations. Pre: 470, Chem 244, Phys 161, consent of instructor.
- 673 Techniques in Physiology-Biochemistry (2) II (2Lb)** **Putman**
Determining substances of physiological significance in plant materials. Pre: 672, consent of instructor.
- 675 Physiology Seminar (1) I, II** **Friend**
Significant topics and problems in physiology. May be repeated. Pre: consent of instructor.
- 681 Phycology—Chlorophyta (2) I (2Lb)** **Doty**
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)

- 682 Phycology—Phytoplankton (2) II (2Lb)** Doty
Systematics, functions and utilization considered at advanced level.
Pre: consent of instructor. (Alt. yrs.; offered 1972-73.)
- 683 Phycology—Myxophyta and Phaeophyta (2) I (2Lb)** Doty
Systematics, functions and utilization considered at advanced level.
Pre: consent of instructor. (Alt. yrs.; offered 1972-73.)
- 684 Phycology—Rhodophyta (2) II (2Lb)** Doty
Systematics, functions and utilization considered at advanced level.
Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 699 Directed Research (v) I, II**
Pre: candidacy for M.S. degree; consent of instructor.
- 799 Directed Research (v) I, II**
Pre: candidacy for Ph.D. degree; consent of instructor.
- 800 Thesis Research (v) I, II**

Microbiology (Micro)

Professors: Benedict, Berger, Contois, Folsome, Gundersen, Herzberg, Loh.

Associate Professors: Allen, Hall, Siegel.

Assistant Professors: Adams, Baumann.

- 130 General Microbiology (3) I, II** Benedict, Berger, Gundersen, Hall, Herzberg
Fundamentals of microbiology. The role of microorganisms and how they affect man and his possessions. Discussion groups optional. Not open to those who have credit in 351. Multiple sections, each with a different emphasis, as follows: (1) Survey of microbiology with emphasis on broad aspects of biochemistry, genetics, physiology, exobiology and origin of life. (2) Medical and public health aspects, bacterial and viral diseases, epidemiology. (3) Ecology with emphasis on the microbiology of soils and water; environment and pollution; industrial microbiology.
- 140 Microbiology Laboratory (1) I, II (1Lb)** Hall
Primarily for students in nursing and dental hygiene. Pre: credit or registration in 130; Chem 113-115.
- 351 Prokaryotic Biology (4) I, II (3L, 2Lb)** Adams
Study of bacteria: their anatomy, chemistry, physiology and development, their roles in natural processes. Pre: Biol 220, Chem 241-242 or 244; or consent of instructor; Math 205 desirable.
- 397 Microbial Physiology (3) II (3L)** Staff
Metabolic and physiological diversity among the microorganisms. Energy-yielding mechanisms, patterns of cell regulation, special cellular functions and activities; the effect of the environment on growth processes. Designed to meet a "physiology" requirement of the biology major. Pre: Biol 250 and I sem. biochemistry. Not open to microbiology majors.
- 421 Developmental Biology (3) II (3L)** J. Arnold, Staff
Analysis of the development of organisms emphasizing the cellular role in organization. Animal and plant systems are compared and contrasted. Pre: Biol 250 and one yr. organic chemistry.
- 431 Microbial Biochemistry and Function (4) I (3L, 2Lb)** 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.
- 441 Ultrastructure of Microorganisms (3) I (3L)** Allen
Cellular structures, both common and specialized, of the lower eucaryotes and procaryotes; correlating macromolecular structure with cell functions. Pre: Biol 250 and Chem 243-244 or consent of instructor.
- 451 Biology of Bacteria (4) II (3L, 3Lb)** 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 desirable.

- 461 Immunology (3) I (3L)** Benedict
Structure and biological actions of antigens and antibodies; fundamentals of antibody production. Pre: 351, Math 205; concurrent registration in 462 or consent of instructor; Biochem 441 or Ag-Biol 402 desirable.
- 462 Immunology Laboratory (1) I (2Lb)** Benedict
Basic exercises and experiments in immunology, immunochemistry, and immunobiology to illustrate principles of 461. Pre: 351, Math 205; concurrent registration in 461 or consent of instructor; Biochem 441 or AgBio 402 desirable.
- 463 Microbiology of the Pathogens (4) II (3L, 2Lb)** Herzberg
Host-parasite relationships in microbial diseases of man and animals. Characteristics of bacterial pathogens. Basic techniques of isolation, identification, diagnosis. Pre: 351, 461, 462.
- 475 Microbial Genetics (4) I (2L, 2Lb)** Folsome
Genetic analysis and molecular basis of transmission, replication, mutation, segregation, expression of heritable characteristics in procaryotes and unicellular eucaryotes. Pre: 351, consent of instructor; Math 206.
- 480 Microbial Ecology (4) I (2L, 2Lb)** Gundersen
Interactions between microorganisms and between microorganisms and other organisms in nature. Pre: 351 or consent of instructor.
- 490 Virology (4) II (2L, 2Lb)** Loh
Basic concepts of animal virology involving comparative consideration of physical, chemical, and biological properties of representative animal viruses. Laboratory: emphasis on the use of animal tissue culture systems. Pre: 351, 461; Bioch 441; or consent of instructor.
- 499 Microbiological Problems (v) 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 (3L)** 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 1973-74.)
- 632 Advanced Microbial Physiology (3) II (3L)** Berger
Selected topics. Pre: 431 or consent of instructor. (Alt. yrs.; offered 1974-75.)
- 642 Marine Microbiology (3) II (3L)** Gundersen
Microbial activities in sea; ecology and physiology of marine microorganisms. Pre: 480; Ocean 620 or 623; or consent of instructor. (Alt. yrs.; offered 1973-74.)
- 655 Virology (3) I (3L)** Loh
Detailed reports and discussions on selected advanced topics and current research literature in virology. Pre: 463, 490; Bioch 441 or 601; and consent of instructor. (Alt. yrs.; offered 1974-75.)
- 665 Electron Microscopy (2) II (2Lb)** Allen
Introduction to use of electron microscope and preparative techniques. Pre: 441 and consent of instructor.
- 671 Microbial Genetics (3) II (3L)** Folsome
Directed study and discussion of research literature dealing with bacterial and bacterial virus mutation, genetic recombination, evolution and control mechanisms. Pre: 475; Bioch 601; and consent of instructor. (Alt. yrs., offered 1973-74.)
- 675 Exobiology (3) II (3L)** Folsome
Advanced introduction to literature dealing with detection of extraterrestrial life, basic organic chemistry pertinent to origin-of-life problem, and the construction of exotic ecological systems. Pre: Chem 351, Biol 440. (Alt. yrs.; offered 1974-75.)
- 681 Host-Parasite Relationships (3) I (3L)** 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 1973-74.)

- 690 Seminar (1) I, II** **Folsome, Baumann**
Significant topics in microbiology. Required of graduate students. May be repeated.
- 699 Directed Research (v) I, II** **Staff**
Selected problems in microbiology. Pre: consent of instructor.
- 795 Special Topics in Microbiology (v) I, II**
Selected topics in any aspect of microbiology. May be repeated.
- 800 Thesis Research (v)** **Staff**

Zoology (Zool)

Senior Professor: Tester.

Professors: Banner, Bardach, Berger, Kamemoto, Maciolek, Reese, Townsley, van Weel.

Associate Professor: Reed.

Assistant Professors: Bailey-Brock, Hadfield, Haley, Kinzie, Losey, Popper, Stevens, Stimson.

- 101 Principles of Zoology (4) I, II (3L, 1Lb)** **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.
- 306 Ethology (2) II (2L)** **Losey, Popper, Reese**
Introduction to the study of animal behavior with emphasis on ethological concepts. Behavioral physiology, development and ecology are discussed. Lecture may be taken without lab.
- 307 Ethology Lab (1) II (1 3hr-Lb)** **Losey, Popper, Reese**
Demonstration of basic concepts in animal behavior presented in lecture portion, 306. Pre: concurrent registration in 306.
- 310 Invertebrate Zoology (3) I, II (2L, 1Lb)** **Banner, Bailey**
Morphology, evolution, systematics, ecology, life history of invertebrate phyla. Pre: 101 or Biol 220.
- 320 Vertebrate Zoology (4) I, II (2L, 2Lb)** **Popper**
Classification, evolution, and comparative functional anatomy of vertebrates. Pre: concurrent registration or completion of 101 or Biol 220.
- 330 Principles of Ecology (2) I, II** **Kinzie, Reese, Stimson**
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 (2L, 2Lb)**
Parasitology with reference to man and domestic animals; classification, comparative morphology, life history, control.
- 411 Zoology of the Lower Invertebrates (4) I**
Pre: Biol 220 or Zool 101 and 1 year of general chemistry (Chem 113-114.)
- 412 Zoology of the Higher Invertebrates (4) II**
Pre: Biol 220 or Zool 101 and 1 year of general chemistry (Chem 113-114.)
- 416 Histology (3) I (2L, 2Lb)** **van Weel**
Studies of tissues, principles of histology, and microscopic anatomy of a limited number of vertebrates. Pre: 320 or completion or concurrent registration in 420.
- 417 Microtechnique (3) I (2L-Lb)** **van Weel**
Fixing, staining, mounting of tissues, entire animals and organs.
- 420 Embryology (4) I, II (3L, 1Lb)** **Haley**
Analysis of developmental phenomena in animals. Pre: Biol 220.
- 421 Developmental Biology (3) II (3L)**
Analysis of development of organisms emphasizing the cellular role in organization. Animal and plant systems compared and contrasted. Pre: one year of organic chemistry and Biol 250. (Cross-listed as Biol 421 and Micro 421.)
- 430 Animal Physiology (4) I (2L, 2Lb)** **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.
- 439 Animal Ecology (3) II**
Pre: Biol 220 or Zool 101 and 1 semester calculus.
- 440 Laboratory in Animal Ecology (1) II**
Pre: credit or concurrent enrollment in 439.
- 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 (2L-Lb)** **Kay, 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 (2L, 1Lb)** **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** **Losey**
Anatomy, physiology, ecology, distribution. Pre: 101 or Biol 220.
- 470 Limnology (3) II (2L-Lb)** **Maciolek**
Biology, physics, chemistry of lakes, streams, estuaries, including field and laboratory techniques. Pre: 310, 330, or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 480 Animal Evolution (3) 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.
- 499 Directed Reading or Research (v) I, II** **Staff**
Limited to senior majors with 2.7 grade-point ratio or 3.0 grade-point ratio in zoology.
- 604 Comparative Endocrinology (3) II (3L)** **Kamemoto**
Biology of hormonal mechanisms, with emphasis on invertebrates and lower vertebrates. Pre: 435 or consent of instructor.
- 605 Comparative Endocrinology Laboratory (1) II (3Lb)** **Kamemoto**
Laboratory in biology of hormonal mechanisms, with emphasis on invertebrates and lower vertebrates. Pre: concurrent registration in 604.
- 606 Principles of Animal Behavior (2) I (2L)** **Losey, Popper, Reese**
Basic concepts and theories of animal behavior. Methods and ideas of various schools of thought are emphasized. Lecture may be taken without lab. Pre: graduate standing.
- 607 Principles of Animal Behavior Laboratory (1) I (1 3hr-Lb)** **Losey, Popper, Reese**
Lab will demonstrate basic concepts and theories of animal behavior as covered in lecture, 606. Pre: concurrent registration in 606.
- 608 Growth and Form (4) II (2L, 2Lb)** **Haley**
Analysis of normal growth patterns. Regulating mechanisms of normal growth, differentiation and influence of environmental factors.
- 609 Biology of Symbiosis (3) II (2L, 1 3-hr 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.
- 610 Topics in Developmental Biology (v) I, II** **Staff**
Discussion and survey of literature pertaining to specific topics in developmental biology.

- 619 Seminar in Teaching (1) I, II**
Consideration of effective teaching methods, including organization of courses, preparation of lectures, development of laboratory exercises, development and evaluation of examinations. Open to doctoral candidates in the biological sciences. (Same as Bot 619.)
- 620 Marine Ecology (3) II (2L, 2Lb)** Kinzie
Principles of ecology 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 (2L, 1Lb)** Townsley
Chemical and physical features of radioactive isotopes used in biological work. Methods of detection; application to biological systems.
- 631 Biometry (3) I (2L-Lb)** Tester
Elementary statistical methods; confidence interval, chi-square, t-test, normal distributions, regression, correlation. Pre: Math 134.
- 632 Advanced Biometry (3) II (2L-Lb)** Tester
Analysis of variance and covariance, curvilinear regression, multiple correlation, design of experiments. Pre: 631.
- 646 Comparative Invertebrate Physiology (3) II (2L-Lb)** van Weel
Life processes, with emphasis on marine invertebrates.
- 666 Advanced Ichthyology (3) II** Staff
Classification with reference to Hawaiian species. Pre: 465.
- 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 (v) 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 (v) 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 (2L, 2Lb)** 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 physiological ecology, electrophysiology, or neurophysiology. Basic concepts and measurements of function at the organismic or cellular level in animals.

Chemistry (Chem)

Professors: Inskip, Naughton, Pecsok, Scheuer, Zeitlin.

Associate Professors: Andermann, Gilje, Hubbard, Ihrig, Kiefer, Larson, Liu, Mann, McDonald, Moore, Schaleger, Waugh.

Assistant Professors: Bopp, Buddemeier, Cramer, Fadley, Muenow, Seff.

- 100 Chemistry and Man (3) II (3L)**
Non-mathematical introduction to chemistry. Basic concepts and their relationship to the modern world. Not open to those with previous college chemistry.
- 101 Chemistry and Man Laboratory (1) II (1 Lb)**
Experiments in everyday chemistry. Pre: credit or registration in 100.
- 113-114 General Chemistry (3-3) Yr. (3L)**
Fundamental laws, principles, methods. Pre: high school algebra and plane geometry.
- 115 General Chemistry Laboratory (1) I, II (1Lb)**
Experiments illustrating fundamental principles of chemistry. Pre: credit or registration in 113.
- 116 General Chemistry Laboratory (1) II (1Lb)**
Continuation of 115. Pre: 115, credit or registration in 114.
- 117 Principles of Chemistry (4) I, II (4L)**
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 (1Lb)**
Principles, techniques, elementary analytical methods. Pre: credit or registration in 117.
- 133 Elementary Quantitative Analysis (2) I, II (2L)**
Beginning gravimetric and volumetric analysis. Pre: 114, 116 or 117, 118.
- 134 Elementary Quantitative Analysis Laboratory (2) I, II (2Lb)**
Gravimetric and volumetric analysis. Pre: credit or registration in 133.
- 241 Survey of Organic Chemistry (3) I (3L)**
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) I (1Lb)**
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. (3L)**
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)**
Techniques of organic chemistry. Synthesis and qualitative analysis. Applications of spectroscopy. Chromatography. Pre: credit or registration in 243.
- 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 (2L, 2Lb)**
Introductory instrumental analysis. Pre: 134, credit or registration in 351.
- 351-352 Physical Chemistry (3-3) Yr. (3L)**
Principles and theories; physico-chemical procedures. Pre: 114, 116 or 117, 118, Math 206, Phys 272-273.
- 353 Physico-Chemical Measurements (2) II (2 Lb)**
Modern laboratory techniques. Pre: 333, GE 251 or GE 253, credit or registration in 352.
- 399 Directed Reading or Research (v) 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 (2L, 2Lb)**
Identification and characterization of organic compounds and mixtures. Pre: 134, 246, credit or registration in 351.
- 445 Intermediate Organic Chemistry (3) II (3L)**
Modern synthetic methods. Pre: 244.
- 622 Advanced Inorganic Chemistry I (3) II**
Mechanisms of various dynamic processes occurring in inorganic compounds are discussed using examples drawn from the current literature. Pre: 352, 422.
- 623 Advanced Inorganic Chemistry II (3) I**
Group theory and symmetry, molecular orbital calculations, molecular vibrations, ligand field theory. Pre: 352, 422.

- 631 Instrumental Methods of Analysis (3) I (2L, 1Lb)**
Theory, instrumentation, applications. Pre: 333.
- 632 Electroanalytical Chemistry (3) II**
Advanced electroanalytical determinations, theory, instrumentation. Pre: 333.
- 633 Introduction to Spectroscopy (3) II**
Spectrochemical determinations, theory, instrumentation. Pre: 631.
- 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.
- 653 Introductory Quantum Chemistry (3) II**
Principles of quantum mechanics with application to atoms and molecules. Molecular quantum mechanical descriptions of the chemical bond. Pre: 352.
- 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 (v) I, II**
Theory and application of modern inorganic chemistry. Pre: consent of instructor. May be repeated.
- 731-732 Special Topics in Analytical Chemistry (v) I, II**
Theory and application of modern analytical chemistry. Pre: consent of instructor. May be repeated.
- 741-742 Special Topics of Organic Chemistry (v) I, II**
Theory and application of modern organic 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 (v) 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 bonds. 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 (3L)**
Crystal symmetry. Elementary x-ray physics. Diffraction theory and its application to crystal and molecular structure determination. Pre: Math 232 or equivalent.
- 761-762 Special Topics in Environmental Chemistry (v) I, II**
Interrelation of chemical theory, concepts and techniques with environmental problems and systems. May be repeated. Pre: consent of instructor.
- 799 Directed Research (v) I, II**
Pre: consent of department chairman. May be repeated.
- 800 Directed Research (v) I, II**
Pre: candidacy for M.S. or Ph.D. degree; consent of thesis chairman.

Drama and Theatre (Drama)

Professors: Brandon, Dukore, Langhans, Trapido.
Associate Professors: Knapp, R. Mason, Wolz.
Assistant Professors: Cannon, Carroll, Finney, T. Miller, Sasa.
Instructor: Boyd.

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.
- 180 Introduction to Dance (3) I, II**
Study of basic theory of human movement and the phenomenon of dance in the West.
- 221-222 Beginning Acting (3-3) Yr.** Cannon
Individual exercises and group rehearsals with emphasis on voice, movement, relaxation. Students must perform in direction class scenes. 221 is prerequisite to 222.
- 240 Basic Stagecraft and Stage Lighting (3) II** Trapido
Introduction to theory and practice of stagecraft and lighting.
- 260 Dramatic Production (3) I** Trapido
Introduction to process of converting the play into the performance.
- 281-282 Beginning Modern Dance (3-3) Yr.**
Introduction to basic technical skills and creative processes.
- 283-284 Beginning Ballet (3-3) Yr.** Sasa
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.** Knapp
Emphasis upon individual work in characterization and improvisation. Students must perform in direction class scenes and must be available to perform in at least one major production each semester. Pre: 221-222 or consent of instructor.
- 330 Direction (3) I** Cannon
Readings, reports, discussion of theory and practice of stage direction.
- 340 Advanced Stagecraft (3) I** Boyd
Principles applied, techniques employed, in contemporary staging.
- 353-354 Design in the Theatre (3-3) Yr.** Mason
Principles of design as related to scenery, costume, lighting for the stage. 353 is prerequisite to 354.
- 356 Costume for the Stage (3) I** Finney
Survey of historical costume, with special emphasis on translation of historical styles into theatrical form.
- 370 Creative Dramatics (3) I, II** Miller
Intensive study of dramatic activities for children and young people. Designed for teachers, group workers, recreation majors, others dealing with children. May be repeated.
- 372 Drama in Performance (3) II** Carroll
Study of plays as scripts for performance.
- 380 Creative Movement for Children (3) I, II**
Study of techniques for teaching children to move, with emphasis on creative exploration.
- 381-382 Intermediate Modern Dance (3-3) Yr.** Wolz
Development of flexibility, control, rhythm, and expressiveness. Pre: 281-282 or consent of instructor.
- 383-384 Intermediate Ballet (3-3) Yr.** Sasa
Training in standard ballet combinations. Pre: 283-284 or consent of instructor.

- 387-388 Dance Composition (3-3) Yr.** **Wolz**
Study of techniques and materials used in composing dances. Pre: 382 or consent of instructor.
- 410 Theatre Management (3) II**
Business organization, management, public relations as practiced in professional, university, community, secondary school theatres.
- 421-422 Advanced Acting (3-3) Yr.** **Knapp**
Intensive work on technique; introduction to historical styles. Students must perform in direction class scenes and must be available to perform in at least one major production each semester. Pre: 321-322 or consent of instructor.
- 440 Advanced Stage Lighting (3) II** **Boyd**
Tools and techniques of lighting; emphasis on design process.
- 461-462 History of the Theatre (3-3) Yr.** **Langhans**
Survey of development of the theatre from ancient times to present.
- 464 Oriental Drama and Theatre: India and Southeast Asia (3) I** **Brandon**
Principal forms of drama in India and Southeast Asia and manner of production in the theatre. Pre: consent of instructor.
- 465 Oriental Drama and Theatre: China and Japan (3) I** **Brandon**
Principal forms of drama in China and Japan and manner of production in the theatre. Pre: consent of instructor.
- 468 Dance History (3) I** **Wolz**
Survey of styles of dance in the West from ancient times to 20th century.
- 470 Advanced Creative Dramatics (3) II** **Miller**
Intensive study of the literature, philosophy, and technique. Supervised field activities with children. Pre: 370 and consent of instructor.
- 474 Children's Theatre (3) I, II** **Miller**
Theories and principles of formal theatre for children. Study of selection, direction, production of plays. Pre: 240 and 260.
- 476 Puppetry (3) I, II** **Miller**
Survey of history and scope of puppetry. Construction and presentation of puppets for adult and child audiences. May be repeated.
- 480 Dance Workshop (v) I, II** **Sasa**
Preparation of standard and new works for performance. May be repeated. Pre: 384 or consent of instructor.
- 481-482 Advanced Modern Dance (3-3) Yr.** **Wolz**
Emphasis upon performance of complete dances. Pre: 381-382 or consent of instructor. May be repeated.
- 483-484 Advanced Ballet (3-3) Yr.** **Sasa**
Emphasis upon performance of complete dances. Pre: 383-384 or consent of instructor. May be repeated.
- 490 Playwriting (3) I** **Carroll**
One-act plays; practice in writing in dramatic form; possibility of production. May be repeated. Pre: 3.0 grade-point in English composition.
- 492 Advanced Playwriting (3) II** **Carroll**
Full-length plays and experimental writing in dramatic form. Pre: 490 or equivalent.
- 499 Directed Work (v) I, II**
Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in drama and theatre.
- 610 Seminar in Theatre Research (3) I** **Langhans**
Bibliography and research methods; fundamentals of thesis and dissertation writing. Required of all Master's candidates.
- 620 Advanced Acting Techniques (3) II** **Knapp**
Individual and group exercises in stage movement and line reading. Research and reports on styles of acting. May be repeated.
- 631-632 Seminar in Direction (3-3) Yr.** **Knapp**
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 (v) 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**
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**
Consideration of the theatre as an art form.
- 799 Directed Work (v) I, II**
Reading or research in theatre theory or history; reading and practice in particular areas of dramatic production. Pre: consent of instructor.
- 800 Thesis Research (v) I, II**
Pre: consent of instructor.

East Asian Languages

Professors: DeFrancis, F.K. Li, Young.

Associate Professor: Cheng.

Assistant Professors: Ashworth, Jolly, Kusanagi, Y.C. Li, Sakurai, Spencer, Taylor, Yoshikawa.

Instructors: Aihara, Chang, Chinn, Hasegawa, Herman, Hijirida, Hirayama, Ishigami, Jedlicka, Kim, Kinoshita, Kurokawa, Kwan, Landers, Larrabee, Lee, S.B. Park, Sakihara, Shoji, Smith, Suehiro, E. Sugita, Takahashi, Takaki, Takeshita, Tatsuta, Yamamoto, Yung.

Specialists: Kobayashi, Nakanishi, Sato.

General (EALa)

- 100 Directed Elementary Language Study (v) I, II**
Directed study of an East Asian language, including regularly offered languages in special cases (e.g., if a transfer student needs special assistance or if a student wishes to proceed at his own pace in his own special area of interest), and languages not regularly offered, if demand warrants and staff available. May be repeated for credit. Pre: consent of department chairman.
- 200 Directed Intermediate Language Study (v) I, II**
Continuation of 100. May be repeated for credit. Pre: consent of department chairman.
- 271 Survey of Asian Languages (3) I**
General survey of languages of the area, aimed at giving a non-technical summary of geographical distribution, historical development, and linguistic, social, and political aspects of the languages. Special attention paid to lexical borrowing, use of a common script, and problems in language engineering, including language reform and establishment of national languages. Conducted in English. (Cross-listed as IP 271.)

- 300 Directed Third-Level Study (v) I, II**
Continuation of 200. May be repeated for credit. Pre: consent of department chairman.
- 400 Directed Fourth-Level Study (v) I, II**
Continuation of 300. May be repeated for credit. Pre: consent of department chairman.
- 451-452 Structure of an East Asian Language (3-3) Yr.**
Structure of an East Asian language, depending on demand and staff. Pre: two levels of an East Asian language.
- 480 Directed Language and Culture Studies (3) I, II**
Study of target language through various academic fields (economics, history, geography, etc.). May be repeated. Pre: consent of department chairman.
- 543 Methodology of Teaching East Asian Languages (1) I, II**
Separate sections are conducted in Chinese, Japanese, and Korean for teachers of these languages. Emphasis on identification and analysis of problems in language learning, teaching, and testing; preparation of teaching materials; and in-service training. May be repeated.
- 690 Directed Reading (v) I, II**
Directed reading of advanced texts in one of the East Asian languages. May be repeated for credit. Pre: consent of department chairman.
- 699 Directed Research (v) I, II**
Pre: consent of department chairman.

Chinese (Chnse)

See also General (EALa)

- 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 background in Cantonese, Hakka, Japanese, etc.). In one semester content of 101-102 covered. Meets 1 hour daily, Monday through Friday. Daily laboratory work. Pre: placement test.
- 107-108 Beginning Cantonese (3-3) Yr.**
Introduction to standard dialect spoken in Canton, emphasizing the acquisition of conversational skills. Meets 1 hour daily. Daily laboratory work.
- 141 Introductory Calligraphy (1) I, II**
Practice in writing with a Chinese brush. Open also to students in Japanese and Korean, or with no language background.
- 142 Advanced Calligraphy (1) I, II**
Introduction to various forms of cursive writing.
- 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) II**
Rapid introduction to spoken and written standard Chinese for students who already have some knowledge of the writing system (including students who have background in Cantonese, Hakka, Japanese, etc.) In one semester content of 201-202 covered. Meets 1 hour daily, Monday through Friday. Daily laboratory work. Pre: 105 or equivalent.
- 207-208 Intermediate Cantonese (3-3) Yr.**
Continuation of 107-108; meets 4 hours a week. Pre: 108 or equivalent or consent of instructor.
- 240 Elementary Chinese Composition (1) II**
Practice in composing simple communications in Chinese, such as informal notes, invitations, announcements, etc. Pre: 201.
- 272 Survey of the Chinese Language (3) II**
Non-technical survey in English of the Chinese language, including its history and external and internal linguistic relationships. Attention given to development of writing system, social factors in evolution of modern Chinese, influence of Chinese on neighboring languages, and controversies regarding language reform. Pre: 102 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.
- 331-332 Chinese for Reading Knowledge (3-3) Yr.**
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.
- 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.
- 431-432 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: 202 or consent of instructor.
- 437-438 Advanced Classical Chinese (3-3) Yr.**
Advanced readings in classical texts. Pre: 436 or equivalent.
- 440 Advanced 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 including 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 consent of instructor.

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 China. Pre: 322, 402 or 422 or concurrent registration in either.

490 Reference Materials for Chinese Studies (1) I

Reference materials required for Chinese studies. Pre: 302.

631 History of the Chinese Language: Phonology (3) I

Phonological changes from archaic Chinese through ancient Chinese to modern Chinese represented by Mandarin. Lectures in English. Pre: 452, or Ling 421; consent of instructor.

632 Chinese Dialects (3) II

Synchronic description of a Chinese dialect and contrastive and comparative studies of the given dialect and Mandarin. May be repeated for credit. Pre: 452 or consent of instructor.

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.

643-644 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.

750 Research Seminar in Chinese (3) I, II

Specialization in (1) teaching methods, (2) structure, (3) classical grammar, (4) other topics. Pre: consent of department chairman. May be repeated.

800 Thesis Research (v) I, II

Pre: consent of department chairman.

Japanese (Jpnse)

See also *General (EALa)*

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. (Special sections for students who already know some Japanese will meet 3 hours a week.)

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 Special Elementary Japanese Conversation (3) I, II

For students who have 102 equivalent writing ability but lack speaking proficiency. Content similar to spoken aspect of 101-102. Meets 3 times a week. Laboratory.

130 Special Elementary Japanese Reading (3) I, II

For students who have 102 equivalent speaking 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

Meets 4 hours daily, Monday through Friday, with daily laboratory drill. In one semester content of 103 and 204 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.

272 Survey of the Japanese Language (3) II

Origin, development and various aspects of Japanese language discussed in connection with anthropology, politics, sociology, culture and history of Japan. Objective is to introduce background of Japanese language to those students who have completed elementary level of Japanese. Conducted in English. Pre: 102 or equivalent.

301-302 Third-Level Japanese (4-4) Yr.

Study of modern spoken and written Japanese involving advanced structures, expressions, patterns, *kyōiku kanji*. Meets 1 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 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, radio, tape recordings, and other audio-visual aids. Pre: 202 or equivalent.

321-322 Japanese Conversation (3-3) Yr.

Development of general oral-aural proficiency. Pre: 202 or equivalent.

331-332 Japanese for Reading Knowledge (3-3) Yr.

Reading course for those interested in developing skill in reading in their areas of specialization. Pre: 202 or equivalent.

340 Japanese Composition (2) I, II

Writing modern compositions following designated patterns, *kanji* and themes. Pre: 202 or equivalent.

400 Intensive Advanced Japanese (16) II

Meets 4 hours daily, Monday through Friday, with daily laboratory drill. In one semester 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, *tōyō kanji*. Meets 1 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 content of 401-402 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, radio, tape recordings, 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.

431-432 Selected Readings in Japanese (3-3) Yr.

Rapid reading of material related to student's own areas of research or discipline. Pre: 332 or equivalent.

435-436 Introduction to Classical Japanese (3-3) Yr.

Analysis of basic structural patterns in classical Japanese, including *kambun*, *sōrōbun*, and others, through selected readings in various texts. Pre: 402 or consent of instructor.

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.

- 457-458 Japanese Grammar—Classical (3-3) Yr.**
Detailed analysis of classical Japanese. Pre: 402 or equivalent.
- 470 Language and Culture of Japan (3) II**
Extensive exposure, chiefly through classroom discussion and outside reading, to culture, history and institutions of Japan. Pre: 401 or concurrent registration.
- 471-472 Topics in Language and Culture of Japan (3-3) Yr.**
Intensive exposure, chiefly through tape recordings, classroom conversations and outside readings, to selected topics in culture, history and institutions of Japan. May be repeated for credit. Pre: 470.
- 490 Reference Materials for Japanese Studies (1) II**
How to find, use and evaluate reference materials basic to Japanese studies. Pre: 302 or equivalent.
- 491-492 Japanese Interpretation (3-3) Yr.**
Training in techniques of summary, consecutive and simultaneous interpretation, English-Japanese and Japanese-English. Pre: 402 or equivalent.
- 495-496 Japanese Translation (3-3) Yr.**
Training in techniques of translation ability, Japanese into English and English into Japanese. Pre: 402 or equivalent.
- 631-632 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.
- 641-642 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.
- 643-644 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 audiolingual approach. Teaching materials, teaching aids and test construction. Pre: 452 or equivalent.
- 750 Research Seminar in Japanese (3) I, II**
Specialization in (1) teaching methods, (2) structure, (3) dialects, (4) other topics. Pre: consent of department chairman. May be repeated.
- 800 Thesis Research (v) I, II**
Consent of chairman.

Korean (Kor)

See also *General (EALa)*

- 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 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.
- 301-302 Third-Level Korean (3-3) Yr.**
Advanced conversation, reading, writing. Additional Chinese characters. Pre: 202 or equivalent.
- 401-402 Fourth-Level Korean (3-3) Yr.**
Introduction to classical and contemporary literary styles. Pre: 302 or equivalent.
- 431-432 Selected Readings in Korean (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.

East Asian Literature

Professors: Araki, Ikeda, Lee, Lo, Viglielmo, Winters.
Associate Professors: Fujioka, Lau.
Assistant Professors: Ma, McLeod, Tahara.

General (EALit)

- 399 Directed Reading (v) I, II**
Pre: limited to majors with 2.7 average. May be repeated.
- 491 Senior Colloquium in East Asian Literature (3) II** Staff
Exploration of comparative perspectives on East Asian literature.
- 690 Directed Reading (v) I, II** Staff
Directed reading of advanced literary texts in Chinese, Japanese or Korean. Pre: consent of instructor.
- 699 Directed Research (v) I, II** Staff
Pre: consent of instructor.

Chinese (ChLit)

- 261 Chinese Literature in Translation—Traditional (3) I, II** McLeod
Survey from earliest times through the Sung Period, with emphasis on poetry and essays.
- 262 Chinese Literature in Translation—Modern (3) I, II** Lau
Survey from the Sung Period to the contemporary era, with emphasis on drama and prose fiction.
- 341-342 Readings in Contemporary Chinese Literature (3-3) Yr.** McLeod
Survey of recent literature in poetry, fiction and drama. Selected simple texts. Pre: concurrent registration in Chnse 301-302 or 321-322.
- 441-442 Readings in Modern Chinese Literature (3-3) Yr.** Lau
Selected readings in modern Chinese verse and prose, with emphasis on critical analysis. Pre: completion of 342 and Chnse 302 or 322.
- 451 Readings in Traditional Chinese Literature (3) I, II** Ma
Introduction to styles and forms of premodern verse and prose. Pre: 261 and Chnse 302 or equivalent.
- 490 Reference Materials for Chinese Literary Studies (3) I or II** Ma
Reference materials important in Chinese literary studies. Pre: 302 or equivalent.
- 609-610 Chinese Poetry (3-3) Yr.** Winters
Critical study of classical Chinese poetry in various forms. Pre: consent of instructor.
- 611 Contemporary Chinese Literature (3) I, II** Winters, Lau
Representative works of leading modern novelists, poets, dramatists since 1919. Drama, poetry, fiction. Pre: consent of instructor. May be repeated for credit.
- 615 Traditional Chinese Fiction (3) I, II** Ma
(1) Short stories (*ch'uan-chi, pien-wen, san-yen* and *erh-p'o* collections) and historical romances (*San-kuo yen-i, Sui-Tang yen-i*, etc.) and (2) the novel—readings from among *Chin-p'ing-mei, Hung-lou-meng, Ju-lin wai-shih*, etc. Analysis of form and themes. Pre: consent of instructor. May be repeated for credit.
- 619 Traditional Chinese Drama—Northern (3) I** Lo
Study of major plays of the Northern style of the Yuan Period (1260-1368). Readings from among "Romance of the Western Chamber," "The Orphan of Chao," "Autumn in the Palace of Han," etc. Pre: consent of instructor. May be repeated for credit. (Not offered 1972-73.)

- 620 Traditional Chinese Drama—Southern (3) II** **Lo**
Study of major plays of the Southern style of the Ming and Ch'ing periods (1368-1911). Readings from among "The Lute Song," "The Peony Pavilion," "The Peach Blossom Fan," etc. Pre: consent of instructor. May be repeated for credit. (Not offered 1972-73.)
- 621 History of Chinese Literary Criticism (3) II** **Staff**
Survey of Chinese literary criticism from Confucius to 20th C. Pre: consent of instructor.
- 693 Advanced Chinese Bibliography (3) I** **Lo**
Principal sources of bibliographical information. Pre: 490 or equivalent. (Not offered 1972-73.)
- 750 Research Seminar in Chinese Literature (3) I, II** **Lau, McLeod**
Study of authors, a genre, a period, or a problem. (1) Modern literature and (2) traditional literature. Pre: consent of instructor. May be repeated for credit.
- 800 Thesis Research (v) I, II** **Staff**
Pre: consent of instructor.

Japanese (JaLit)

- 261 Japanese Literature in Translation—Traditional (3) I, II** **Araki**
Survey of traditional Japanese literature, with emphasis on analysis and comparison.
- 262 Japanese Literature in Translation—Modern (3) I, II** **Tahara, Viglielmo**
Survey of modern Japanese literature, with emphasis on analysis and comparison.
- 341-342 Readings in Contemporary Japanese Literature (3-3) Yr.** **Fujioka**
Survey of recent literature in poetry, fiction and drama. Selected simple texts. Pre: concurrent registration in Jpnse 301-302 or 321-322.
- 441-442 Readings in Modern Japanese Literature (3-3) Yr.** **Tahara**
Selected readings in modern Japanese verse and prose, with emphasis on critical analysis. Pre: completion of 342 and Jpnse 302 or 322.
- 451 Readings in Traditional Japanese Literature (3) I, II** **Ikeda**
Introduction to styles and forms of premodern verse and prose. Pre: 261 and Jpnse 302 or equivalent.
- 490 Reference Materials for Japanese Literary Studies (3) I** **Tahara**
Reference materials important in Japanese studies. Pre: consent of instructor.
- 609-610 Japanese Poetry (3-3) Yr.** **Staff**
Historical survey of poetic types including *tanka*, *haiku*, *senryuu*, *shi*, folk songs. Pre: consent of instructor.
- 611-612 Modern Japanese Literature (3-3) Yr.** **Viglielmo**
Reading and critical analysis of representative modern literary works, with emphasis on fiction. 611: Meiji-Taisho literature (1868-1926). 612: Showa literature (1926-present).
- 614 Edo Literature (3) II** **Araki**
Reading and critical analysis of prose literature of Edo Period. Pre: consent of instructor. May be repeated for credit.
- 615 Medieval Japanese Literature (3) I** **Araki**
Reading and critical analysis of prose literature of Kamakura and Muromachi periods. Pre: consent of instructor. May be repeated for credit.
- 616 Classical Japanese Literature (3) II** **Tahara**
Reading and critical analysis of Heian Period prose literature. Pre: consent of instructor. May be repeated for credit.

- 621-622 History of Japanese Literary Criticism (3-3) Yr.** **Staff**
Survey of Japanese literary criticism from ancient times to 20th C. Pre: consent of instructor.
- 623-624 Japanese Folklore (3-3) Yr.** **Ikeda**
Investigation of folk beliefs and customs, particularly as manifested in traditional literature and narrative literature. Pre: consent of instructor.
- 690 Advanced Japanese Bibliography (3) I, II** **Ikeda**
Advanced studies in bibliographical material. Pre: 490.
- 750 Research Seminar in Japanese Literature (3) I, II** **Viglielmo, Araki**
(1) Modern literature and (2) traditional literature. Pre: consent of instructor. May be repeated for credit.
- 800 Thesis Research (v) I, II** **Staff**
Pre: consent of instructor.

Korean (KoLit)

- 261 Korean Literature in Translation—Poetry (3) I** **Lee**
Historical survey from earliest times to present, with emphasis on analysis and comparison. Knowledge of Korean not required.
- 262 Korean Literature in Translation—Prose (3) II** **Lee**
Historical survey of Korean narrative and fiction, with emphasis on analysis and comparison. Knowledge of Korean not required.
- 461 Introduction to Modern Korean Literature (3) I** **Lee**
Selected readings in major genres of modern literature. Pre: consent of instructor.
- 462 Introduction to Traditional Korean Literature (3) II** **Lee**
Selected readings in major genres of premodern literature. Pre: consent of instructor.
- 694 Reference Materials for Korean Studies (3) II** **Lee**
Basic reference and bibliographic materials for research and use in Korean studies. Pre: consent of instructor.
- 750 Research Seminar in Korean Literature (3) I, II** **Lee**
Specialization in (1) traditional literature, (2) modern literature. Pre: consent of instructor. May be repeated for credit.

Economics (Econ)

- Professors:* Campbell, Demeny, Gorter, Heller, Hung, Kamins, Miklius, Miller, Naya, Oshima, Power.
Associate Professors: Comitini, Lim, Yeh.
Assistant Professors: Abudu, Ashby, Burcroff, Chau, Coffman, Ebel, Ghali, Haines, Hight, Mak, Moncur, Overbeck, Pollock, Richards, Rose.
Acting Assistant Professor: Rice.
Visiting Assistant Professor: Shoup.
- 120 Introduction to Economics (3) I, II**
One-semester course for nonmajors. 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. Credit not given for both this course and 150.
- 150 Principles of Economics (3) I, II**
Analysis of functioning of economic systems with emphasis on forces determining levels and changes of national income, employment and price levels. Describes basic economic institutions, e.g., markets, money, banks, labor organizations, corporations. Credit not given for both this course and 120.

- 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.
- 220 Mathematics for Social Scientists (3) I** **Moncur**
Basic mathematics as used in economics, emphasizing development of usable and accurate knowledge of appropriate concepts. Topics include: graphs, sets and functions; matrices, determinants and linear equation systems; differentiation, partial derivatives and total differentials, and the calculus of optimization; integration; log and exponential functions.
- 300 Intermediate Economic Theory: Macroeconomic Analysis (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** **Burcroff, Coffman**
Price determination and resource allocation under competition, monopoly, oligopoly, monopolistic competition. Theories of demand, cost, partial, general equilibrium. Pre: 151.
- 310 From Poverty to Affluence: Economic Development for Nonmajors (3) I, II** **Lim, Hung, Rice**
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.
- 311 The Hawaiian Economy (3) II** **Ebel, Mak**
The course is developed in two parts. Part I focuses on history of the development of Hawaiian economy. Part II emphasizes current economic problems. Pre: 150, 151 or consent of instructor. (Alt. yrs.; offered 1972-73.)
- 321 Introduction to Statistics (3) I, II** **Moncur, Richards**
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, Hight**
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.
- 360 International Economic Relations (3) I** **Heller, Naya, Yeh**
General survey focusing on theoretical, historical, and institutional aspects of international trade and finance. Includes international specialization, gains from trade, trade problems of less developed countries, balance of payments, capital movements, and international monetary system. Pre: 120 or equivalent.
- 396 Contemporary Economic Issues for Nonmajors (3) I** **Ebel**
To apply economic analysis to economic problems currently under public discussion. Designed for nonmajors, the required analytic background is modest. Subject matter will vary, but might include the economics of poverty, environmental pollution, discrimination, war economy, land-use and housing, public transportation, etc. Pre: 120 or consent of instructor.
- 399 Directed Reading (v) 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.
- 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** **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** **Lim, Power, Rice**
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) II** **Overbeek**
Study of economic growth and changes in economic institutions of Europe and U.S.S.R., since Industrial Revolution. Pre: 150, 151.
- 412 Economic Development of U.S. (3) I** **Mak**
Analysis of U.S. economy from colonial times to the present. Topics include economics of slavery, transportation, education, industrial concentration, regional and urban growth. Pre: 150, 151. (Alt. yrs.; offered 1973-74.)
- 415 Asian Economic Development (3) I** **Yeh, Burcroff**
Study of history and economic development of Asian nations. 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, Richards**
Review and application of mathematical techniques in economic analysis; differentiation, integration, differential equations, difference equations, and linear programming. Pre: 300, 301, and knowledge of differential and integral calculus.
- 424 Introduction to the Theory of Statistics (3) I**
Covers descriptive statistics, probability theory, probability distributions, sampling, hypothesis testing, parameter estimations, bi-variate regression and correlation analysis. Pre: knowledge of differential and integral calculus.
- 425 Econometrics I (3) I** **Chau, Ghali**
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: 424.
- 426 Econometrics II (3) II** **Chau, Ghali**
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: 425.
- 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.
- 458 Public Resource Allocation (3) II** **Holmstrom**
Application of economic analysis to public decision making. Introduction to cost-benefit analysis; social rate of discount; external economies; treatment of uncertainty; planning and program budgeting systems (PPBS). Applications to planning. Pre: 120 or consent of instructor.

- 460 International Trade and Welfare (3) I** Heller, Naya, Yeh
Theory of international trade and welfare; international specialization and exchange, general equilibrium, tariffs, quotas, common markets, including welfare implications. Pre: 301 or 360.
- 461 International Monetary Economics (3) II** Comitini, Heller, Yeh
International monetary theory: balance of payments, income, price level, and exchange rate determination in open economies, international capital movements, the role of international reserves, and current international monetary problems. Pre: 300 or 360.
- 470 Industrial Organization and Public Control of Business (3) I** Hight, Miklius
Organization and structure of American industries and markets. Competitive behavior, pricing policies, market performance. Social control of business through antitrust and other government regulations. Pre: 300, 301.
- 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**
Location theories concerned with agricultural, manufacturing and tertiary activities and with urban systems. Basic methods of locational analysis. Paths toward application in regional economic planning. (Identical to Geog 420.) Pre: 150, 151.
- 492 Regional Economic Development (3) II** Holmstrom
Sources of regional economic growth and of regional development planning. Emphasis on Hawaiian economy and experience. Pre: 300, 301 or consent of instructor.
- 495 Urban Economics (3) I** Miklius, Shoup
Metropolitan and regional growth and development. Intrametropolitan changes (industry, employment, population). Residential location. The urban land market, housing markets and racial problems in urban areas. The provision of urban services and municipal finance. Urban transportation issue. Pre: 300, 301 or consent of instructor.
- 496 Selected Topics in Contemporary Economics Problems (3) II** Rose
To demonstrate the relevance of economic principles to current events. Topics treated vary from semester to semester, depending on student interests. Typically, they include environmental pollution, crime (including drugs trade) control, racial discrimination, the draft, social choice, transit congestion, etc. Content is not informational but analytic. Student learns to pose questions, to think them through, and to analyze problems using microeconomic concepts. Pre: 301.
- 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, II** Hung, Miller
Rigorous analysis of consumer's choice; market structure; pricing of products and factors of production under different market structures; distribution. 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
Topics include general equilibrium; welfare economics; linear programming; input-output analysis; capital theory; dynamic economics. Pre: 601.
- 604 History of Economic Thought (3) I** Overbeek
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
Application of mathematical methods of 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.
- 610 Economic Development I (3) I** Lim, Oshima, Power
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, Power
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 Advanced Economic Development of the U.S. (3) I** Mak
Analysis of U.S. economy from colonial times to the present. Topics include economics of slavery, transportation, education, industrial concentration, regional and urban growth. Emphasis placed on the application of economic theory and quantitative techniques to the measurement and interpretation of economic events. 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** 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** Lim, Naya, Oshima, Rice
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
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, Ghali
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
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, Miller
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) I** Ebel, Pollock
Theoretical analysis of the problem of defining an optimum amount and composition of public goods that should be supplied by government in a market economy. Determinants of the existing level and composition of the public sector examined along with operational techniques for selecting government spending programs, e.g., benefit-cost analyses. Intergovernmental transfers and other aspects of multi-level finance. Public debt practices. Pre: 450.

- 651 Theory of Public Finance-Revenue (3) II** **Ebel, Pollock**
Analysis of the incidence and economic effects of alternative taxes and tax systems; specification of tax systems which would have minimum impact on resource allocation determined by the free market while achieving other public policy goals. Role of public finance in economic development. Pre: 450.
- 660 International Trade Theory (3) I** **Heller, 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, Naya, 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**
Human resource development as source of economic growth. Labor skill excess and shortage, manpower planning. Investment in labor skills. Migration and the transfer of human capital. Pre: 430.
- 672 The Economics of Population Growth (3) I or II** **Demeny**
Analysis of demographic aspects of economic development with particular reference to demographic determinants of consumption, saving, employment and productivity. Population growth and the problem of natural resources. Role of demographic factors in theories of economic development. Economic aspects of population policies. Pre: consent of instructor.
- 690 Regional Economic Analysis (3) I** **Holmstrom**
Selected problems of regional economic analysis and regional projections. Discussion of specific regional and inter-regional input-output models. Identical to Geog 620. Pre: 310 or 492 or equivalent.
- 694 Economics of Marine Resources (3) I or II** **Comitini**
Application of techniques of economic analysis related to unique problems of utilization and development of marine resources. Topics include: economics of 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. Identical to OE 694. Pre: consent of instructor.
- 699 Directed Research (v) 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, Takayama**
Critical evaluation and empirical application of microeconomic theory. Pre: 601 and 603.
- 710 Seminar in Economic Development (3) II** **Lim, Naya, Power**
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** **Pollock, Miller, Haines**
Review of recent literature and intensive discussion of selected issues emphasizing research approaches in one of these fields: (a) urban and regional economics, (b) public finance, (c) money and finance, (d) human resource economics. Pre: consent of instructor.
- 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 (v) I, II**

English (Eng)

Professors: Anderson, Bouslog, Edell, Fujimura, Huntsberry, Kirtley, Larson, Leib, Levy, Shen, Stempel, Summersgill, Winters.
Associate Professors: Backus, Friedson, Hollingshead, Maltby, McCutcheon, Menikoff, Scott, Sinclair, Solomon, Stillians, P. Thompson, Topham, Ward, Wiley.
Assistant Professors: Baber, Creed, Edelstein, Fellmeth, Friederich, Glick, Gray, Hillman, Kau, Kennedy, Lafferty, Lichty, MacMillan, McHenry, Nam, Newton, Pak, Seitz, Sherman, Simson, Teevan, Whitlock, Wilson, Wright.
Instructors: Allen, Birkhoff, Damon, DeMoss, Dick, Frantz, Harris, Jones, Kamins, Leggett, Lynch, Macdonald, McKean, McKeegan, Merz, Mockridge, Morriss, Murray, P. Nelson, V. Nelson, Roeklein, Rogers, Sage, Shimer, Sumida, Vella, Werner, Wieting, Brown, Chirila, Church, Cunningham, Drinkard, Faurey, Hunter, Morrison, Mucklo, Ownbey, Petrie, Schlieman, Weston.

One course from the sequence 100-170 is prerequisite to all sophomore literature courses.

- 100 Expository Writing: Four Major Forms (3) I, II** **Staff**
Practice in representative forms of expository writing: descriptive and narrative exposition, autobiographic writing, interpretations of completed events, and presentation of arguments on social or cultural issues, together with readings in professional writing in each form.
- 110 Narrative and Descriptive Exposition (3) I, II** **Staff**
Intensive course in the writing of exposition in which description and narration play a major role. All assignments in non-fiction.
- 120 Exposition and Autobiography (3) I, II** **Staff**
Writing of essays in which the student records, examines, accounts for, and interprets noteworthy events in his own life.
- 130 Problem-Solving and Argument on Contemporary Issues (3) I, II** **Staff**
Study of elements involved in solving of problems and resolution of issues in a controversy, together with writing of essays in which students identify problems, and argue in support of courses of action that should be taken to solve those problems.
- 140 The Uses of Language (3) I, II** **Staff**
Requires frequent written commentaries on language in action. Papers based on readings in prose writing (book-length works of nonfiction, essays, reports and editorials in newspapers, articles and advertisements in periodicals) and observation of oral discourse (public speeches, television reports, radio and television advertisements, etc.). Also includes exercises in the creation of different rhetorical effects through language.
- 150 Exposition and the Study of the Past (3) I, II** **Staff**
Writing of essays focusing on analysis and comparison of ideas and issues raised by primary and secondary sources in Western cultural and intellectual development.
- 160 Studies in a Major Writer of Exposition or Argument (3) I, II** **Staff**
Writing of analyses, interpretations, and evaluations of a work or group of works by a single writer, to help students develop firm grasp of the author's work and of ways of analyzing major works of exposition.
- 170 Language and the Visual Media (3) I, II** **Staff**
Writing of essays analyzing visual media, with particular concentration on the role of language in visual media, such as films, television, and advertising.
- 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.** **Wilson, 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.** **Friederich, 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.** **Lichty, Staff**
Practical criticism in major genres of European and American literature. 255: short story, novel. 256: drama, biography, poetry.
- 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** **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** **Glick, 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** **Huntsberry, Staff**
Writing and criticism of essays, designed to develop effective expression, with emphasis on lively and individual style. Pre: consent of instructor.
- 313 Introduction to Imaginative Writing (3) I, II** **Huntsberry, Staff**
Basic principles of the writing arts explored through composition of poems, short stories, and one-act plays.
- 315 Advanced Expository Writing (3) I, II** **Wright, 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.
- 331 Introduction to Poetry (3) I, II** **Kau, Staff**
Written and oral analysis of imagery, sound, language, form and structure of poems, leading to increased awareness of nature of poetry.
- 335 Backgrounds of World Literature (3) I, II** **Backus, Staff**
Most important sources of European literary themes and allusions, including King James Bible and western European myth and legend.
- 336 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.
- 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.
- 360 Readings in Oriental Literature (3) I, II** **Staff**
Introduction to major texts in three or more Oriental literatures, with opportunity for each student to read further in one literature of his own choosing.
- 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 (v) 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** **Fellmeth, Pak, 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** **Fellmeth, Pak, Shen**
Introduction to older stages of English and processes by which modern English evolved.
- 403 American English: Its History and Development (3) II** **Backus**
Linguistic, regional, and cultural development of American English in literary works, from Colonial times to the present.
- 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. SpCom 211 or equivalent.
- 411 Poetry Writing (3) II** **Thompson, Staff**
Writing and criticism of poetry. Pre: consent of instructor.
- 413 Form and Theory of Fiction (3) I, II** **Huntsberry, Staff**
Study of techniques of prose fiction from standpoint of the writer. Pre: consent of instructor.
- 414 Narrative Writing (3) I, II** **Huntsberry, Staff**
Instruction and practice in writing short story. Pre: 413 or equivalent, and consent of instructor.
- 415 Advanced Narrative Writing (3) I, II** **Huntsberry, Staff**
Developing skill in story telling (either short story or novel). Pre: 414 or equivalent, and consent of instructor.
- 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.** **Creed, 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.
- 433 20th-Century British Novel (3) I, II** **Creed, Friedson, Menikoff**
- 437 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.
- 442 Chaucer (3) I, II** **Summersgill**
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**
Representative Old and Middle English poetry, prose, exclusive of Chaucer, with continental backgrounds; chiefly in translation.
- 453 16th-Century English Literature (3) I** **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, 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** **Stempel, Stillians**
Poetry and prose from 1780 to 1832, exclusive of the novel.

- 463,464 Victorian Literature (3,3) Yr.** **Stempel**
Poetry and prose exclusive of the novel. 463: from 1832-1870. 464: from 1870-1914.
- 469 Studies in British Literature (3) I, II** **Staff**
Some aspects of British literature, such as genre, one or more major authors, etc. May be repeated for credit.
- 471,472,473 American Literature (3,3,3) I, II** **Staff**
Critical study of American literature. 471: from beginnings to Civil War. 472: from Civil War to 1914. 473: from 1914 to present. All three semester courses taught each semester.
- 475,476 The American Novel (3,3) I, II** **Bouslog, Edelstein, 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) I, II** **Backus, Leib, Sinclair**
Pacific Islands, Australia: narratives of voyagers, translations of native literature, fiction and poetry.
- 482 The Narratives of Oral Tradition (3) II** **Kirtley**
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.** **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.
- 491-492 Senior Honors Tutorial (3-3) Yr.** **Stempel, Stillians, Staff**
Intensive study of periods of English and American literature. Tutorial methods. Repeatable. Consult dept. honors adviser.
- 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 analysis of non-fiction prose, 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** **Pak**
Structure of the language, relation to present English; reading of selected prose and poetry. Pre: consent of instructor.
- 660 Major Authors (3) I, II** **Staff**
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.
- 790 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 (v) I, II** **Staff**
Individual reading or research. Pre: consent of instructor.
- 800 Thesis Research (v) I, II** **Staff**
Pre: consent of instructor.

Journalism (Journ)

- 150 The Press and Society (3) I, II** **Nam, Ward**
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**
Fundamentals of news style, reporting, ethics. Pre: Eng 100.
- 206 News Editing (3) I, II**
News and photo editing, headline writing, publications makeup. Pre: 205.
- 216 Typography (3) I** **Scott**
Basic printing procedures and design; history of typography.
- 255 Public Affairs Reporting (3) I, II** **Hillman**
Legal, technical and professional problems in public affairs reporting.
- 260 Mass Media (3) I** **Scott**
Mass communications as a product of technological, industrial organization; characteristics of mass media and consumer response to media.
- 305 Advanced Reporting (4) I, II** **Hillman**
Intensive training in reporting and writing in sensitive news areas for the advanced student; field work. Pre: 255.
- 306 Advanced Editing (4) I, II** **Scott**
Intensive training in selecting and editing news material for accuracy, clarity and relevance. Pre: 255.
- 316 Editing and Publishing (3) II** **Scott**
Illustration and typographical design; printing processes; newspaper and magazine management; editorial responsibility; laws of libel and copyright.
- 325 Writing Non-Fiction (3) II** **Wiley**
Writing non-fiction articles for magazines and newspapers; preparing material for specific audience; marketing articles. Pre: consent of instructor.
- 350 Problems in Journalism (3) I, II** **Hillman, Wiley**
Professional problems of news media at public institutions. Pre: consent of instructor.
- 385 Directed Work (3) I, II** **Scott**
Internship in media operations under professional and faculty supervision. Pre: consent of instructor.

English as a Second Language

Associate Professors: Crymes, Higa, Lester, Plaister.

Assistant Professors: Afendras, Alter, Collier, Cramer, Blatchford, Jackson, Krohn, Mason, Rodgers, D. Steinberg, M. Steinberg, Whitman.

Instructors: Day, Gibson, Rickard.

English Language Institute (ELI)

Note: Initial placement in ELI courses is by examination only. A grade of CR (Credit) 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, 81; 62, 72, 82; 63, 73, 83; ESL 100.

- 78
- 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 3 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**
Focus on the similarities and differences between spoken and written English. Practice in taking dictation; and in writing direct address, indirect address, and factual accounts. Equals 3 credits.
- 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 Reading Program for Foreign Students (0) I, II**
Further drill on English grammatical patterns. Equals 3 credits.
- 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**
Intensive analysis of common transitional expressions occurring in expository writing. Practice in the use of these devices in essays and summaries. 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 2 credits.
- 81 Advanced English Structure for Foreign Students (0) I, II**
Emphasis on control of complex spoken and written syntactical constructions. Equals 2 credits.
- 82 Advanced Reading Program for Foreign Students (0) I, II**
Emphasis on the development of skills in comprehending the subtleties and sophisticated ideas of modern English prose. Equals 2 credits.
- 83 Advanced Writing Program for Foreign Students (0) I, II**
Writing workshop. Individualized instruction in specific writing problems, such as term paper assignments, reports, projects, etc. Equals 2 credits.
- ESL 100 Expository Writing: A Guided Approach (3) I, II**
Extensive practice in writing expository essays focusing on the discovery and use of various linguistic devices which make an essay effective. (May fulfill English composition requirement only for non-native speakers of English.)

English as a Second Language (ESL)

- 360 The English Language in Hawaii (3) I, II** **Day**
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. Students will work with actual language data. Pre: one course in English language or linguistics.
- 425 Linguistics and Reading (3) I** **Mason**
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 and comparison of reading in first and second languages. Pre: English 320 or equivalent.
- 450-451 English Syntax (3-3) Yr.** **Crymes, Whitman**
Basic course in English syntax primarily within the generative transformational framework with attention wherever possible to implications for the language teacher.
- 455 Materials for Teaching English Grammar (3) I**
Critical examination of current English grammar texts for first and second language learners to gain insights into the assumptions about language and language learning which underlie them. Required for B.Ed. in English Language Teaching.
- 460 English Phonology (3) I, II** **Krohn**
Basic course in English phonetics and phonology with particular attention paid to areas of interest to language teachers. Introduction to current work in English generative phonology.
- 465 Materials for Teaching English Phonology (3) II**
Critical examination of texts and materials for the teaching of English phonology and orthography for first and second language learners including applications of contrastive analysis. Required for B.Ed. in English Language Teaching.
- 470 Language Learning and Teaching (3) II**
Review of recent works in psycholinguistics as it applies to first language acquisition, second language learning and teaching, and related language topics. Pre: Psych 100. Required for B.Ed. in English Language Training.
- 580 Teaching English as a Second Language for Language Arts Teachers (3) I, II**
Introduction to the application of linguistic science to the teaching of English as a second language for language arts teachers in public schools of Hawaii. Emphasis on preparing teachers with little or no background in applied linguistics. English grammar, or current teaching techniques to handle immigrant children who do not speak English natively. Course covers study of language systems, language acquisition, and teaching techniques for the language skills: speaking, listening, reading and writing.
- 600 Topics in ESL (3) I, II**
Open topic course dealing with current issues in teaching English as a second language. May be repeated.
- 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 or equivalent. For nonmajors, consent of instructor.
- 650 Psycholinguistics in Second Language Learning (3) I, II** **Higa, Rodgers, Steinberg**
Critical survey of theories of language and language processes that relate to second language acquisition. Relation of language to mind, behavior and culture considered.
- 660 Culture in Second Language Learning (3) I, II** **Afendras, Higa, Steinberg**
Introduction to ethno- and socio-linguistics with special reference to second language teaching. Discussion of "cultural interferences" in second language learning. Pre: 650 or equivalent.

- 670 Comparison of First and Second Language Acquisition (3) I, II** Higa, Rodgers, Steinberg
Survey of developmental, experimental and clinical studies of first language acquisition with reference to the ways in which first language acquisition can be said to parallel second language acquisition, followed by laboratory controlled experiments in teaching and learning second languages. Pre: 650 or equivalent.
- 699 Directed Reading (v) I, II**
Individual reading in various fields of teaching English as a second language. Pre: consent of department chairman and instructor.
- 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: 610.
- 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. Pre: 610.
- 720 Second Language Testing (3) I, II** Blatchford, Jackson, Mason, Plaister
Measurement and evaluation of achievement and proficiency in second language learning. Pre: 610 or consent of instructor.
- 730 Seminar in TESL (3) I, II**
Application of linguistics to second language teaching. Readings and discussion of current issues in applied linguistics. Pre: 610; 710 or 711.
- 799 Directed Research (v) I, II**
Individual research in various fields of teaching English as a second language. Pre: consent of department chairman and instructor.
- 161-162 Humanities and the Forging of Western Civilization (3-3) Yr.** Scherer
Emphasis on experiencing the growth of Western civilization from earliest times as revealed by in-depth examination of man's endeavors in literature, language, music, philosophy, art and architecture.
- 225 Early Greek Thought (3) I or II** Burns, Harter
Comprehensive study of evolution of early Greek thought from its beginnings through Aristotle as expressed in mythology, literature, science, and philosophy. (Cross-listed as Philosophy 225.)
- 233 Literature and Self-Knowledge (3) I or II**
Literature as quest for self-knowledge and becoming in the introspective writings of Augustine, Montaigne, Pascal, Rousseau, Novalis, Kierkegaard, Hammarskjold, and others. Lectures and discussions.
- 251-252 Hispanic Civilization (3-3) Yr.** Kleinbergs
Study of the way of life of Spanish speaking peoples.
- 261-262 Civilization of German Peoples and Countries (3-3) Yr.** Schweizer
Study of cultural and artistic heritage of the German-speaking countries, with emphasis upon art, music, literature, and philosophy of ideas in Germany, Austria, and Switzerland.
- 303 Greek Literature (3) I or II** Tucker
Major writers of ancient Greece in English translation, including epic, lyric, elegiac, and bucolic poetry, tragedy, comedy, history, philosophy, oratory, and romance.
- 304 Roman Literature (3) I or II** Ball
Major writers of ancient Rome in English translation, including epic, lyric, elegiac, and bucolic poetry, tragedy, comedy, history, philosophy, oratory, satire, and the novel.
- 305 Greek and Roman Drama (3) I or II** Tucker
Major works of Aeschylus, Sophocles, Euripides, Aristophanes, Menander, Plautus, Terence and Seneca.
- 306 Ancient Epic (3) I or II** Littman
Study of the *Iliad*, the *Odyssey*, the *Aeneid*, and selections from other ancient epics of the Ancient Near East, Greece and Rome.
- 331 19th-Century Russian Novel (3) I or II** Klimenko
Survey of important novelists in English translation, particularly Gogol, Goncharov, Turgenev, Saltykov, Dostoevsky, Tolstoi.
- 332 20th-Century Russian Literature (3) I or II** Klimenko
Survey of important literary movements and authors from Gorki to Solzhenitsyn. Lectures and discussions of most important works of this period.
- 333 Ideology and Literature in the Soviet Society (3) I or II** Klimenko
Reading and discussion of contemporary Soviet prose, poetry and plays in conflict with Soviet ideology, and demands of the ideology upon literary art.
- 356 Latin American Literature (3) I or II** Knowlton
Reading and discussion of classic works of Latin American literature in English. Purpose is to provide insight into Latin American culture through its literature.
- 360 The Rebel Hero in Spanish Literature (3) I or II** Dias
Reading and discussion of classic works of Spanish literature, with emphasis on how each work's hero deals with his particular circumstance and how this represents an aspect of Spanish culture.
- 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 Loti and Paul Gauguin.
- 372 Franco-American Relations in the 18th Century (3) I or II** Jackson
Contribution of America to French literary trends during the eighteenth century. French and American political and social interrelations.

European Languages and Literature

Professors: Aspinwall, S. Baci, Dauer, Fairbanks, Hadlich, Holton, Jackson, Knowlton, Seymour.

Associate Professors: Burns, Crean, Gasinski, Klimenko, M. Montes, Moody, A. Moore, Niedzielski, Sang, Zants.

Assistant Professors: M. Baci, Ball, Bénouis, Dias, Elliott, Forno, Heien, Ignatius, Katsell, Kleinbergs, Kratky, Littman, Y. Montes, C. Moore, Quinn, Roldán, Scherer, Schweizer, Tucker.

General (EL)

LITERATURE COURSES IN ENGLISH

Note: These courses, given in English, do not require a knowledge of a foreign language. None of the courses counts toward requirements for any major in this department, but may be taken as electives outside the major with the consent of the student's adviser. Many of the courses may be taken toward fulfilling the College foreign language/culture requirement (consult the student services office). Also many of these courses, as well as literature courses in the languages, may count toward the University humanities requirement.

- 111 Latin and Greek In Current Use (2) I or II** Burns
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** Burns
The principle myths of Greek and Roman literature.
- 121 Introduction to Modern Russian Culture (3) I or II**
Insights into modern Russian culture as viewed by Russian authors.

- 373 European Poetry in the Middle Ages**
(3) I or II C. Moore, Scherer
Heroic poetry of medieval Europe: *Nibelungenlied*, *Chanson de Roland*, *Cid*, and Scandinavian sagas; magical incantations; war chants; vagabond lyrics and love lyrics of the troubadours and Minnesingers of the Hohenstaufen Age; courtly epics, including *Parzival* and *Tristan*.
- 374 Literature and Thought of European Renaissance** (3) I or II C. Moore, Scherer
Main currents of European Renaissance and its impact especially in central Europe, culminating with Protestant Reformation.
- 375 French Literature since 1800**
(3) I or II Aspinwall, Forno, Jackson
Rapid reading in translation: lectures, discussions, and reports.
- 380 The Classical German Poet** (3) I or II Scherer, Schweizer
Readings in translation from dramatic works of Lessing, Goethe, and Schiller, and lectures on philosophic and aesthetic view points 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 Orient and Eastern philosophy. Open to lower division students.
- 382 German Expressionism** (3) I or II Scherer
Search for the "new man" and the revival of a humanity gone astray through world wars and technological "progress."
- 397 French African Literature** (3) I or II Jackson
Works reflecting the development of black African literature in French during the 20th Century. Major themes of negritude, national political unity, colonialism and traditional culture.
- 405 European Tragedy** (3) I or II Dias, Forno, Schweizer, Tucker
Comparative study of selected tragedies from ancient and modern European literature, team taught by members of the department of European languages and literature.
- 497 Dutch Literature in Translation** (3) I or II C. Moore
Dutch colonies and trade routes and their reflection in Dutch literature.

LANGUAGE COURSES

- 199 Directed Language Study** (v) I, II
Directed study in European languages not taught on regular basis (e.g., Danish, Rumanian, etc.), depending on demand and staff. Pre: permission of department chairman.
- 399 Directed Reading** (v) I, II
Individual projects in various fields. Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point in department major. Pre: permission of department chairman.
- 610 Contrastive Analysis of Spanish and French with English** (3) I or II
Structures of Spanish and French contrasted with English on phonemic, morphological, and syntactic levels. Elucidation of nature and cause of learning problems of French or Spanish students. Pre: Span 431 or Fr 306. English 320, 401 or Ling 320 recommended.
- 621 Comparative Romance Linguistics** (3) I
Comparative study of linguistic development of Romance languages from Latin. Pre: Ling 320 or equivalent. Reading knowledge of at least one Romance language and of Latin recommended. (Alt. yrs.)
- 630 Seminar in Research Methods** (v) I or II
(1) French, (2) Spanish, (3) German, (4) Classics, (5) Russian. Study of source materials with emphasis upon basic research tools and methods.
- 699 Directed Research** (v) I, II
Pre: consent of department chairman.

Dutch (Du)

311-312 Reading, Comprehension, and Speaking Skills (3-3) Yr.

C. Moore
Introduction to modern Dutch designed for students who wish to study a second foreign language. Reading, grammar, with some conversation and laboratory drill. Cannot 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

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) I or 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 or II

Course contents of 201-202 covered in one semester. Meets daily for one hour, Monday through Saturday, with daily laboratory practice. Pre: 102 or equivalent.

301 Phonetics and Pronunciation Practice (3) I, II

Niedzielski
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

Niedzielski
Study of structure of contemporary French as analyzed by descriptive linguists. Pre: 202 or equivalent.

307-308 Continuing French for Non-Majors (3-3) Yr.

Speaking, reading, and writing French for practice and enjoyment. Emphasis on current events and day to day social situations. Not open to French majors. Pre: 202 or 208 or consent of instructor.

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 expression on variety of topics. Pre: 202 or equivalent.

312 Advanced Composition (3) I, II

Emphasis on strengthening facility with language through further training in syntax, structure and composition writing. Pre: 202.

331-332 Survey of French Literature (3-3)

M. Baciu, Jackson, Ignatius
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

Bénouis
Survey of culture and institutions of modern France. Pre: 202 or equivalent. May be taken concurrently with 311 or 312.

407 Introduction to Medieval Language and Civilization (3) I

Ignatius, Niedzielski
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** Ignatius, Niedzielski
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** Bénouis
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.** Bénouis, Forno
1st semester: Drama. Study of the principal works of major dramatists of the 17th century: Corneille, Moliere, Racine. *2nd semester:* Non-dramatic literature. Study of principal movements and major authors of non-dramatic prose and poetry of 17th century. Pre: 331 or 332.
- 413 Masterpieces of 18th-Century Literature (3) II** Forno
Pre: 331 or 332.
- 415-416 Masterpieces of 19th-Century Literature (3-3) Yr.** Aspinwall, Ignatius, Jackson
415: Poetry; 416: Prose. Pre: 331-332.
- 420 20th-Century French Novel (3) I or II** Jackson, Zants
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** M. Baciú
Study of major French playwrights of 20th century and their works. Claudel, Giraudoux, Anouilh, Sartre, Camus, etc. Pre: 331-332.
- 422 20th-Century French Poetry (3) I or II** Aspinwall
Explication and discussion of poems by such poets as Valery, Claudel, Apollinaire, Supervielle, Saint-John Perse, Breton, Desnos, Eluard, Aragon, Char, Reverdy. The goal is appreciation. Desirable preparation: 331-332.
- 425 Current French Literature (3) I or II** M. Baciú, Zants
Major literary works and trends of last thirty years which directly reflect the dilemma of modern man. Pre: 331 or 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.
- 601 Seminar in 20th Century French Literature (3) I or II** Aspinwall
Study of authors and movements of modern period.
- 602 Seminar in French Poetry (3) I or II** Aspinwall
Technical study of representative poems from Renaissance to the present.
- 605 French Prose Literature of the Last 30 Years (3) I or II** M. Baciú, Zants
Study of prose works illustrating new trends and themes of contemporary France: Existentialism, the Absurd, The New Novel, Confessional literature, etc.
- 609 French Renaissance (3) I or II** Bénouis, Jackson
Poetry, theatre, prose. Emphasis on Montaigne and Rabelais. Lectures, discussions, reports.
- 620 Masterpieces of the 17th Century (3) I or II** Bénouis, Forno
Study of dramatic or prose works of the Classical period.
- 651 Philosophic Currents in the 18th Century (3) I or II** Forno, Jackson
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** Bénouis
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 (4) I** Ignatius, Niedzielski
Introduction to historical development of the French nation, its civilization and its language. Contrastive analysis. Readings of selected texts.
- 672 Seminar in Medieval Literature (3) I or II**
(a) Medieval Lyric Poetry; (b) Medieval Epic and Romance; (c) Medieval Drama and Prose. Genesis and evolution of literary genres from the 12th to 15th centuries. May be repeated for credit.
- 677 Seminar in French Lanaguage (3) I or II**
Study of problems in French language, such as: dialectology, linguistic geography, sociolinguistic phenomena in France. May be repeated for credit.
- 681 The Novel in France (3) I or II** Forno, Jackson, Zants
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**
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 (v) I, II**
Pre: consent of department chairman.
- 735 Seminar in French Literature (3) I or II**
Study of authors or a period. Pre: consent of chairman of graduate field. May be repeated for credit.
- 800 Thesis Research (v) I, II**

German (Ger)

Note: All courses are conducted in German.

- 101-102 Elementary German (4-4) Yr.**
Conversation, laboratory drill, grammar, reading.
- 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** A. Moore, Seymour
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.** A. Moore, C. Moore, Sang, Schweizer
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 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 department chairman.
- 215 Intermediate: Readings in the Humanities (3) I or II** Schweizer
Emphasis on developing rapid reading skill for comprehension. Primarily for graduate students, others by permission of department chairman. Does not count toward language requirement. Pre: 102 or equivalent or S106.

- 305-306 Composition and Conversation (3-3) Yr.** Crean, Dauer, A. Moore
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.
- 307-308 Continuing German for Nonmajors (3-3) Yr.** Crean, Dauer, C. Moore, Sang
Speaking, reading, and writing German for practice and enjoyment. Emphasis on current events and day to day social situations. Not open to German majors. Pre: 202 or 208 or consent of instructor.
- 312 Introduction to German Literature (3) I or II** Sang, Scherer
Representative reading and discussion of cultural periods in chronological order starting about 1700 with brief reference to earlier periods. Pre: 305 or consent of chairman. For majors, concurrent registration in 305 is permitted.
- 315 Structure of German Language (3) I** A. Moore, Seymour
Phonological, morphological, syntactic structure of contemporary German, as analyzed by descriptive linguists. Pre: 202 or equiv.
- 318 The 19th Century (3) II** Schweizer
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
Pre: 306 or equivalent; 318 recommended.
- 413-414 German Literature from 1880 to the Present (3-3) Yr.** Sang, 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.
- 415 Contemporary German Literary Activity (3) I or II** Sang
Pre: 306 or equivalent.
- 428 Survey of German Lyric Poetry (3) I or II** Scherer
Survey of development of German poetry from "Stabreimdichtung" to present. Individual interpretation will complement lectures on theoretical and historical background.
- 432 Stylistics (3) I or II** A. 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: 315 or consent of instructor.
- 452 Introduction to Middle High German (3) II** Seymour
Introduction to phonology and morphology of Middle High German with selected readings. Pre: 315 or consent of instructor.
- 489 Literature from the Beginnings to 1700 (3) I or II** C. Moore, Scherer
Lectures and discussion of key periods of German literary history from the Germanic beginnings until the Baroque, with emphasis upon chief cultural aspects of each period. Pre: 306 or consent of chairman.
- 609-610 Middle High German (3-3) Yr.** Seymour
1st semester: Study of grammar, syntax, phonetics, rhythm, meter (alliteration), reading. *2nd semester:* Middle High German literature. Reading of Nibelungenlied, Parzifal, Minnesang and other poetry and prose work 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 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.
- 632 German Stylistics (3) I or II** A. Moore
Concepts of style and stylistics; comparison of descriptive and applied stylistics: presentation of stylistic phenomena in texts and methods of assessment of style.
- 650 Seminar: The German Essay (3) I or II** Sang
Development of the genre as exemplified by typical works from various periods.
- 651 Seminar: The German Novelle (3) I or II** Dauer, Sang, Schweizer
Discussion of representative works of this genre from end of 18th century up to 1955.
- 652 Seminar: German Drama (3) I or II** Dauer, Sang, 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** Dauer, Sang
Reading and discussion of novels representative of a period, movement, or author.
- 655 Faust I (3) I or II** Dauer, Schweizer
Short history of Faust theme; Goethe's image of the "small world" or lower plane of human striving. (Alt. yrs.)
- 699 Directed Research (v) I, II** Seymour
Pre: consent of department chairman.
- 735 Seminar (3) I or II**
Study of authors, topics, a genre, or a period. Pre: consent of chairman of graduate field. May be repeated for credit.
- 800 Thesis Research (v) I, II** Seymour

Greek (Greek)

- 101-102 Elementary Greek (3-3) Yr.** Littman
Introduction to literary Greek. with readings.
- 201-202 Intermediate Greek (3-3) Yr.** Burns
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 *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** Littman
Selected readings in Greek dramatists. Pre: 202 or permission. (Alt. yrs.)
- 432 Drama (3) II** Burns
Reading of entire dramas by Aeschylus, Sophocles, Euripides. Pre: 431 or 421 or permission. (Alt. yrs.)
- 441 Pre-Socratics (3) I or II** Burns
Study of fragments from the early Greek philosophers. (Alt. yrs.) Pre: permission.

- 442 Aristotle (3) I or II** Burns
Selected readings in Aristotle. (Alt. yrs.) Pre: permission.
- 490 Seminar (3) I, II** Burns
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** Littman
Study of an author, genre, period, or work of Greek literature. May be repeated for credit.
- 699 Directed Research (v) I, II**
Pre: consent of department chairman.
- 800 Thesis Research (v) I, II** Burns

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 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 language requirement. Pre: 312 or equivalent.

Latin (Latin)

- 101-102 Elementary Latin (3-3) Yr.** Ball
Vocabulary and grammar, with reading of simple Latin.
- 103 Intensive Elementary Latin (6) I or II**
Meets one hour daily, Monday through Saturday. In one semester contents of Latin 101-102 presented.
- 201-202 Intermediate Latin (3-3) Yr.** Tucker
Review of grammar, reading of selections from prose and poetry. Pre: 102 or the equivalent.
- 301-302 Structure of Latin (3-3) Yr.** Ball, Littman
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.
- 409 Lyric Poets (3) I or II** Tucker
Selections from foremost Latin lyricists, Horace, Catullus, Propertius, Tibullus. Pre: 202 or permission. (Alternates with 401.)
- 420 Vergil (3) I or II** Tucker
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** Tucker
Selected dramas of Plautus and Terence. Pre: 202 or permission. (Alternates with 427.)
- 433 Roman Philosophy (3) I or II** Ball, Burns
Pre: permission. (Alt. yrs.)
- 434 Lucretius (3) I or II** Ball, Burns
De Rerum Natura. Pre: permission. (Alt. yrs.)
- 440 Oratory (3) I or II** Tucker
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 Compositions (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** Tucker
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.
- 651 Seminar in Roman Literature (3) I, II** Burns
Study of an author, period, genre, or work of Roman literature. May be repeated for credit.
- 699 Directed Research (v) I, II**
Pre: consent of department chairman.
- 800 Thesis Research (v) I, II**

Polish (Polsh)

- 319-320 Introduction to Polish (3-3) Yr.** Gasinski
Introduction to modern Polish. Grammar, reading, and some speaking. References to other Slavic languages depending upon background of students. Cannot be taken to fulfill College language requirement. Pre: none; 1 year of Russian desirable.
- 419-420 Topics in Polish Literature and Culture (3-3) Yr.** Gasinski
Treats the major works and trends of Polish literature through readings of excerpts in Polish as well as others in English translation. Pre: 1 year of Polish or equivalent.

Portuguese (Port)

- 101-102 Elementary Portuguese (4-4) Yr.** S. Baciú, Kleinbergs
Reading, conversation, laboratory drill, grammar.
- 201-202 Intermediate Portuguese (3-3) Yr.** S. Baciú, Knowlton, Moody
Reading, conversation, writing laboratory drill. Pre: 102 or the equivalent.
- 360-361 Introduction to Luso-Brazilian Literature (3-3) Yr.** S. Baciú, Knowlton
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. 45.

Note: All courses conducted in Russian except 161-162.

- 101-102 Elementary Russian (4-4) Yr.** Heien, Katsell
Conversation, lab drill, reading, writing, grammar.
- 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 department chairman. Cannot be used to fulfill undergraduate language requirement. Meets five days a week.
- 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 undergraduate language requirement.
- 201-202 Intermediate Russian (3-3) Yr.** Heien, Katsell
Reading, conversation, laboratory drill, grammar, composition. Pre: 102 or equivalent.

- 207-208 Intermediate Scientific Russian (3-3) Yr.** Heien, Katsell
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) I or II** 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.** Katsell
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** Gasinski, Heien
Advanced intensive study 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.** Heien
Survey of Russian literature covering major authors and discussion of historical background in order to provide insight into Russian culture. Pre: 202.
- 411-412 Literature of the 19th Century (3-3) Yr.** Heien, 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.** Katsell, Klimenko
Representative writers before the revolution and contemporary Soviet writers. Pre: 304 or consent of instructor. (Alternates with 411-412.)
- 418 Advanced Composition and Stylistics (3) I** Katsell, Gasinski
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.
- 419 Advanced Reading in the Russian Daily Press (3) II** Gasinski, Heien
Reading and discussion of current problems from selected articles in the Soviet press.
- 495 Seminar in Russian Literature (3) I, II** Katsell, Klimenko
Important literary movements and writers. Pre: consent of instructor. May be repeated for credit.
- 615 Russian Poetry (3) I or II** Gasinski
Reading and discussion of classical and contemporary Russian poets. (Alternates with 617.)
- 617 Russian Drama (3) I or II** Katsell, Klimenko
Reading and discussion of representative plays of 18th, 19th and 20th centuries. (Alternates with 615.)
- 618 Comparative Grammar of Russian and English (3) I** Heien
Study of selected problems in modern Russian in comparison and contrast with English language. (Alternates with 619.)
- 619 Advanced Russian Syntax (3) II** Gasinski
Study of compound and complex Russian sentences, and writing of compositions on advanced level. (Alternates with 618.)
- 621 Historical Grammar of the Russian Language (3) I** Fairbanks, Gasinski
Study of the Old Russian language as found in earliest Russian monuments. Phonemics, morphology, and syntax covered and contrasted with modern Russian in order to prepare student for reading of Old Russian texts.
- 622 Reading in Old Russian Language (3) II** Fairbanks, Gasinski
Representative readings in the Old Russian language from 11th to 18th centuries covered, including both secular and religious literature such as chronicles, tales, hagiographic literature, sermons, etc. Pre: 621.
- 641-642 Old Russian Literature, X-XVIII Centuries (3-3) Yr.** Gasinski
Study of trends, developments, main representatives, and their thought, from the beginnings. (Alternates with 621-622.)
- 650 History of the Russian Literary Language (3) I** Gasinski, Klimenko
Study of the literary language from 18th century to present. Important literary styles, figures, and movements which have greatly influenced form of the literary language as we know it today.
- 699 Directed Reading (v) I, II** Klimenko
Pre: consent of department chairman.
- 735 Seminar on Problems of Russian Literature (3) I, II**
Special study of topics, movements, genres, or of their representatives. May be repeated for credit. Pre: consent of instructor.
- 800 Thesis (v) I, II** Klimenko

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.
- 120 Spanish Workshop I (2) I, II** Holton
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 foreign language requirement. (*See also* 220.)
- 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 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.
- 220 Spanish Workshop II (2) I, II** Holton
Semi-independent individual or small group study and practice of any aspect of Spanish on second-year level. May be taken concurrently with, or independently of, other Spanish courses. May be repeated for credit. Cannot be used toward meeting foreign language requirement. Pre: 102 or equivalent. (*See also* 120.)
- 303-304 Advanced Grammar and Composition (3-3) Yr.** Dias, M. Montes, Y. Montes, Roldán
More detailed study of problem areas of Spanish grammar. Cultivation of accuracy and elegance in written expression. Pre: 202 or equivalent.

- 330 Phonetics and Pronunciation Practice**
(2) I, II **Hadlich, Holton**
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.** **Kleinbergs, Roldán**
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.** **Dias, Kratky**
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.** **Y. Montes, Roldán**
Systematic practice designed to continue on advanced level student's control of spoken Spanish. Attention to further development of vocabulary which will permit accurate and mature expression on variety of topics. Laboratory drill. Pre: 304 or consent of instructor.
- 405 Spanish-English Translation (3) I** **Holton**
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.
- 420 Spanish Workshop III (1) I, II** **Holton**
Individual or small group study and practice of any aspect of Spanish on advanced level. May be repeated for credit. Pre: 304 or equivalent.
- 431 The Structure of Spanish (3) I or II** **Hadlich**
Phonological, morphological, and syntactic structure of contemporary Spanish, as analyzed by modern 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, Roldán**
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 Castilian encountered in language of Iberian Peninsula, America, Philippines. Pre: 431 or consent of instructor.
- 465-466 Modern and Contemporary Spanish Literature (3-3) Yr.** **Kratky, 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. Baciú**
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.** **Kratky**
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 1972-73.) Pre: 202 or equivalent.
- 625 Stylistics and Advanced Composition (3) I or II** **M. Montes**
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) 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, Roldán**
Major works and trends of periods prior to Golden Age. The epic, poetry, and prose. (Alt. yrs.; offered 1972-73.)
- 670 Spanish Literature of the Golden Age (3) I or II** **Y. Montes**
Aspects of 16th and 17th C. Spanish literature: (a) Theater; (b) Prose; (c) Poetry; (d) Cervantes.
- 671 18th and 19th Century Spanish Literature (3) I or II** **Dias, Roldán**
Representative readings in three literary currents: (a) Neoclassicism; (b) Romanticism; and (c) Realism.
- 673 20th Century Spanish Literature (3) I or II** **M. Montes**
(a) Generation of 1898; (b) Pre-Civil War; (c) Post-Civil War Literature.
- 674 Spanish-American Lyric Poetry (3) II** **S. Baciú, Moody**
- 681-682 Spanish-American Novel (3-3) Yr.** **S. Baciú, Knowlton, Moody**
Development of the novel in Spanish America with emphasis on the 20th C. Pre: consent of instructor.
- 695 Seminar in Hispanic Literature (3) I, II** **S. Baciú, M. Montes, Y. Montes**
Study of a period, author, genre or region. Pre: consent of instructor. (May be repeated.)
- 699 Directed Research (v) I, II**
Pre: consent of department chairman.
- 800 Thesis Research (v) I, II**

Geography (Geog)

Professors: J. H. Chang, S. D. Chang, Fryer, Fuchs, Kornhauser, Manchester, Pitts, Street.
Associate Professors: Armstrong, Bach, Chapman, Clarke, Pirie.
Assistant Professors: Earickson, Fuller, Masterson, Murton, Schwind, Sommarstrom, Wester, Wingert.
Instructor: Immisch.
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, 1Lb)** **Immisch, Street, Wester**
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 (3) I, II** **Fuller, Kornhauser, Manchester, Masterson**
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.
- 201 Atmospheric Pollution (3) I, II (2L, 1 Lb)** **Bach**
Interdisciplinary approach to air pollution: Discussion of chemical, meteorological, health, economic, technological, control, legal, and public awareness aspects of air pollution.

SYSTEMATIC PHYSICAL GEOGRAPHY

- 300 Introduction to Climatology (3) I** **J.H. Chang**
Elements and controls of climate. World patterns of insolation, temperature, evaporation, precipitation, atmospheric circulation. Climatic classifications. Pre: 101.

- 310 Modification of the Biosphere (3) II** **Street**
Nature, distribution and interrelationships of vegetation, soils, landforms. Problems of man's impact upon the environment. Readings in recent biogeographic literature. Pre: 101.
- 314 Geography of the Tropics (3) I** **Clarke, Murton**
Analysis of physical environmental and resource potential of tropics: problems of human use and occupation.
- 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**
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 GG 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 GG 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) II** **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 problems and research. Pre: 380 or equivalent. Biol 120 or Zool 101 or equivalent, or consent 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. Bibliography 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. Contemporary U.S. problems and international issues.
- 328 Perspectives on Environment and Culture (3) I** **Murton**
Concepts and methods of cultural geography. Emphasis on understanding adaptations and adjustments to environment in past and present in different societies. Examination of man-environment decision processes and models.
- 330 Population Geography (3) I** **Chapman**
Spatial view of human populations: distribution, structure and internal dynamics. Emphasis upon approaches to research and development of a methodology.
- 335 Political Geography (3) I or II**
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 present. Emphasis on Asia and Pacific. Pre: junior standing and introductory course in geography.

- 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 activities and with urban systems. Basic methods of locational analysis. Paths toward application 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.
- 423 Urbanization and Urban Problems in Asia (3) II** **Fryer**
Role of urbanization in Asian economic and social development. Problems arising from rapid city growth. Emphasis on Southeast Asia but with some attention to East Asia and South Asia.
- 425 Spatial Analysis of Social Behavior (3) I** **Earickson**
Behavioral aspects of spatial relations, movement and information flow. Structure of mental maps; group perception of space; measurement and utility of qualitative environmental variables in spatial investigation. Application to urban structure, human interaction, and urban planning. Pre: upper division standing in social sciences. 380 or equivalent background in quantitative methods or consent of instructor.
- 612 Ecological Concepts and Planning (3) I** **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.
- 621 Urban Systems and Analysis (3) II** **Schwind**
Use of descriptive and predictive urban models; consideration of individual and aggregate behavior, structure, and institutions in urban areas and how they interrelate; relationship of planning and public policies to urban spatial structure. Pre: 380 or equivalent and consent of instructor.
- 632 Field Study of Population (3) II** **Chapman**
Concepts and techniques in the field study of non-literate (tribal and peasant) populations. Designed for graduate students in the social sciences actively planning field research that involves taking a census of a study population. (Identical to Anth 632.) Pre: consent of instructor.

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**
The land and its people. Physical environment and resource base. Evolving problems of resource management, migration, urbanization, and economic development. Analysis of selected regions. For information on the Russian Area Studies Certificate, see p. 45.

- 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 occupation, problems of economic transformation. Not open to those who have taken 352, 353, 355, or 356.
- 352 Geography of Japan (3) I** **Kornhauser, Manchester**
Regional synthesis of physical and cultural features which characterize economic, social, political geography of Japan. Emphasis on origins and development of cities.
- 353 Geography of China (3) I** **S.D. Chang**
Geographic interpretation of China in terms of historical evolution of spatial organization, physical conditions, resource base, patterns of agriculture and industry, and characteristics of population and urbanization. Emphasis on spatial aspects of modernization and economic development since 1949.
- 355 Geography of South Asia (3) II** **Murton**
Physical and human-use regions of India, Pakistan, Ceylon, Himalayan kingdoms. 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 Australia and New Zealand (3) I** **Fryer**
Australia and New Zealand in the postwar world. Physical environment and rural industries. Demographic movements, industrialization, urbanization.
- 365 Geography of the Pacific (3) I** **Pirie**
Physical character of the Pacific and its islands; cultural, political, economic geography of Melanesia, Micronesia, Polynesia (except Hawaii).
- 368 Geography of Hawaii (3) I, II** **Piianaia**
Regional, physical, cultural geography. Detailed study of 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.
- 476 Advanced Cartography (3) II (3 2-Hr L-Lb)** **Wingert**
Special topics in cartography: computer mapping, relief representation, map reproduction methods, use of color, analytic map interpretation, and experimental cartography. Pre: 375 and 475 or consent of instructor.
- 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**
Concepts and methods in geographic analysis. Application to local problems through short field trips. Research on topics of special interest. Required of majors in junior year.
- 399 Directed Reading (v) I, II**
Limited to senior majors with 2.7 grade-point ratio, or 3.0 grade-point ratio in geography.
- 490 Senior's Thesis (3) I**
Preparation of research paper under individual faculty supervision. Required of majors; those in honors program may substitute Hon 493-494. Pre: 390.
- 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, 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, I—Bach
(2) Biogeography, I—Street
(3) Medical geography, II—Armstrong
(4) Resource management
(5) Population geography, II—Fuller
(6) Economic geography
(7) Urban geography
(8) Geographic aspects of economic development, I—Fryer
(9) Cultural geography, I, II—Murton
(10) Conservation, II—Sommarstrom
(11) Quantitative Models and Methods—Erickson
- 791 Field Camp (1) 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 (v) I, II**
Pre: consent of instructor.
- 800 Thesis Research (v) I, II**

TECHNIQUES AND METHODOLOGY

- 375 Introduction to Cartography and Airphoto Methods (3) I, II (2L, 1 2-Hr Lb)** **S.D. Chang, Wingert**
Principles of cartography: compilation from various sources including aerial photographs, measurements from aerial photographs, alternate forms of data presentation, symbolism, design and map projections.
- 380 Quantitative Methods in Geography (3) I, II** **Fuller, Pitts**
Basic concepts and techniques: data collection, probability theory, tests of hypothesis, sampling methods, analysis of variance and regression, correlation analysis. Application to spatial problems.
- 470 Remote Sensing (3) II (1L, 1 3-Hr Lb)** **Wingert**
Principles of remote sensing: air photo interpretation and its application in natural and social science research, electromagnetic spectrum, exotic sensors, imagery interpretation. Research project and laboratory exercises. Pre: 375 or consent of instructor.
- 475 Cartographic Production (3) I (3 2-Hr L-Lb)** **Wingert**
Intensive introduction to the tools and methods used in preparation of cartographic materials for illustration and publication. Includes both drafting and reproduction stages. Pre: credit or concurrent registration in 375 or consent of instructor.

Geology and Geophysics (GG)

Senior Professor: Macdonald.

Professors: Abbott, Adams, Cox, Furumoto, Laurila, Moberly, Rose, Sutton, Woollard.

Associate Professors: Daugherty, Fan, Khan, Malahoff, Manghnani, Peterson, Resig.

Assistant Professors: Pankiowskyj, Veeh.

101-102 General Geology and Geophysics

(4-4) I, II (3L, 1Lb) Macdonald, Pankiowskyj, Peterson

Both sections offered both semesters. Principles of geology, geophysics, geochemistry, and paleontology; origin and evolution of the earth, its structure, materials, and life. Field trips. 101: emphasis on physical geology and its place in the environment; 102: topics in geophysics, geochemistry, paleontology, and historical geology.

200 Geology of the Hawaiian Islands (2) I, II

Abbott, Macdonald

Survey of Hawaiian volcanism, rock types, development of land forms, ground water, engineering materials: field trip.

301 Mineralogy (3) I (2L, 1Lb)

Pankiowskyj

Mineral structure, composition and identification by physical and x-ray techniques; crystal form and symmetry. Pre: 101, Chem 113-114 or 117-118.

302 Petrology (3) II (2L, 1Lb)

Macdonald

Composition, classification, origin, occurrence of rocks. Pre: 301.

303 Structural Geology (3) I (2L, 1Lb)

Macdonald

Tectonophysics, structural analysis, interpretation of geologic maps. Pre: 102, Phys 170.

305 Geological Field Methods (2) I, II

Abbott, Macdonald

(8 hrs. Saturday in field) Methods used in geological investigations in the field. Pre: 303 or consent of instructor.

306 Work of Water (4) II (3L, 1Lb)

Peterson

Dynamics of streams, waves, currents, ground water. Pre: 101-102.

316 Geomorphology (3) II

Abbott

Study of landforms and their relation to geologic structure. Pre: 303 or consent of instructor.

351 Seismology (3) I

Adams

Elastic properties of rocks, behavior of earthquake waves; earthquake recording instruments; reading of seismograms. Pre: Phys 170. (Alt. yrs.: not offered 1972-73.)

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.

411 Paleontology (3) I (2L, 1Lb)

Principles of paleozoology. Morphology and identification of fossils. Pre: 102 or Zool 101 or consent of instructor.

412 Micropaleontology (3) II (2L, 1Lb)

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. (Not offered 1972-73.)

415 Regional Geology (3) I (2L, 1Lb)

Moberly

Geologic framework of the earth, illustrated by North America and Pacific Ocean Basin. Pre: 303.

424 Advanced Mineralogy (5) I (3L, 2Lb)

Pankiowskyj

Crystal symmetry, crystal chemistry, x-ray crystallography, optical mineralogy, use of petrographic microscope. Pre: 301 or consent of instructor.

425 Geochemistry (3) II

Veeh

Principles of geochemistry. Factors controlling distribution of chemical elements in the earth's crust and ocean. Geochronology. Pre: 301.

426 Advanced Petrology (3) II (1L, 2Lb)

Fan

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

Fan

Stratigraphy, structure and history of major geologic provinces of Asia. Pre: 302 and 303 or consent of instructor. (Alt. yrs.; offered 1972-73.)

440 Economic Geology (2-2) Yr.

Abbott

(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: 302 and 303. (Alt. yrs.; offered 1972-73.)

454 Engineering Geology (3) I (2L, 1Lb)

Peterson

Application of geology to engineering problems and structures. Includes engineering properties of earth materials, subsurface water, foundation, dam, tunnel, bridge and highway, shore-line, landslide and earthquake engineering, with special emphasis placed on urban and environmental engineering geology problems. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)

455 Ground-Water Geology (4) I (3L, 1Lb)

Peterson

Occurrence, characteristics, movement, quality, development of water in earth's crust. Pre: 306 or consent of instructor. (Alt. yrs.; offered 1972-73.)

457 Introduction to Geodetic Science (3) I

Laurila

Resections and intersections on plane. Parameters, defining ellipsoid, various latitudes, radii of curvature, geodesic, normal section, great elliptic, chords. Solution of ellipsoidal triangles, Legendre's method. Additament method. Direct and inverse solutions for short distances. Strength of figure. Mathematical projections of ellipsoid. Basic theory of electronic surveying. Pre: Math 206 or equivalent.

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 1972-73.)

465-466 Geophysical Exploration (4-4) Yr. (3L, 1Lb)

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.

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 Space Science (3) I

Khan

Review of relevant mathematical methods in geophysical and geodetic applications of satellites. Growth of classical orbital theory. Motion of satellite in central force field. Some of the problems associated with satellite launching. Significant perturbations. Introduction to planetary gravity fields. Earth's environments. Other space applications of artificial satellites. Pre: Math 232 or consent of instructor.

601 Seminar in Volcanology (2) II

Macdonald

Types and mechanisms of volcanic action. Pre: 302. (Alt. yrs.; not offered 1972-73.)

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.

605 Seminar in Engineering and Ground-Water Geology (3) I, II

Peterson

Geologic controls on occurrence and development of ground water; geologic effects on man-made structures. Pre: consent of instructor. May be repeated for credit.

607 Seminar in Ore Deposits (2) II **Abbott**
Consideration of physical and chemical processes and structural controls in formation of metalliferous ore deposits. Pre: 302 and 303. (Alt. yrs.; offered 1972-73.)

609 Seminar in Geomorphology (2) II **Abbott**
Consideration of special problems and geologic processes in development of land forms. Pre: 316. (Alt. yrs.; offered 1972-73.)

614 Advanced Field Study (v) I, II
Field projects in geologic sciences.

619 Sedimentology (3) I **Fan**
Sources of recent sediments and their environments of deposition, textures, and composition. To be followed by Ocean 642 for an integrated survey of young marine sediments. Pre: consent of instructor.

620 Stratigraphy (3) II **Moberly**
Analysis of stratigraphic rock units. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)

623 Marine Geology (3) I **Veeh**
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 (v) 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.

655 Seismic Source Mechanisms (3) II **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 1972-73.)

656 Seismic Propagation Phenomena (3) II **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 1972-73.)

657 Analysis and Synthesis of Seismograms (3) I **Adams, Furumoto**
Development of theoretical seismograms for comparison with observed seismograms utilizing analytical and numerical techniques. Pre: consent of instructor. (Alt. yrs.; offered 1972-73.)

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 1972-73.)

659 Physics of Earth's Interior (3) I **Manghnani**
Study of earth's interior in light of current knowledge gained from various interdisciplinary sciences. Interpretation of fundamental geophysical (gravity, seismic, magnetic, and thermal) and high-pressure laboratory data with the aim of understanding the elastic and anelastic properties, structure, composition, phase, and temperature distribution of the earth's deep interior. Pre: consent of instructor.

660 Seminar in Solid Earth Geophysics (v) I, II
(a) Tectonics and crustal deformation. (b) Isostasy. (c) Physical 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) I **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 1972-73.)

662 Principles of Theoretical Geophysics (3) II **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) II **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 1972-73.)

671 The Magnetic Field of the Earth (3) II **Furumoto**
Discussions on the observed magnetic field and variations, origin of the geomagnetic field; dynamo theory; magnetohydrodynamics. Pre: 481. (Not offered 1972-73.)

672 Seminar in Geotectonics I (3) I
Evolution of the ocean basins and margins, from regional syntheses of structure, petrology, geophysics, stratigraphy, and physiography. (Cross-listed as Ocean 672. Alt. yrs.; offered 1972-73.)

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 1972-73.)

674 Rock Magnetism and Paleomagnetism (3) I **Furumoto**
Ferromagnetism of rocks, various forms of remanent magnetism; paleomagnetism, application of paleomagnetic data. Pre: consent of instructor. (Alt. yrs.; offered 1972-73.)

675 Seminar in Geomagnetism (v) II **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.

680 Seminar in Geodesy (v) 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.

685 Adjustment Computation (3) II **Laurila**
Theory of errors, distributions, systematic, random, criteria. Error propagation, weights of observations. Presentation of residuals. Adjustment of observations, least squares principle, observation equations, condition equations, applications to problems in geodetic and geophysical science. Solution of normal equations. Gaussian method of substitutions, Cholesky-Rubin method. Standard errors and weights after adjustment, variances, co-variances and functions. Error ellipses. Pre: 457 and Math 206.

799 Directed Research (v) I, II
Pre: consent of instructor.

800 Thesis Research (v) I, II

History (Hist)

Professors: Akita, Cowing, D. Johnson, W. Johnson, Kwok, Margulies, Maurer, Melendy, Newby, Nunn, Sakai, Shinoda, Stalker, Stein, Van Neil, Vella, J. White.

Associate Professors: Beechert, Connors, Daws, Ernest, Kang, Lam, Lamley, J. McCutcheon, McKnight, Morris, Rapson, Saville, Sharma, Speidel, Uhalley, Wade.

Assistant Professors: Choe, Cubberly, Kuzminski, Ladd, Lind, McGlone, Nader, Stephan, Tao, Winchester.

Acting Assistant Professor: B. Miller.

Visiting Professor: Newbury.

History 151-152 is prerequisite to all advanced History courses.

151-152 World Civilization (3-3) Yr. **Akita, Connors, B. Miller, Stalker**
Development of civilization from its prehistoric origins to present. Prerequisite for advanced courses.

161-162 World Cultures in Perspective (3-3) Yr. **Ernest, Lind, Winchester**
Problems in world history; development of ideas, institutions. Pre: consent of instructor. (Alternative for 151-152; freshmen only.)

241-242 Civilization of Asia (3-3) Yr. **Sakai, 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. **McGlone, Newby**
Interpretive survey of U.S. history from earliest settlements to present.

301-302 History of Warfare (3-3) Yr.
Principles and practices of war, warfare and military forces around the world since 1500. (Not offered 1972-73.)

341-342 East Asian Civilization (3-3) Yr.
Basic characteristics of East Asian civilization as they developed in pre-modern China; variant patterns in Japan and Korea. Modernization process and factors which affected the nature of change in these countries. (Not offered 1972-73.)

396 History Colloquium (3) I, II
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, Stein**
Historical survey of Indian culture, society, economics, politics, religion, ideas and institutions—how they originated, developed, and effected culture and were affected by it.

403 Topics in South Asian History (3) I or II
(1) Social and Economic History of Modern India; (2) Social Institutions of Pre-Modern India; (3) South India, Ancient and Modern; (4) Development of Indian Thought.

405-406 History of Southeast Asia (3-3) Yr. **Lam, Vella**
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 **Lam, Vella, Van Niel**
Detailed treatment of particular periods and countries in Southeast Asia. (1) Southeast Asia to 1300 A.D. (2) Southeast Asia 1300 to circa 1750 (3) Modern Philippines (4) Modern Malaysia (5) Modern Indonesia (6) Modern Vietnam, Laos, and Cambodia (7) Modern Thailand (8) Modern Burma. May be repeated.

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, Shinoda**
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. **Choe, Kang**
Detailed political, economic and social survey of Korean history.

419 European Expansion (3) I, II **Shinoda, Stein**
Historical processes in modern European colonization (16th to 20th c.) emphasizing impact upon non-Europeans in Asia and Africa. Asian, Pacific or European credit.

421 Australia and New Zealand (3) I **Newbury**
Major historical developments from colonization to independent nationhood; present problems and policies.

422 History of Oceania (3) II **Daws**
European impact and native response in major island groups, from exploration to annexation, trusteeship and independence. European or Pacific credit.

424 History of the Hawaiian Islands (3) I, 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
Civilizations of the Sumerians, Babylonians, Assyrians, Ancient Egyptians, Hittites, Hebrews and Achaemenid Persians. Asian, Pacific or European credit. (Not offered 1972-73.)

427 Ancient Greece (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** Haraway
Man's changing ideas concerning universe reflected against historical setting. Pre: one year 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. (Not offered 1972-73.)
- 435 Renaissance and Reformation, 1300-1600 (3) I** Nader
Ideas and institutions in early period of commercial and national development.
- 437 Early Modern Europe, 1600-1800 (3) II** Cubberly
Traces political evolution and major economic, social, and cultural developments of European states in post-Reformation and pre-Revolutionary periods.
- 438 French Revolution, 1789-1815 (3) I, II** Cubberly
Traces causes, course, and conduct of the French Revolution and Napoleonic periods, their impact upon Europe, and emphasizing the conflict of ideologies inherent in the Revolutionary experience.
- 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.
- 440 Europe Since Versailles (3) II** Saville, Winchester
Problems of contemporary Europe and their historical background.
- 441-442 East Central Europe (3-3) Yr.** Winchester
General history of Poland, Danubian region and Balkans from Middle Ages to present. (Not offered 1972-73.)
- 443-444 History of Germany (3-3) Yr.** Saville
Major political, social, economic and intellectual trends in evolution of Germany. (443 only in 1972-73, second semester.)
- 445-446 History of France (3-3) Yr.** Cubberly
Major political, social, economic, and intellectual trends in evolution of France. *1st semester:* end of the Middle Ages to the Revolution. *2nd semester:* the Revolution to the Fifth Republic.
- 447-448 History of England (3-3) Yr.** Lind
Major trends in development of English civilization from origins to contemporary period.
- For information on the Russian Area Studies Certificate, see p.45.*
- 449-450 History of Russia (3-3) Yr.** Wade
Survey of development of Russian thought and institutions, and of territorial expansion. Impact of revolutionary changes. Listed for Russian Studies Certificate.
- 451-452 Modern Russian and Soviet Foreign Policy (3-3) Yr.** White
Territorial expansion; frontier and nationality questions: cultural, diplomatic, economic and ideological relations. Listed for Russian Studies Certificate.
- 453-454 Intellectual History of Russia and the Soviet Union (3-3) Yr.** Wade
Religious and secular traditions, intellectual and social developments, political movements. Listed for Russian Studies Certificate.
- 455-456 European Intellectual History (3-3) Yr.** Connors
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.
- 459 Constitutional History of England (3) I** Ernest
Anglo-Saxon institutions; Norman innovations; legal, administrative, parliamentary development under Angevins; rise of cabinet system. (Alt. yrs.; offered 1972-73.)
- 461 Colonial America to 1790 (3) I** Cowing
Transit of European culture of North America, independence, Constitution.
- 462 The Young Republic: U.S. History 1789-1841 (3) II** McGlone
Federalist decade, rise of Jeffersonianism, War of 1812, Age of Jackson.
- 463 Crisis of the Union: U.S. History 1841-1877 (3) I** McGlone
National expansion, sectional conflict; Civil War and Reconstruction.
- 464 The Transformation of America: U.S. History 1877-1920 (3) II** Margulies
Response to industrialism, emergence of U.S. as world power, progressive movement, World War I and Reconstruction.
- 465 Troubled Peace: U.S. History 1920-1941 (3) I** W. Johnson
The Twenties, depression and New Deal, isolationism and involvement in World War II.
- 466 America and World Leadership: The U.S. Since 1941 (3) II** W. Johnson
World War II, Cold War and beyond; politics from Roosevelt to Johnson; McCarthyism, civil rights; economic and social development.
- 471-472 Diplomatic History of the United States (3-3) Yr.** D. Johnson, W. Johnson
History of American foreign policy and diplomacy.
- 473-474 History of Spain and Portugal (3-3) Yr.** Nader
Iberian institutions; explorations and colonization experiences in America, Asia and the Pacific; special attention to cultural developments in the second semester.
- 475 Constitutional History of the United States (3) I** Stalker
Origins and development of the constitution from colonial times to present.
- 477-478 Economic History of the United States (3-3) Yr.** Beechert
Examination of 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.** McCutcheon, 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.; not offered 1972-73.)
- 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 1972-73.)
- 486 Representative Americans (3) I** Margulies, Stalker
Series of biographical sketches of leading characters in American history from Revolution to present. Discussion of common readings.
- 487-488 History of Latin America (3-3)** Ladd
Political, economic, social development of Latin American republics from colonial times to present.
- 496 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 (v)**
Individual projects in various fields. Limited to seniors in History with 2.7 grade-point average, or 3.0 in history. (1) American, (2) Pacific, (3) Japanese, (4) European, (5) English, (6) Chinese, (7) Russian, (8) Hawaiian, (9) South Asian, (10) Southeast Asian, (11) Korean.

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** Kuzminski
History of history, and historians; philosophies of history.
- 603 **Colloquium in the Instruction of History (1) I or II** Melendy
Informal sessions on teaching and professional matters, including the learning process and general responsibilities of instruction. Students encouraged to give lectures or lead discussions under supervision. Field trips to nearby colleges arranged.
- 611 **Seminar in European History (3) I, II** Saville, Winchester, Ernest, Speidel, Cubberly
Selected problems for reading and research. (1) Ancient, (2) Medieval, (3) Early Modern, (4) Modern, (5) England. (6) Intellectual.
- 618 **British Empire and Commonwealth (3) II**
British Empire in modern times. (Not offered 1972-73.)
- 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) II** White
Research in problems of foreign policy in Russia and Soviet Union.
- 631 **Advanced Problems and Reading in American History (3) I, II** Cowing, McGlone, Margulies, Newby
Interpretations and literature of important problems of American history.
- 635 **The Colonial Period in American History (3) II** Cowing
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) II** 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. (Not offered 1972-73.)
- 641 **Seminar in American Diplomatic History (3) I** D. Johnson
Selected problems in development of U.S. foreign policy and its implementation.
- 654 **Seminar in the History of Mainland Southeast Asia (3) II** Lam, Vella
Studies in histories of peoples and states of Burma, Thailand, Cambodia, Laos and Vietnam.
- 655 **Seminar in the History of Island Southeast Asia (3) I** Van Niel, Vella
Studies in histories of peoples and states of Malaysia, Indonesia and Philippines.
- 661 **Seminar in Chinese History (3) I, II** Kwok, Lamley, McKnight, Tao, Uhalley
Problems and readings in political, social, cultural history of China.
- 663 **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.
- 665 **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. 1600. (2) Early modern, 1600-1877. (3) Modern, 1868 to present. (4) 20th century diplomatic.
- 667 **Seminar in Korean History (3) I, II** Choe, Kang
Reading and research in selected topics in Korean history.
- 675 **Seminar in Pacific History (3) I** Daws, Newbury
Reading and research in selected topics in history of Oceania. Pre: 422 or 424 or 425 or equivalent upper division course in another discipline, with consent of instructor.
- 701 **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.
- 709-710 **Institutional History of Korea (3-3) Yr.** Choe, Kang
Detailed treatment of developments in political, economic and social institutions of traditional Korea.
- 711 **Korean Historical Sources (3) I, II** Choe, 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.
- 713-714 **Chinese Historical Literature (3-3) Yr.** Tao
Systematic reading and use of numerous genres of Chinese historical literature and documents. Chinese bibliography. Knowledge of Chinese required.
- 717-718 **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.
- 721-722 **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.
- 725-726 **Contemporary China Seminar (3-3) Yr.** Uhalley
Topical studies of contemporary China including attention to significant historical antecedents. Pre: 409-410. (Cross-listed as Asian Studies 601.)
- 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. (Not offered 1972-73.)
- 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. (Not offered 1972-73.)
- 731 **Seminar in Political History of Modern Japan (3) I** 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. (733 not offered 1972-73.)
- 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 (v)**
Individual research topics in special fields. (1) American, (2) Pacific, (3) Japanese, (4) European, (5) English, (6) Chinese, (7) Russian, (8) Hawaiian, (9) South Asian, (10) Southeast Asian, (11) Korean.
- 800 **Thesis Research (v)**

Indo-Pacific Languages

Professor: Maurer

Associate Professor: R. Baumer

Assistant Professors: J. Baumer, Dardjowidjojo, Gething, Jenner, Johnson, Nguyen-Dang-Liem, O'Harrow, Roop, Ward.

Instructors: Anthony, Billups, Kimura, Ramos.

Lecturer: de Heer.

General (IP)

In addition to the courses listed here, other languages commanded by individual faculty members may be offered if demand and staff permit. These unlisted languages include Arabic (classical), Armenian, Avestan, Balinese, Batak, Bisayan, Cham, Javanese, Madurese, Minangkabau, Mon, Muong, Persian (Old and Modern), Stieng, Sundanese, and Tahitian. Persons interested in studying an unlisted language are requested to consult with the department chairman as early as possible.

101-102 Directed Elementary Language Study (3-3) Yr.

Directed study of a South Asian, Southeast Asian or Pacific language not regularly listed by the department. Pre: consent of instructor.

201-202 Directed Intermediate Language Study (4-4) Yr.

Continuation of 102. Pre: consent of instructor.

271 Survey of Asian Languages (3) I

General survey of languages of the area, aimed at giving a non-technical summary of geographical distribution, historical development, and linguistic, social, and political aspects of the languages. Special attention paid to lexical borrowing, use of a common script, and problems in language engineering, including language reform and establishment of national languages. Conducted in English. (Cross-listed as EALa 271.)

301-302 Directed Third-Level Language Study (3-3) Yr.

Continuation of 202. Pre: consent of instructor.

361-362 Southeast Asian Literatures in Translation (3-3) Yr.

Survey of traditional and modern literatures of Southeast Asia (except Vietnam) conducted in English for majors in Southeast Asian studies and comparative literature.

365-366 South Asian Literatures in Translation (3-3) Yr.

Survey of traditional and modern literatures of South Asia. Fall term devoted to literature written originally in English, spring term to a vernacular literature to be determined by faculty resources and student interest.

401-402 Directed Fourth-Level Language Study (3-3) Yr.

Continuation of 302. Pre: consent of instructor.

497 Survey of Structures of Southeast Asian Languages (3) II

Survey of the structures of Burmese, Cambodian, Indonesian, Tagalog, Thai and Vietnamese with emphasis on phonology, morphology and syntax. Pre: Ling 421, 422 and consent of instructor.

499 Directed Studies (v) I, II

Study of a Pacific, South Asian or Southeast Asian language through vernacular readings in various academic fields. May be repeated. Pre: third-level language and consent of instructor.

690 Directed Reading (v) I, II

Directed reading of advanced texts written in a South Asian, Southeast Asian or Pacific language. Pre: consent of instructor.

699 Directed Research (v) I, II

Pre: consent of instructor.

Bengali (Beng)

101-102 Elementary Bengali (3-3) Yr.

Development of listening, speaking, reading, and writing colloquial Bengali. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday. Laboratory work.

201-202 Intermediate Bengali (4-4) Yr.

Continuation of 102. Introduction to the literary language. Advanced grammar. Meets 1 hour daily, Monday through Friday. Laboratory work. Pre: 102 or equivalent.

301-302 Third-Level Bengali (3-3) Yr.

Continuation of 202. Primary emphasis on reading and written work. Introduction to modern literature of Bengal. Pre: 202 or equivalent.

690 Directed Readings in Bengali Texts (v) I

Pre: consent of instructor. May be repeated.

Burmese (Burm)

101-102 Elementary Burmese (3-3) Yr.

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday. Laboratory work.

201-202 Intermediate Burmese (4-4) Yr.

Continuation of 102. Conversation, reading, writing. Meets 1 hour daily, Monday through Friday. Laboratory work. Pre: 102 or equivalent.

Cambodian (Cam)

101-102 Elementary Cambodian (3-3) Yr.

Development of reading skill in modern standard Khmer. Structural points introduced inductively. Meets 3 hours weekly. Daily laboratory work.

201-202 Intermediate Cambodian (3-3) Yr.

Continuation of 102. After completion, student should be proficient in use of all major sentence patterns. Meets 3 hours weekly. Daily laboratory work. Pre: 102 or equivalent.

281-282 Introductory Old Khmer (3-3) Yr.

Reading and analysis of inscriptions of the Angkor period, using graduated romanized texts. Meets 3 hours weekly. Pre: 202 or equivalent. May be repeated.

690 Directed Reading (v)

Directed reading of advanced or specialized texts in modern, Middle or Old Khmer. Pre: consent of instructor. May be repeated.

699 Directed Research (v)

Directed research involving use of Cambodian literary, historical or technical sources. Pre: consent of instructor. May be repeated.

Hawaiian (Haw)

101-102 Elementary Hawaiian (3-3) Yr.

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday, with 4 out of 5 hours devoted to directed drill and practice. Daily laboratory work.

131-132 Hawaiian for Reading Proficiency (3-3) Yr.

Elementary course in Hawaiian with emphasis on reading and translation.

201-202 Intermediate Hawaiian (4-4) Yr.

Continuation of 102. Meets 1 hour daily, Monday through Friday, with at least 2 out of 5 hours devoted to directed drill and practice. Reading of traditional texts. Daily laboratory work. Pre: 102 or equivalent.

261 Hawaiian Literature in English (3) I

Survey of traditional myths, legends, chants, songs, sayings. Conducted in English.

301-302 Third-Level Hawaiian (3-3) Yr.

Continuation of 202. Conducted in Hawaiian. Advanced conversation and reading. Pre: 202 or equivalent.

401-402 Fourth-Level Hawaiian (3-3) Yr.

Advanced reading and discussion in Hawaiian. Pre: 302 or equivalent.

435-436 Hawaiian Translation (3-3) Yr.

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

452 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)**101-102 Elementary Hindi (3-3) Yr.**

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday, with at least 3 out of 5 hours devoted to directed drill and practice. Daily laboratory work.

201-202 Intermediate Hindi (4-4) Yr.

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

301-302 Third-Level Hindi (3-3) Yr.

Continuation of 202. Conversation and advanced reading. Pre: 202 or equivalent.

Ilokano (Ilo)**101-102 Elementary Ilokano (3-3) Yr.**

Development of listening, speaking, reading, writing skills. 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.

Indonesian (Ind)**103 Accelerated Elementary Indonesian (6) I**

Development of listening, speaking, reading, writing skills. 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) I

Continuation of 204. Conducted mainly in Indonesian. Meets three times a week, 2 hours each. Emphasis on vocabulary building and extended mastery of sentence structures through reading, composition, and conversation. Laboratory work. Pre: 204 or equivalent.

404 Accelerated Fourth-Level Indonesian (6) II

Continuation of 303. Conducted in Indonesian. Meets three times a week, 2 hours each. Emphasis on creative use of the language for academic topics. Introduction to varieties of speech. Laboratory work. Pre: 303 or equivalent.

452 Structure of Indonesian (3) II

Introductory study of modern Indonesian grammar including some socio-linguistic background. Pre: 303 or equivalent.

Lao (Lao)**101-102 Elementary Lao (3-3) Yr.**

Development of listening and speaking skills. Reading and writing introduced after thorough pronunciation practice. Meets 1 hour daily, Monday through Friday. Laboratory work.

201-202 Intermediate Lao (4-4) Yr.

Continuation of 102. Conversation, reading, writing. Meets 1 hour daily, Monday through Friday. Laboratory work. Pre: 102 or equivalent.

Marathi (Marat)**101-102 Elementary Marathi (3-3) Yr.**

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday. Daily laboratory work.

Pali (Pali)**381-382 Elementary Pali (3-3) Yr.**

Reading of simple texts from the Pali Canon. Grammar taught as needed for the reading. Pre: Sanskrit 382 or equivalent.

481-482 Intermediate Pali (3-3) Yr.

Continuation of 382. Reading of various Hinayana texts. Pre: 382 or equivalent.

Prakrit (Prak)**481-482 Introduction to Prakrit (3-3) Yr.**

Survey of the principal Prakrits with selected readings and analysis. Pre: Sanskrit 481-482 and Pali 381-382 or equivalent.

Sanskrit (Sansk)**381-382 Introduction to Sanskrit (3-3) Yr.**

Introduction to basic Sanskrit grammar followed by reading and analysis of progressively difficult classical texts. Pre: consent of instructor.

481-482 Intermediate Sanskrit (3-3) Yr.

Continuation of 382. Reading and analysis of classical texts with review of grammar. Pre: 382 or equivalent.

681-682 Third-Level Sanskrit (3-3) Yr.

Reading and analysis of various classical texts in 1st semester. Introduction to Veda in 2nd semester. Pre: 482 or equivalent.

683-684 Fourth-Level Sanskrit (3-3) Yr.

Reading, analysis and interpretation of various Vedic or Sanskrit texts selected according to students' requests. Pre: 682 or equivalent.

690 Directed Reading (v)

Directed reading, analysis, and interpretation of specifically selected texts. May be repeated. Pre: consent of instructor.

Tagalog (Tag)**101-102 Elementary Tagalog/Pilipino (3-3) Yr.**

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday, with 3 out of 5 hours devoted to directed drill and practice. Daily laboratory work.

201-202 Intermediate Tagalog/Pilipino (4-4) Yr.

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

301-302 Third-Level Tagalog (3-3) Yr.

Continuation of 204. Conversation, advanced reading and composition. Meets 3 times weekly. Pre: 204 or equivalent and consent of instructor.

361 Philippine Literature in English (3) II

Survey in English from Period of Apprenticeship (1900-29) to Period of Emergence (1945-). Pre: 1 semester of literature in English department.

401-402 Fourth-Level Tagalog (3-3) Yr.

Continuation of 302. Advanced reading in current literature, with discussion of cultural implications. Includes composition. Meets 3 times weekly. Pre: 302 or equivalent and consent of instructor.

451 Structure of Tagalog (3)

Introductory study of phonology, morphology, syntax. Pre: 204 or equivalent.

690 Directed Reading (v)

Directed reading and analysis of advanced texts in Tagalog. Pre: consent of instructor. May be repeated.

699 Directed Research (v)

Directed research involving use and analysis of Tagalog sources. Pre: consent of instructor. May be repeated.

Tamil (Tamil)**101-102 Elementary Tamil (3-3) Yr.**

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday. Daily laboratory work.

201-202 Intermediate Tamil (4-4) Yr.

Continuation of 102. Meets 1 hour daily, Monday through Friday. Daily laboratory work. Pre: 102 or equivalent.

Thai (Thai)**103 Accelerated Elementary Thai (6) I**

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 2 hours daily, Monday through Friday, with 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work.

204 Accelerated Intermediate Thai (8) II

Continuation of 103. Meets 2 hours daily, Monday through Friday, with 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work. Pre: 103 or equivalent.

303 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.

404 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.

451-452 Structure of Thai (3-3) Yr.

Introductory study of the grammar of Thai as analyzed by descriptive linguists. Standard language and regional variants discussed. Pre: Ling 320 and knowledge of one Southeast Asian language.

Vietnamese (Viet)**101-102 Elementary Vietnamese (3-3) Yr.**

Development of listening, speaking, reading, writing skills. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday, with 4 out of 5 hours devoted to directed drill and practice. Daily laboratory work.

201-202 Intermediate Vietnamese (4-4) Yr.

Continuation of 102. After completion, student should be proficient in use of all major sentence patterns, able to produce sounds, combination of sounds, tones, and intonation, and should have some understanding of Vietnamese culture. Meets 1 hour daily, Monday through Friday. Daily laboratory work. Pre: 102 or equivalent.

301-302 Third-Level Vietnamese (3-3) Yr.

Continuation of 202. Emphasis upon vocabulary building and mastery of sentence structures through reading and conversations. Pre: 202 or equivalent.

401-402 Fourth-Level Vietnamese (3-3) Yr.

Continuation of 302. Extensive reading and oral discussion with emphasis on academic and cultural topics. Pre: 302 or equivalent.

421-422 Advanced Vietnamese Conversation (3-3) Yr.

Systematic practice on academic topics of conversation. Laboratory drill. Pre: 402 or equivalent and consent of instructor.

433-434 Selected Readings in Vietnamese (3-3) Yr.

Selected readings in various disciplines selected on basis of student interest and availability of staff. Pre: consent of instructor. May be repeated.

451-452 Structure of Vietnamese (3-3) Yr.

Introductory study of phonology, morphology, syntax, including some discussion of linguistic geography. Pre: 202.

461-462 Introduction to Vietnamese Literature (3-3) Yr.

Selected readings in major genres, with emphasis on analysis. First semester devoted to modern literature, second semester to traditional literature, including an introduction to demotic script. Pre: 402 or consent of instructor.

690 Directed Reading (v)

Directed reading of advanced Vietnamese texts. Pre: consent of instructor. May be repeated.

699 Directed Research (v)

Directed research based on Vietnamese sources. Pre: consent of instructor. May be repeated.

Information Sciences (ISc)

The department of information and computer 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 and computer 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 and computer sciences M.S. program is intended to serve both the student who is interested in a career in information and computer sciences and the student who expects to use information and computer 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 may be found in the University of Hawaii Graduate Division Catalog.

Professors: Abramson, Akaike, Gersch, Jones, Kinariwala, Kuo, Lichtenberger, Pager, Peterson, Pitts, Slepian, Watanabe, Weldon.
Associate Professors: Gaarder, Lester, Lin, Nicholson, Rodgers, Sprague, Wallen.
Assistant Professors: Lew, Plasch.

301-302 Computers and Information Sciences (3-3) Yr. Staff

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 facilities of UH Computing Center required. Not intended for information sciences or engineering major. Pre: high school algebra.

- 371 Elementary Probability Theory (3) I, II** Gersch
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.
- 410 Computer Project (3) I, II** Nicholson
Students work in small groups on a project involving application or design of a computer system. Projects chosen from various areas subject to availability of suitable computers and background and interests of students and faculty. Pre: 466 or 467 and consent of instructor.
- 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, ISc 371 or equivalent.
- 445 Introduction to Random Processes (3) I or II** Gersch
Linear systems, Fourier transforms, foundations of probability, random variables, functions of random variables, random processes, Gaussian random processes. Pre: Math 206, ISc 371.
- 446 Information Theory and Coding (3) I** 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, ISc 371, junior standing or consent of instructor.
- 466 Computer Organization and Programming Techniques (4) I, II** Peterson
Organization and machine language of typical computers. Machine language programming techniques. Introduction to 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 (4) 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 I, or COBOL.
- 491 Special Topics in Information Sciences (v) I, II** Staff
Course will reflect special interests of visiting and permanent faculty, and 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.
- 610 Computer Project (3) I or II** Nicholson
Students work in small groups on a project involving application or design of a computer system. Projects chosen from various areas subject to availability of suitable computers and background and interest of students and faculty. Pre: graduate standing and 466 or 467 and consent of instructor.
- 621 Formal Linguistics (3) I or II** Peterson
Introduction to formal theory of languages, their recognition and translation. Grammars, automata, decidability, complexity and related topics. Pre: consent of instructor.
- 622 The Theory and Construction of Compilers (3) I or II** Lew
Design and implementation of compilers. Syntactic and semantic descriptions of programming languages. Algorithms for syntactic analysis and object code generation. Pre: 466, 467.
- 625 Mathematical Properties of Natural Languages (3) II** Lester
Rule-governed nature of natural languages. Construction and evaluation of logical systems that mirror properties of natural languages. Students enrolling in this course may not take Ling 625. Pre: consent of instructor.
- 627 Information Structures (3) I or II** Lew
Modelling structures, implementation structures, storage management, representation of procedure, run time representation of programs, specialized data manipulation languages and facilities, data definition, file management. Pre: 466, 467.
- 630 Information Processing in the Nervous System (3) I or II** Gersch
Concept, behavior and properties of neural elements, networks and systems, including conduction of the nervous impulse, properties of sensory receptors, neural coding, neural models, the visual system and central control of posture and locomotion. Pre: Math 206.
- 641 Discrete State Stochastic Processes (3) I or II** Plasch
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.
- 644 Pattern Recognition (3) II** Watanabe
Describes nature of the problems in pattern recognition and clustering and explains various algorithms. Pre: 371 or knowledge of probability.
- 646 Parametric Methods in Time Series Analysis (3) I or II** Gersch
Scalar and multidimensional autoregressive and mixed autoregressive-moving average models fit to stationary time series. Applications to problems in prediction, spectral analysis, identification of unknown systems and causality arising in meteorology, neurophysiology, structural engineering and geophysics. Pre: 445.
- 648 Theory of Inference (3) I** Watanabe
Formal and quantitative study of 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. Pre: elementary knowledge of probability, consent of instructor.
- 650 Time Series Analysis (3) I** 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 Applied Regression Analysis (3) II** Jones
Fitting a straight line by least squares, multiple regression, hypothesis testing, examination of residuals, dummy variables, stepwise regression, analysis of variance, nonlinear estimation. Computer assignments involving writing regression programs from scratch and using the regression package REGPAK. Pre: 443 or equivalent.
- 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 expressions. Decision problems of finite automata. Turning machines. Canonical systems. Pre: consent of instructor.
- 663 The Theory of Computability (3) I or II** Pager
Particularly relevant to students of information sciences, logic and mathematics. 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, semi-computability, combinatorial systems, the complexity of recursive functions. Pre: none.
- 665 Systems Programming (3) I** 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 programming course.
- 680 Statistical Decision Analysis (3) I or II** Plasch
Development of a normative theory for choice under uncertainty and development of the Bayesian approach to statistics. Modeling values and risk preference using utility measures and modeling information about uncertainties using probability measures. Design and value of information-gathering experiments. Relationships between Bayesian statistics and classical statistics. Examples drawn from engineering, business, medicine and other fields. Pre: Math 206, ISc 371.

- 690 Seminar in Information Sciences (1) I, II** Abramson
Series of talks on advanced research topics in information sciences.
- 693 Special Topics in Information Sciences (v) I, II** Staff
Reflects special interests of visiting and permanent faculty, generally in the fields of computer systems, programming languages, artificial intelligence and computer nets. Pre: consent of instructor.
- 699 Directed Reading (v) I, II** Staff
Graduate standing, consent of instructor.
- 710 Seminar in Software Systems (1) I, II** Lew
Intended for graduate students interested in advanced study and research in Area 1 explained in the *Graduate Catalog*. Formal theory and practical considerations of software-related problems in computer science discussed. Pre: graduate standing, consent of instructor.
- 720 Seminar in Automata and Computability Theory (1) I, II** Pager
Intended for graduate students interested in advanced study and research in Background Area 2 explained in the *Graduate Catalog*. Pre: graduate standing, consent of instructor.
- 730 Seminar in Time Series Analysis and Applications (1) I, II** Gersch
Intended for graduate students interested in advanced study and research in different disciplines in time series analysis and applications. Discussions of problems in meteorology, neurophysiology, engineering, geophysics and oceanography can expose the student to the diversity of applications and newer methods of time series analysis.
- 800 Thesis Research (v) I, II**

Linguistics (Ling)

Professors: Bender, Fairbanks, Grace, Kim, McKaughan, Thompson.
Associate Professors: Bickerton, Pawley, Schütz, Starosta, Topping, Tsuzaki.
Assistant Professors: Forman, Howard, Hsu, Josephs, Lee, Lyovin, Peters, Reid, Ward.

- 102 Introduction to the Study of Language (3) I, II**
Nature and workings of language; its role in culture and history.
- 200 Languages of the World (3) I, II**
Survey of major languages and language families of the world, including brief characterizations of their salient features, and attention to the numbers and distribution of their speakers. Pre: 102.
- 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 students for field work, especially with unrecorded languages.
- 414 Introduction to Linguistic Anthropology (3) I**
Introduction to the ethnographic study of speech and language. Pre: consent of instructor.
- 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.
- 440 Introduction to Linguistic Semantics (3) II**
General review of notions and problems relating to the expression of meaning in natural languages and their implications for linguistic semantics.
- 470 Introduction to the Study of Children's Speech (3) I, II**
Survey of findings regarding the child's acquisition of language. Pre: 102 or 320.
- 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**
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.
- 640 Topics in Linguistics (3) I, II**
Open topic course dealing with range of subjects including among others the history of the discipline, schools of linguistic thought, and current issues. May be repeated. Pre: consent of instructor.
- 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 (v) 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 language of various areas of the world, topics depending on both resident and visiting staff specialties. Pre: 622. May be repeated.

800 Thesis Research (v)**Mathematics (Math)**

Professors: Bear, Gregory, Hanf, Hirschfeld, Mookini, Nobusawa, Pierce, Pitcher.

Associate Professors: Colby, Mader, Rogers, Wallen, Wells, Williamson, Wong, Yeh.

Assistant Professors: Allday, Bertram, Brase, Brown, Calica, Clark, Csordas, Fakhruddin, Gilfeather, Hilden, Iha, Johnson, Kibler, Koehler, Kranzler, Lee, Martin, McDermott, Monroe, Myers, Reiter, Siu, Spielvogel, Wenska, Freese, Hoover, Little.

100 Survey of Mathematics (3) I, II

Selected topics designed to acquaint non-specialists with examples of mathematical reasoning.

111 Introduction to Mathematics (3) I, II

Study of concepts and properties 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. In addition every student required to take a screening examination to test whether he has sufficient skill in algebra. Examination given in the first class meeting.

150 Introductory Calculus for the Non-Specialist (3) I, II

Selected topics and application in algebra, trigonometry, analytic geometry, and calculus. *Not* acceptable as prerequisite to 205 or 206. Pre: two years of high school algebra and one year of plane geometry.

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; differentiation and integration of algebraic functions with applications. Pre: C in 134 or in equivalent courses covering trigonometry and analytic geometry.

206 Calculus II (3) I, II

Derivatives of integrals of trigonometric, exponential, logarithmic and hyperbolic functions; techniques of integration; infinite series. Pre: C in 205 or equivalent.

231 Calculus III (3) I, II

Power series, vector-oriented study of functions of several variables; partial differentiation and line integrals. Pre: C in 206 or equivalent.

232 Calculus IV (3) I, II

Multiple integrals, surface integrals, first and second order ordinary differential equations, linear equations with constant coefficients. Pre: 231 or consent of instructor.

251 Informal Geometry (3) I, II

Informal treatment of non-metric relationships, congruence and similarity, polygons and polyhedrons, transformations. (Primarily for Elementary Education majors.) Pre: 111 or equivalent.

311 Introduction to Linear Algebra (3) I, II

Algebra of matrices, linear equations, real vector spaces and transformations. Pre: 231.

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, II

Axiomatic Euclidean geometry and introduction to the 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.

373 Elementary Statistics (3) I, II

Estimation, tests of significance, the concept of power. Pre: 371.

375 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: 2 semesters of calculus or equivalent.

402 Partial Differential Equations (3) I, II

Integral surfaces and characteristics of first and second order partial differential equations. Applications to equations of mathematical physics. Pre: 232.

403-404 Methods of Applied Mathematics (3-3) Yr.

Vector calculus, functions of complex variable, residue theory, conformal mapping, Fourier series and integrals, Laplace transforms, special functions, partial differential equations, calculus of variations. Pre: 232.

407 Introduction to Numerical Analysis (3) I

Solution to equations of one variable and systems of linear equations by iterative methods, interpolation, curve fitting, and convergence criteria for special iterations. Pre: 232 and 311.

408 Numerical Solution of Differential Equations (3) II

Runge Kutta methods, finite difference methods for ordinary and partial differential equations, and convergence criteria. Pre: 402 and 407.

412-413 Introduction to Abstract Algebra (3-3) Yr.

Introduction to basic algebraic structures. Topics include finite groups, abelian groups, integral domains, quotient fields, factorization, polynomial rings, field extensions, vector spaces, linear transformations and canonical forms. Pre: 311.

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 the Riemann integral, sequences and series, uniform convergence, implicit function theorems, differentials and Jacobians. Pre: 311.

442 Vector Analysis (3) II

Vector operations and their applications. Vector differential operators. Line and surface integrals. Theorems of Green and Stokes. Pre: 231.

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.

451 Projective Geometry (3) I or II

Postulational approach to synthetic and analytic projective geometry: homogeneous coordinates, Desargues' theorem, harmonic sets; collineations of points, concurrence of lines, duality principle, introduction to non-Euclidean geometries. Pre: 311 or consent of instructor.

455 Mathematical Logic I (3) I

A system of first order logic. Formal notions of well-formed formula, proof, and derivability. Semantic notions of model, truth, and validity. Completeness theorem. Pre: 412 or consent of instructor.

456 Mathematical Logic II (3) II

Applied first order logic, arithmetization of metamathematics, recursive functions, and incompleteness results. Pre: 455 or Phil 611 or 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 (v) I, II

Individual reading in mathematics. Limited to advanced students. Students must make arrangements with an instructor before enrolling in the course.

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. 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.

615 Ring Theory (3) I or II

Ideal theory in Noetherian rings, localization, Dedekind domains, the Jacobson radical, the Wedderburn-Artin theorem, 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; metrizable; 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

Topics from various areas of graduate mathematics. May be repeated for credit. Pre: consent of instructor.

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.

671 Advanced Probability (3) II

Independence and conditioning, martingales, ergodic theory, Markov chains, central limit theorem. Pre: 631 or consent of instructor.

672 Stochastic Processes (3) I

Stationary, Gaussian and Markov processes. Pre: 671 or consent of instructor.

750 Seminar (v) I, II

Pre: consent of instructor.

799 Directed Reading and Research (v) I, II

Pre: graduate standing and consent of instructor.

800 Thesis Research (v) I, II

Meteorology (Met)

Professors: Chiu, Murakami, Ramage.

Associate Professors: Adams, Fullerton, Sadler, Takahashi.

Assistant Professors: Daniels, Raymond, Taylor.

101 Climate, Weather and the**Atmosphere (4) I, II (3L, 1Lb)****Adams, Daniels, Taylor**

Introduction to physical science for the non-science major, using the atmosphere as the medium to show physical processes and basic concepts of the physical world around us. Encompasses earth-sun relationships, ocean-atmosphere interactions, satellite observations, earth's atmosphere compared to those of other planets, acoustical, electrical and optical properties, and emphasis on local weather processes and climate of Hawaii.

342 Meteorological Instruments and**Observations (3) II (2L, 1Lb)****Taylor**

Principles of meteorological instruments and their care; instrumental and visual weather observation; coding. Pre: credit or registration in Math 205. (Alt. yrs.; offered 1972-73.)

350 Theoretical Meteorology Laboratory I (1) I (1Lb)**Adams**

Exercises related to 352. Required for meteorology majors. Pre: credit or registration in 352.

352 Theoretical Meteorology I (3) I (3L)**Adams**

Atmospheric statics; optical, acoustical, electrical phenomena; condensation and precipitation; radiation and heat balance; thermodynamics; kinematics. Pre: Phys 275; concurrent registration in Phys 310, or consent of instructor.

353 Theoretical Meteorology II (3) II (3L)**Adams**

Basic concepts of fluid motion applied to atmosphere. Equations of motion; special cases of balanced motion; principles of numerical weather prediction. Pre: 352.

354 Theoretical Meteorology Laboratory II (1) II (1Lb)**Adams**

Exercises related to 353. Required for meteorology majors. Pre: credit or registration in 353.

444 Meteorological Satellites (3) II (1Lb)**Sadler, Adams**

Fundamentals of meteorology, physical laws of space and satellite orbits; operation of meteorological satellites, satellite information and its usage. Pre: credit or registration in Math 205. (Alt. yrs.; not offered 1972-73.)

445 Tropical Meteorology (3) II**Taylor**

History; tropical clouds and hydrometeors; easterly waves and typhoons; monsoons; local and diurnal effects. Pre: 352. (Alt. yrs.; offered 1972-73.)

450 Meteorological Analysis Laboratory (3) II**Daniels, Taylor**

Techniques of portraying and analyzing atmospheric structure and weather systems in middle and high latitudes; modern methods of forecasting extratropical systems. Pre: credit or registration in 353. (Alt. yrs.; not offered 1972-73.)

- 452 Tropical Analysis Laboratory (3) II** Taylor
Techniques of portraying and analyzing atmospheric structure and weather systems in tropical and equatorial regions; modern methods of forecasting tropical systems. Pre: credit or registration in 353. (Alt. yrs.; offered 1972-73.)
- 639 Meteorology of the Tropical Oceans (2) I** Ramage, Sadler
Trade winds, typhoons, synoptic climatology. research exercises. Pre: 445 or consent of instructor.
- 640 Advanced Tropical Meteorological Laboratory (3) II (3Lb)** Ramage, Sadler
Modern methods of analysis and forecasting applied to the tropics. Pre: 639 or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 641 Monsoon Meteorology (3) II** Ramage
Synoptic components of monsoons, regional and temporal variability, numerical models, research exercises. Pre: 639 or consent of instructor.
- 642 Seminar in Meteorological Sensors (3) I** Taylor
Theoretical and experimental approach to the response of meteorological sensors and sensor systems. (Alt. yrs.; offered 1972-73.)
- 643 Cloud Physics (3) I** Raymond
Physical processes attending formation and subsequent history of clouds and cloud particles.
- 644 Physical Meteorology (3) II** Daniels
Advanced treatment of radiation, atmospheric optics, acoustics, electricity, visibility; radar meteorology. Pre: 352.
- 645 Advanced Air Pollution Meteorology (3) I (2L, 1Lb)** Daniels
Development and comparison of major air pollution diffusion expressions, their application and modification for different weather conditions and intended uses. Turbulence and pertinent instrumentation. Actual grid-based urban air pollution calculations. Pre: Geog 407, 408 or consent of instructor.
- 646 Statistical Meteorology (3) I** R. Jones
Frequency distributions of atmospheric variables, probability; correlation and regressions; time series analysis; statistical forecasting. Pre: Math 231.
- 650 Advanced Theoretical Meteorology I (3) I** Chiu
Basic equations of meteorology in vector form and in various coordinate systems; circulation and vorticity theorems; classical hydrodynamics. Pre: 353 or equivalent.
- 651 Advanced Theoretical Meteorology II (3) II** Chiu
Atmospheric waves and tides; stability problems. Pre: 650.
- 742 Atmospheric Turbulence (3) II** Chiu
Equations of motion for turbulent flow; statistical descriptions of turbulence; atmospheric boundary layer processes. Pre: 650 or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 745 Dynamic Meteorology in Extratropics (5) II (3L, 2Lb)** 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 Dynamic Meteorology in Tropics (5) I (3L, 2Lb)** Murakami
Instability theory; numerical integration procedures; special problems in numerical analysis; programming exercises of numerical integration. Pre: 353.
- 752 Special Topics in Meteorology (3) I, II**
Concentration 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. (Also offered at Hilo College.)
- 799 Directed Research (v) I, II**
Pre: consent of instructor.
- 800 Thesis Research (v) I, II**

Music (Mus)

Professors: Kerr, McKay, L. Rowell, A. Russell, Smith, Vaught.
Associate Professors: Chadwick-Cullen, Lum, W. Pfeiffer, Tait, Trubitt, Uchima.
Assistant Professors: Brown, Coraggio, Gillett, Gordon, Krantz, Shipwright, Spielman, Susilo, Trimillos, Walz.
Instructor: Van Zile.
Lecturers: Allton, S. Arai, T. Arai, Burton, Cambra, Cole, DeMello, Fleming, Freitas, Gilmore, Harling, Huhm, Kaeppler, Kim, LeBeck, Mikami, Miyamura, H. Nakasone, Y. Nakasone, R. Pfeiffer, Porritt, Rajapur, Roblee, A. Rowell, L. Russell, Sapp, Shifrin, Valentin, Watkins, White, Wong, Yamada.

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**
Performance of choral literature from Renaissance to present. Previous choral experience not required.
- 115-116 First-Level Secondary Piano (1-1) Yr.**
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.**
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 1972-73.)
- 123-124 Elementary Voice Class (1-1) Yr.**
Basic principles of voice production. Relevant problems in voice literature at elementary level. Pre: consent of instructor.
- 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) I, II**
Basic principles of performance of Asian music. Relevant problems in literature at elementary level. (71) koto, (72) shamisen, (78) South Indian singing.
- 129 Elementary Classical Guitar Class (1) I, II**
Basic principles of classical guitar performance. Relevant problems in guitar literature at elementary level. Pre: consent of instructor.
- 151-152 String Methods (2-2) Yr.**
For students preparing to teach instrumental music. Performance techniques, materials and pedagogy for string instruments.
- 153 Woodwind Methods (2) I**
Similar to 151-152.
- 154 Brass Methods (2) II**
Similar to 151-152.
- 155 Percussion Methods (2) I**
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 (3) 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

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.

Materials and organization of music; analysis, writing and keyboard application. Taken concurrently with 183-184. Placement conference required. Pre: consent of instructor.

183-184 Aural Training (1-1) Yr.

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.

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: 182 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: 182 or consent of instructor.

271-272 Sound Organization in World Cultures (2-2) Yr.

Music-theoretical study of sound organization as defined and used by various cultures, such as Hawaii, Japan, India, Ghana, and Java. Attention to uses of sequential event, simultaneous event, timbre musical process, tuning systems and larger forms. Pre: 183-184 or equivalent.

273-274 Aural Training in Ethnic Musics (1-1) Yr.

Development of listening and aural analysis skills concurrent with 271-272. Pre: 183-184 or equivalent.

281-282 Intermediate Music Theory (2-2) Yr.

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.

Systematic study of advanced problems in perception, identification and notation of musical sounds. Includes sight-singing. Taken concurrently with 281-282. Pre: 184.

325-326 Conducting (1-2) Yr.

Problems in directing instrumental and choral ensembles and organizations. Score reading, rehearsal techniques and basic interpretive problems. Pre: 182.

351-352 Music in the Elementary School (2-2) Yr.

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

Study of music concepts and literature appropriate for elementary schools. Basic materials and procedures. Not intended for majors in elementary school music (vocal-general). Desirable background: any one of the following: 118, 119, 160, 170, 180, 181. Pre: EdCI 312 or concurrent registration.

357 Organ Pedagogy (2)

Comparison of technical methods, evaluation and grading of literature; practice teaching. Pre: 236 or consent of instructor.

358-359 Piano Methods (2-2) Yr.

Concepts, materials and procedures for class and individual instruction in piano. Pre: 182 or consent of instructor.

370 Music in Modern American (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.)

391-392 Movement Notation (2-2) Yr.

Analysis and recording of movement through Labanotation; reconstruction of notated exercises and dances. Pre: 180 or consent of instructor.

397 Hawaiian Chorus (1) I, II

Performance of Hawaiian choral music of the post-missionary period.

399 Directed Study (v) I, II

Limited to senior majors with 2.7 grade-point ratio or 3.0 in music. Pre: consent of instructor.

401 Ensembles (1) I, II

Check schedule of classes for available sections.

Performance of literature for ensembles and performing groups of various sizes and kinds: (12) University Chamber Singers, (21) Keyboard Accompanying, (22) Piano Duo, (23) Keyboard Chamber Music, (31) String Ensemble, (37) North American Fiddling, (41) Woodwind Ensemble, (51) Brass Ensemble, (52) Stage Band, (61) Percussion Ensemble, (71) Koto Ensemble, (72) Japanese Ensemble, (73) Chinese Ensemble, (74) Korean Ensemble, (75) Okinawan Ensemble, (76) Philippine Ensemble, (77) Asian Ensemble, (78) Oceanic Ensemble, (81) Collegium Musicum, (82) Contemporary Music Ensemble, (91) Hawaiian Dance, (92) Japanese Dance, (93) Chinese Dance, (94) Korean Dance, (95) Okinawan Dance, (96) Philippine Dance, (97) Asian Dance, (98) Oceanic Dance. Pre: audition or consent of instructor. May be repeated for credit.

402 University Concert Choir (1) I, II

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

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

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 Band (1) I, II

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, (22) organ. Pre: 236 in appropriate area, or consent of instructor. May be repeated for credit.

421 Service Playing (2)

Comparison of liturgies, score reading, accompanying, choral directing from the console, hymn playing, improvisation. Pre: 236 or consent of instructor.

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 1972-73.)

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 1972-73.)

457 Asian and Pacific Music in Education (2) II

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

Concepts, materials and procedures for class and individual instruction in voice. Pre: 182 or consent of instructor.

461 Symphonic Music (2) I

Historical study of symphony orchestra and its literature from Bach to present. Pre: 265 and 266 or consent of instructor. (Not offered 1972-73.)

462 Choral Music (2) II

Historical study of choral literature from Palestrina to present. Pre: 265 and 266 or consent of instructor. (Not offered 1972-73.)

463 Opera (2) I

Historical study of operatic literature from Monteverdi to present. Pre: 265 and 266 or consent of instructor. (Not offered 1972-73.)

464 Twentieth-Century Music (2)

Study of major styles and composers from Debussy to present. Pre: 265 and 266 or consent of instructor.

465 Chamber Music (2)

Historical study from Renaissance to present, of music written for one performer to a part. Pre: 265 and 266 or consent of instructor. (Not offered 1972-73.)

466 Music of the United States (2)

Historical study of music of U.S. from colonial times. Pre: 265 and 266 or consent of instructor.

467 Solo Song (2)

Historical study of solo song literature from the troubadours to the present. Pre: 265-266 or consent of instructor.

468 The Concerto (2)

Historical study of concerto grosso, solo concerto, sinfonia concertante and Konzertstück from their inception to the present. Pre: 265-266 or consent of instructor.

469 Keyboard Music (2)

Study of literature for harpsichord, piano and organ from Renaissance to present, emphasizing development of historical styles. Pre: 265 and 266 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) I

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, (4) Indonesia. Pre: either 160, 170, 180, 181 or consent of instructor. May be repeated for credit.

479 Undergraduate Topics in Ethnomusicology (2) I or II

Problem-oriented cross-cultural investigation of music and music organization. Subject matter variable. May be repeated for credit. Pre: any ethnomusicology course in the -70 series or consent of instructor.

481-482 Orchestration (2-2) Yr.

Basic principles of scoring for orchestra and band, including study of instrumental ranges, timbres, transpositions. *2nd semester:* transcribing or composing for band, orchestra and chorus. Pre: 182 or consent of instructor.

483-484 Counterpoint (2-2) I

Techniques of contrapuntal writing from the beginnings of polyphone 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.

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.

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.

580 Theory Review (3) I

Pre: consent of instructor.

600 Seminar (3) 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

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) I, II

Detailed study of music literature by chronological period. May be repeated. (1) Medieval, (2) Renaissance, (3) Baroque, (4) Classic, (5) Romantic. Pre: 265-266 or consent of instructor.

661 Bibliography and Research Methods in Music (3) I

Basic materials and techniques for research in music.

670 Regional Music (3) I, II

Musical content and historico-social context of principal musical traditions. (1) Asia, (2) Oceania. Pre: consent of instructor. May be repeated.

680 Advanced Problems in Music Theory (2) 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.

690 Regional Dances (3) I, II

Dance content and historico-social context of principal dance traditions. May be repeated. (1) Asia, (2) Oceania. Pre: consent of instructor.

699 Directed Work (v) 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)

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.

785 Comparative Theory (3) I

Music in the ancient world; high musical cultures of Asia and European Middle East examined for systems of pitch and time organization, mode, forms, and other theoretical constructs; cosmologies in their relationship to music; music as symbol; analysis of non-Western music in both culture-significant and objective terms. Pre: graduate standing in music or instructor's consent.

800 Thesis Research (v) 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 and admission to these courses are based on tests and auditions given by the department during the advising and registration period. Applied music courses cannot be audited.

Information regarding specific requirements in applied music courses may be obtained from the music department.

Fees Per Semester

One half-hour lesson per week \$55.00
Two half-hour lessons or one hour per week \$90.00

131 Introduction to Applied Music (v) I, II

Individual instruction in solo vocal or instrumental performance at the elementary level. Including study of works representative of literature. For nonmusic majors and music majors in secondary performance fields. May be repeated for credit. (11) Voice, (21) piano, (22) organ, (24) harpsichord, (25) harp, (26) classical guitar, (31) violin, (32) viola, (33) cello, (34) double bass, (35) viola da gamba, (41) flute, (42) oboe, (43) clarinet, (44) bassoon, (45) saxophone, (51) trumpet, (52) French horn, (53) trombone, (54) tuba, (55) baritone horn, (61) percussion, (71) koto, (72) shamisen, (78) South Indian singing, (79) Hawaiian chant, (91) Japanese dance, (94) Korean dance, (96) Philippine dance. Pre: audition or consent of instructor.

135-136 First-Level Applied Music (v) I, II

For music majors or intended majors. Individual instruction in solo vocal or instrumental performance at first performance level. Study of works representative of the literature. Weekly repertoire laboratory required. (11) Voice, (21) piano, (22) organ, (25) harp, (26) classical guitar, (31) violin, (32) viola, (33) cello, (34) double bass, (41) flute, (42) oboe, (43) clarinet, (44) bassoon, (45) saxophone, (51) trumpet, (52) French horn, (53) trombone, (54) tuba, (55) baritone horn, (61) percussion. Pre: audition.

231 Intermediate Applied Music (v) I, II

For nonmusic 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 (v) I, II

For music majors or intended majors. Individual instruction in solo vocal 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 (v) I, II

For music majors. Individual instruction in solo vocal or instrumental performance at the third performance level. Study of works representative of literature. Weekly repertoire laboratory required. Half recital required in 336. See 135 for list of sections. Pre: 236 or consent of instructor.

431 Advanced Applied Music (v) I, II

For students who are 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 (v) I, II

For majors in music performance. Individual instruction in solo vocal or instrumental performance at fourth performance level. Study of works representative of literature. Weekly repertoire laboratory required. Full recital required in 436. Pre: 336 or consent of instructor. See 135 for list of sections.

635 Graduate-Level Applied Music (v) 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) French 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) French horn, (53) trombone, (54) tuba, (61) percussion.

Oceanography (Ocean)

Professors: Chave, Groves, Hardy, Murphy, Wyrcki.

Associate Professors: Andrews, Caperon, Gallagher, Malahoff, Stroup.

Assistant Professors: Cattell, Clarke, Kroopnick, Margolis, Miller, Newbury, Tait, Young.

Captain James Cook Professor: Garrels.

201 Science of the Sea (3) I, II

Cattell, Stroup

Descriptive introduction to oceanography: structure and formation of ocean basins and their characteristic features; properties of sea water; distribution of temperature and dissolved substances in the ocean; ocean currents; waves; tides; characteristics of the biotic community and interrelationships with the environment; flow of energy and matter in the food web; man and the sea. Field trip to Coconut Island, Kaneohe Bay, required.

620 Physical Oceanography (3) I

Wyrcki

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 Geol-Geoph 623.

623 Chemical Oceanography (3) I

Kroopnick

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 (1 2-Hr Lb)

Wyrcki

Techniques and methods of analysis in physical oceanography. Pre: Math 232 and consent of instructor.

632 Littoral Geological Processes (3) II

Tait

Geological processes and forms peculiar to the nearshore marine environment. Pre: 620, 622.

633 Chemical Oceanography Laboratory

Methods (1) I (1 3-Hr Lb)

Kroopnick

Laboratory and field analytical techniques used in chemical oceanography. Pre: consent of instructor.

- 634 Techniques in Geological Oceanography (2) I, SS (1 L, 1Lb)** **Andrews, Margolis**
Laboratory procedures for analysis of sea floor materials (microscope, x-ray, size, chemical, and physical properties). Methods of data collection at sea (dredging, coring, photography echo sounding, seismic profiling, magnetics, gravity). Pre: consent of instructor.
- 636 Phytoplankton Ecology (3) II (2L, 1 3-Hr Lb)** **Cattell**
Phytoplankton-environmental relations and community ecology: phytoplankton-zooplankton interactions; phytoplankton synecology. Pre: 620 and consent of instructor. (Alt. yrs.: not offered 1972-73.)
- 640 Advanced Physical Oceanography (3) II** **Wyrki**
Dynamics of ocean currents; equations of motion and continuity; ocean circulation; heat budgets. Pre: 620, Math 402.
- 641 Major Element Cycles in the Environment (3) II** **Garrels**
Cycling among ocean, atmosphere, and land. Of twelve major chemical elements; recent rates and controls; past rates and controls; man's interference with natural cycles. Pre: 1 year chemistry.
- 642 Sedimentology II (3) II (2L, 1 3-Hr Lb)** **Margolis**
Analysis of sedimentary textures, physical properties, and sediment compositions; distribution of recent marine sediments; statistical applications to sedimentology: to be preceded by Geol-Geoph 619 for an integrated survey of young marine sediments. Pre: consent of instructor.
- 643 Marine Geochemistry (3) II** **Chave**
Origin and history of oceans, isotope geochemistry, sedimentary cycle, biogeochemistry. Pre: 622, 623.
- 644 Marine Geophysics (3) I** **Staff**
Geophysical exploration techniques and studies of ocean basins and margins. Offered jointly as Geol-Geoph 661. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 646 Zooplankton Ecology (3) I (2L, 1 3-Hr Lb)** **Newbury**
Environmental factors related to acquisition, assimilation and utilization of energy by zooplankton; practical experience with sampling methods and taxonomic analysis; production models and measurement. Pre: 621 or consent of instructor.
- 650 Mathematical Techniques for Biologists (3) I** **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 Waves (3) I** **Groves**
Ocean wave propagation; transformation of the wave spectrum on propagation and refraction; prediction of wind waves; application to swell, tsunamis, surf, and other waves in the ocean. Pre: Math 432 or 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 or Math 432 and consent of instructor.
- 662 Marine Hydrodynamics (3) I** **Gallagher**
Introduction to classical hydrodynamics and continuum mechanics. Techniques for solution of Navier-Stokes equations on various scales of oceanic motion, including potential theory, dynamic modelling, and viscous, rotational, and turbulent processes. Pre: math at a level equivalent to Math 403-404.
- 663 Measurements and Instrumentation (2) II** **Hardy & Vitousek**
Oceanographic measurements, their accuracy and precision. Design principles and operation of selected instruments for physical oceanography. Reduction and evaluation of measured data with emphasis on digital data acquisition. Workshop in data processing part of this course.
- 664 Principles of Underwater Acoustics (3) I** **Hardy**
Study of the physical "optics" of underwater sound propagation in the ocean, including effects of diffraction, scattering, refraction, and reflection. Pre: consent of instructor and Math 404 or equiv.
- 666 Nearshore Physical Oceanography (3) II** **Tait**
Wave-driven water motions in and near the surf zone. Non-linear and second order analysis techniques with emphasis on the "Radiation Stress" approach. Edge waves near surf zone and on continental shelf. Turbulent mixing and diffusion in the surf zone. Application to pollution in nearshore environment. Pre: 660 or consent of instructor.
- 672 Seminar in Geotectonics I (3) I** **Staff**
Evolution of ocean basins and margins, from regional syntheses of structure, petrology, geophysics, stratigraphy, and physiography. Pre: consent of instructor. (Cross-listed as Geol-Geoph 672.) (Alt. yrs.: offered 1972-73.)
- 673 Continental Shelves (3) I** **Andrews**
Geological structure and mineral resources of continental shelves. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 699 Directed Research (v) I, II** **Staff**
Pre: 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. (Alt. yrs.; offered 1972-73.)
- 705 Ecology and Management of Marine Resources (2) I** **Murphy**
Review of the ecology and management of living marine resources drawing from best-documented case histories from the world oceans. Mathematical models and the application of basic ecological principles will be stressed. Pre: year of calculus and consent of instructor. (Not offered 1972-73.)
- 735 Seminar in Oceanography (2) I, II** **Staff**
- 750 Topics in Biological Oceanography (2) I, II** **Staff**
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.
- 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** **Staff**
- 799 Seminar (1) I, II** **Staff**
- 800 Thesis Research (v) I, II** **Staff**

Overseas Career Program (OCP)

Director: Hackler. Associate Director: Moscotti.

- 301 Overseas Americans and Asian Societies (3) I, II** **Moscotti**
Survey of Asian institutions and social and cultural realities encountered by Americans in Asia, particularly American students. Special attention given to social experiences of Asian youth and to higher education in Asia. Preparatory to study in Asia by University of Hawaii undergraduates.
- 631-632 Asia-America: Studies of Men and Institutions (3-3) I, II** **Hackler, Moscotti**
Interdisciplinary study of problems of Americans living and working in Asia. Examination of current American policies and institutions in Asia, overseas operations of U.S. Government and international agencies, private organizations and business. Emphasis on relevant Asian institutions, country studies and practical aspects of interaction of contemporary American and Asian cultures. Required of candidates for Overseas Career Certificate.
- 791 Internship in an Asian Country (3)** **Hackler**
Field experience for approximately 6 months with international or governmental agencies, private organizations, educational institutions or business firms in Asia. Periodic and final reports required. Limited to candidates for the Overseas Career Certificate. Pre: consent of instructor.

See *Graduate Division Catalog* for description of Overseas Career Program and requirements for the Overseas Career Certificate.

Pacific Islands Program (PIP)

Professors: D. Cox, D. Johnson, Lamoureux, A. Leib, Meller, Oliver, Pirie, Tilton.
Curators: Heyum, Kittelson.

A cross-disciplinary program offered by the Pacific Islands Committee.

- 390 Change in the Pacific (3) I** Meller
 Impact of cultural and physical change and their interrelationships on various selected island regions of the Pacific.
- 690 Graduate Seminar: Change in the Pacific (3) II** Meller
 Interrelationship of change in selected Pacific Island regions, institutions, and processes. Pre: consent of instructor.
- 699 Directed Reading and Research (v) I, II** Staff
- 800 Thesis Research (v) I, II** Staff

Pacific Urban Studies and Planning Program (Plan)

Director: Dinell.
Associate Professors: Armstrong, Bauman.
Assistant Professors: Earickson, Holmstrom, Minerbi, Nitz, Povey, Schwind.
Associate Specialist: Wiederholt.

Participating units include the departments of architecture, economics, geography, political science and sociology, the College of Engineering and the schools of Public Health and Social Work.

- 310 Planning Perspectives (3) I, II** Povey
 Introduction to urban and regional planning in Hawaii. Considers differing perspectives on planning, types of planning tools and methods employed and specific Hawaii planning-research problems. Pre: consent of instructor.
- 600 Contemporary Planning Theory (3) I**
 Review of present day planning theory, its historical development and applications and its role in various settings. Each student develops his own conceptual model of planning which he may then test and revise as he develops more expertise in the field. Required of Planning Certificate candidates. Pre: consent of instructor.
- 601 Introduction to Planning Systems (3) I** Holmstrom
 Introduction to systemic analysis of planning problems and their solutions. Consideration of subfields of planning and relationship of planning to other disciplines, professions and areas of common concern such as physical design. Planning models including heuristic gaming employed in highlighting complexity of planning process and range of interests at play in the development of urban and regional systems. Pre: 600 or concurrent.
- 645-646 Development Planning (3-3) Yr.** Holmstrom
 Interdisciplinary two-semester course for students with strong interest in development. Emphasis on development planning at regional level. *1st semester:* regional planning theory and problems within the context of national policies and procedures for the planning of regional infrastructure. *2nd semester:* simulation of the behavior of a developing country in terms of decision making processes for regional development and control. Use of operations research techniques, quantitative methods and computer applications. (Identical to Arch 645-646 and CE 645-646.)
- 695 Planning Practicum I (3) I, II**
 First unit in Planning Practicum sequence. Planning tools essential to understanding dimensions of planning problems introduced and applied to a particular planning issue in the state. Students become

familiar with local data sources as well as methods and techniques of analysis. Research design and theory construction including hypothesis testing reviewed and applied. Students identify area of research interest relevant to planning issue being examined, develop a research design for implementation and initiate research. Pre: 600 and 601 or consent of instructor.

- 696 Planning Practicum II (3) I, II**
 Final unit in Planning Practicum sequence. Students produce an integrated planning research report in which results of individual and small group effort are documented and presented in verbal, written and visual form to client group. Individual research efforts reviewed and integrated and research gaps identified and covered. Pre: 695.
- 780 Selected Topics in Planning (3) I, II**
 Special topics in planning theory, history, analysis, and application. Pre: 600 and 601 or consent of instructor.
- 799 Directed Reading and Research (v) I, II**
 Pre: consent of instructor.
- 800 Thesis Research (v) I, II**

The following courses offered by the participating units are part of the planning studies program: Arch 442, 452; CE 463, 464, 664, 665; Econ 458, 492, 495; Geog 421, 425, 612, 621; PH 614; PolSc 651, 670, 750, 770.

Philosophy (Phil)

Professors: Chang, Copi, Deutsch, McCarthy, Mehta, Nagley.
Associate Professors: Cheng, Upadhyaya, Yamasaki.
Assistant Professors: Assali, Bender, Goodman, Harter, Moore, Stewart, Wargo.

One of the following is generally a prerequisite to each advanced course: 100, 200, 201, 210 or the equivalent.

WESTERN

- 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** Moore, Stewart
 Western philosophy from Renaissance to present. Desirable preparation: 200.
- 210 Introduction to Logic (3) I, II** Copi, Harter, Wargo
 Principles of modern deductive logic.
- 225 Early Greek Thought (3) I or II** Burns, Harter
 Comprehensive study of the evolution of early Greek thought from its beginnings through Aristotle as expressed in mythology, literature, science, and philosophy. (Cross-listed as EL 225.)
- 300 Greek Philosophy (3) I** Goodman, Harter
 Basic philosophical works of schools and thinkers of Greek philosophy from Pre-Socratics to Neo-Platonism.
- 301 Philosophy of Late Antiquity (3) II** Goodman
 Study of Greek and Roman philosophies of Hellenistic and post-Hellenistic ages, including Stoicism, Epicureanism, Skepticism, Cynicism, neo-Platonism and post-Aristotelian Peripateticism. Desirable preparation: 300 or permission of instructor.
- 302 Medieval Philosophy (3) II** Goodman, Harter, 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** Assali, Wargo
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 19th-Century Philosophy (3) I** Bender, Nagley
Major philosophical writings of German Idealists from Kant through Hegel, Marx, Kierkegaard, and Nietzsche.
- 310 20th-Century Philosophy (3) II** Stewart
Survey of recent developments in Western philosophy.
- 315 Ethical Theory (3) I or II** Goodman, Moore
Comparative analysis of ethical theory in theological, legal, literary, scientific, social, as well as philosophical sources indicating relevance of ethical theory to processes of decision making.
- 340 Survey of Islamic Philosophy (3) I or II** Goodman
Brief introduction to philosophers of the Islamic world, including Kindi, Razi, Avicenna, Ghazali, Ibn Tufayl, and Averroes.
- 400 Political Philosophy (3) I or II** Bender
Combined systematic and historical approach to major problems of Western political philosophy. Special attention to European political theory.
- 401 Social Philosophy (3) I or II** Bender
Traditional problems of justice, freedom, equality and authority and their contemporary analyses.
- 402 Philosophy of Law (3) I** Moore
Study of both historical and contemporary materials in law and legal theory. Principle considerations: legal responsibility, justice, natural law, punishment, insanity, censorship, judicial reasoning.
- 403 Marxist Philosophy (3) I or II** Bender
Study of both historical and contemporary texts in Marxist philosophy, especially those dealing with problems of alienation, history, society and the Marxist critique of the Western philosophical tradition.
- 405 American Philosophy (3) I or II** Cheng, Harter, Wargo
Major trends in development of American philosophy in relation to socio-political background and influence.
- 410 Philosophy of the Physical Sciences (3) I** Assali
Systematic study of methods and procedures in the natural sciences. Pre: 210.
- 415 Philosophy of the Social Sciences (3) II** Assali
Substantive methodological problems in current analyses of social sciences.
- 417 Theory of Knowledge (3) I or II** Cheng, Copi
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 or II** Harter, Wargo
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 or II** McCarthy, Moore, Yamasaki
Study of art from points of view of creation, appreciation, criticism. Particular attention to painting, sculpture, music, poetry.
- 422 Philosophy and Psychoanalysis (3) I** McCarthy
Contributions of psychoanalysis to the philosophical understanding of the nature of man, society, art, religion and morality.
- 425 Philosophy in Literature (3) I** McCarthy
Literary expression of philosophical ideas. Consideration of writers: Beckett, Camus, Hemingway, Kafka, Rilke, Sartre, Eliot.
- 427 Kafka (3) II** McCarthy
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** McCarthy
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 or II** Bender, Nagley, Stewart
Survey of main themes of European existential philosophy. Particular attention to Kierkegaard, Heidegger, and Sartre.
- 435 Philosophy of Religion (3) I or II** Goodman, Nagley, Yamasaki
Problems concerning existence of God, nature of religious experience, faith and reason, immortality, religious language, alternatives to theism. (Cross-listed as Rel 435.)
- 440 Introduction to Phenomenology (3) I or II** Bender, Stewart
Study of conceptual and historical aspects of phenomenological philosophy. Emphasis placed upon the works of Husserl, Sartre and Merleau-Ponty. Pre: 304 and 306.
- 441 Introduction to Contemporary Analytical Philosophy (3) II** Moore
Survey of major themes in logical atomism, logical positivism and linguistic analysis. Readings from G.E. Moore to present.
- 445 Symbolic Logic I (3) I** Copi, Wargo
Intermediate level course designed to impart the techniques of symbolic logic, both the propositional calculus and first order predicate calculus. Desirable preparation: 210.
- 448 Comprehensive Philosophical Systems (3) I, II**
Detailed examination of philosophical systems of major Eastern and Western philosophers, such as Plato, Aristotle, Hume, Kant, Hegel, Chu-Hsi, Sankara (one philosopher per semester). May be repeated for credit on different philosophers. Pre: one of 100, 200, 201 or equivalent.



- 449 Philosophical Topics (3) I, II**
Specialized treatment of selected philosophies, philosophical problems or movements in the Eastern and Western traditions. May be repeated for credit on different topics. Pre: consent of instructor.
- 600 Problems of Philosophy (3) I, II**
Persistent specific problems of philosophy, primarily those concerning nature, man, God. Pre: graduate standing; consent of instructor.
- 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 order functional calculus. Pre: 445.
- 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: 611 or 12 credits in math; consent of instructor.
- 720 Seminar in Ancient-Medieval Philosophy (3) I, II**
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.
- 795 Philosophical Texts (3) I, II**
- 799 Directed Research (v) I, II**
(a) Greek philosophy, (b) modern classical philosophy, (c) contemporary philosophy. Available to advanced graduate students; consent of instructor and chairman required. May be repeated.
- 800 Thesis Research (v) I, II**
- 661 Mahayana Buddhist Philosophy (3) II**
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 from Confucius to 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** Chang
Pre: 460; graduate standing; consent of instructor.
- 770 Seminar in Chinese Philosophy (3) I, II** Chang, Cheng
Pre: 470; graduate standing; consent of instructor.
- 780 Seminar in Comparative Philosophy (3) I, II** Chang, Deutsch, Mehta
Pre: graduate standing; consent of instructor.
- 795 Philosophical Texts (3) I, II**
- 799 Directed Research (v) 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 (v) I, II**

ASIAN AND COMPARATIVE

- 450 Indian Philosophy (3) I** Deutsch, Upadhyaya
Philosophical systems and movements: Vedas, Upanishads, six systems of Hinduism, Charvaka, Jainism, Buddhism.
- 460 Buddhist Philosophy (3) II** Yamasaki
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.
- 485 Modern Japanese Philosophy (3) II** Wargo
Systematic survey of the history of development of Japanese philosophy in modern period, from mid-19th century to present.
- 650 Individual Asian Philosophers (3) I, II**
Philosophies of men such as Ramanuja, Sankara, Confucius, Chuang Tzu, Nagarjuna, 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 complexity. Pre: 450; consent of instructor.
- 656 Indian Social Philosophy (3) II**
Basic codes of Indian moral and social philosophy (Dharmasastras) and their historical developments and practical significance. Pre: 450; consent of instructor.
- 660 Theravada Buddhist Philosophy (3) I**
Analysis of early Buddhist conceptions of the nature of man. Pre: 460; consent of instructor.

Physics (Phys) and Astronomy (Astr)

Professors: Cence, Henke, Holmes, Jefferies, McAllister, Orrall, Peterson, Pong, Sinton, Steiger, Tuan, M.S. Watanabe, J. Zirker.
Associate Professors: Boesgaard, Bonsack, Dobson, Nose, Pakvasa, Shyu, Stenger, Wolstencroft, Yount.
Assistant Professors: Crooker, Hayes, Peters.

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 or 102.
- 102 Elementary Modern Physics (3) I**
Introduction to the fundamental ideas of 20th century physics—relativity, quantum theory and the structure of matter.
- 110 Astronomy (3) I, II**
Survey of nature of astronomical universe, with much emphasis on scientific method and development of scientific thought. Pre: high school trigonometry.
- 111 Astronomy (3) I, 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 credit/no-credit.
- 154 College Physics Laboratory II (1) II (1 3-hr. Lb)**
Continuation of 153. Pre: credit or registration in 152. Offered only as credit/no-credit.
- 170 General Physics I (4) I, II**
Mechanics of particles and rigid bodies; wave motion; thermodynamics and kinetic theory. 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 II (3) I, II**
Electricity and magnetism; geometrical 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 III (3) I, II**
Relativity, introduction to quantum mechanics, atomic and nuclear physics, physical optics. Pre: 272, 273, or 151-154; 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.
- 310 Theoretical Mechanics I (3) I**
Particle dynamics, rigid body dynamics, planetary motion. Pre: credit or registration in Math 232.
- 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 232.
- 390 Contemporary Physics (2) II**
Series of lectures by researchers from different branches of physics, astronomy, and related physical sciences. Pre: 274 or equivalent or consent of instructor. Offered on credit no-credit basis only.
- 399 Individual Work in Advanced Physics (v) 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.
- 405-406 Modern Physics Lab (1 or 2) I, II**
Selected experiments in modern physics. Measurements of nuclear magnetic resonance, Mossbauer effect, electron spin resonance, lasers, electron diffraction, other phenomena. Pre: 275, credit or registration in 480, or consent of instructor.
- 421 Astrophysics I (3) I**
Methods of observation, physical theory, and interpretation of radiation from single stars, stellar spectra. Discussion of accuracy of data and 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. Special topic of current interest in astronomical research discussed during the last 3-4 weeks to exemplify concepts discussed 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**
Laws of thermodynamics, heat transfer, kinetic theory, statistical mechanics. Pre: Math 232.
- 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) II**
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**
Relativity, quantum theory, atomic physics. Pre: 274 and Math 232.
- 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.
- 502 Electronics for In-service Teachers (2)**
Special in-service course for high school and junior high school teachers of science for developing low-cost electronic and physical science equipment for teaching Harvard Project Physics and Introductory Physical Science II. Pre: admission to NSF In-Service Institute.
- 600 Methods of Theoretical Physics I (3) II**
Study of mathematical tools of theoretical physics. Intended as continuation of 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. (Alt. yrs.: offered 1973-74.)
- 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 402 or credit or registration in 400 or 600. (Alt. yrs.: offered 1972-73.)
- 611 Analytical Mechanics II (3) II**
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 402 or credit or registration in 400 or 600. (Alt. yrs.: offered 1972-73.)
- 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 402 or credit or registration in 400 or 600. (Alt. yrs.: offered 1973-74.)
- 627 Galactic Structure I (3) II**
Stellar statistics, stellar populations, and structure of galaxy. Pre: consent of instructor. (Alt. yrs.: offered 1973-74.)
- 629 Astrophysical Techniques (3) I**
Experiments in photoelectric and photographic photometry, spectroscopy, optics, infra-red techniques, stellar classifications, and positional astronomy. Practical observing experience. Pre: consent of instructor. (Alt. yrs.: offered 1972-73.)
- 650 Electrodynamics I (3) II**
Potential theory, Maxwell's equations, electromagnetic waves, boundary value problems. Pre: 450; Math 402 or credit or registration in 400 or 600. (Alt. yrs.: offered 1973-74.)
- 651 Electrodynamics II (3) I**
Relativistic electrodynamics, radiation by charged particles. Pre: 650. (Alt. yrs.: offered 1973-74.)

660 Advanced Optics (3) I

Wave motion, interference, diffraction, fundamentals of spectroscopy, optics from viewpoint of electromagnetic theory, lasers. Pre: 460. (Alt. yrs.; offered 1972-73.)

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 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.

725 Planetary Physics (3) I

Physical processes and the composition of planetary interiors, surfaces, atmospheres, and environment. Pre: consent of instructor. (Alt. yrs.; offered 1973-74.)

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.; offered 1973-74.)

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. (Alt. yrs.; offered 1972-73.)

733 Special Topics in Astronomy (3) I

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. May be repeated for credit.

770-771 Quantum Mechanics (3-3) Yr.

Physical basis and formulation of quantum theory. Exact solutions of Schroedinger equation and their applications. Approximation methods. Applications to atomic, nuclear, and molecular physics. Pre: 481, Math 403-404 or Physics 600. (Alt. yrs.; offered 1972-73.)

772 Relativistic Quantum Mechanics (3) I

Relativistic wave equations and their solutions. Dirac's theory of the electron, propagator techniques. Applications to quantum electrodynamics. Pre: 771. (Alt. yrs.; offered 1972-73.)

777 Nuclear Physics I (3) I

Properties and structure of nuclei, reactions, and nuclear models. Pre: 481, 770. (Alt. yrs.; offered 1972-73.)

778 Nuclear Physics II (3) II

Elementary particles, nuclear forces, meson theory. Pre: 777 and consent of instructor. (Alt. yrs.; offered 1973-74.)

780 Atomic and Molecular Spectra (3) II

Study of atomic and molecular structure by quantum mechanical interpretation of line, band, continuous spectra. Pre: 770. (Alt. yrs.; offered 1972-73.)

785 Solid-State Theory (3) I

Quantum theory of crystalline solids. Pre: 440, 770. (Alt. yrs.; offered 1972-73.)

799 Directed Research (v) I, II

Pre: consent of instructor.

800 Thesis Research (v) I, II**Political Science (PolSc)**

Professors: Becker, Haas, Friedman, Jacob, Kariel, Levi, Meller, Miwa, Paige, Riggs, Rummel, Schubert, Stauffer.

Associate Professors: Bwy, Cahill, Chadwick, Dator, Henningsen, Kent, Kuroda, Neubauer, Shapiro.

Assistant Professors: Kerkvliet, Lee, Nitz, Rohter, Wilson.

Acting Assistant Professor: Povey.

110 Introduction to Political Science (3) I, II

Introduction to political problems, systems, ideologies, processes.

300-301 Political Thought (3-3) I, II

Henningsen, Nitz, Kariel, Wilson

Consideration of major elements of political theory.

305 Topics in Political Thought (3)

Cahill, Henningsen, 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, 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, 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

Cahill, Neubauer, Nitz, Shapiro

Genesis, organization, expression, efficacy of political demands.

333 American Government (3) I, II

Organization and functioning of American political system.

335 Topics in Policy Formation (3) I, II,

Cahill, Neubauer, Nitz, Shapiro

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

Bwy, Kuroda, Paige, Stauffer

Integrated introduction to comparative political institutions and patterns.

345 Topics in Comparative Government and Politics (3) I, II

Bwy, Kuroda, Paige, Stauffer

To be pre-announced each semester. Recent topics include: Political Leadership, Comparative Political Analysis, Japanese Politics, Latin American Politics, Political Modernization, China, Soviet Union, Comparative Communist Systems.

350-351 Public Administration (3-3) I, II

Friedman, Meller

Integrated introduction to public organization and management theory, administrative institutions and processes. (350 prerequisite for 351.)

355 Topics in Public Administration (3) I, II

Friedman, Meller

To be pre-announced each semester. Recent topics include: University Administration in Developing Countries, Bureaucracy, Organizational and Management Theory.

360-361 Public Law and Politics (3-3) I, II

Becker, Schubert

Integrated introduction to interrelationship between judicial process and political system. (360 prerequisite for 361.)

365 Topics in Public Law and Politics (3) I, II

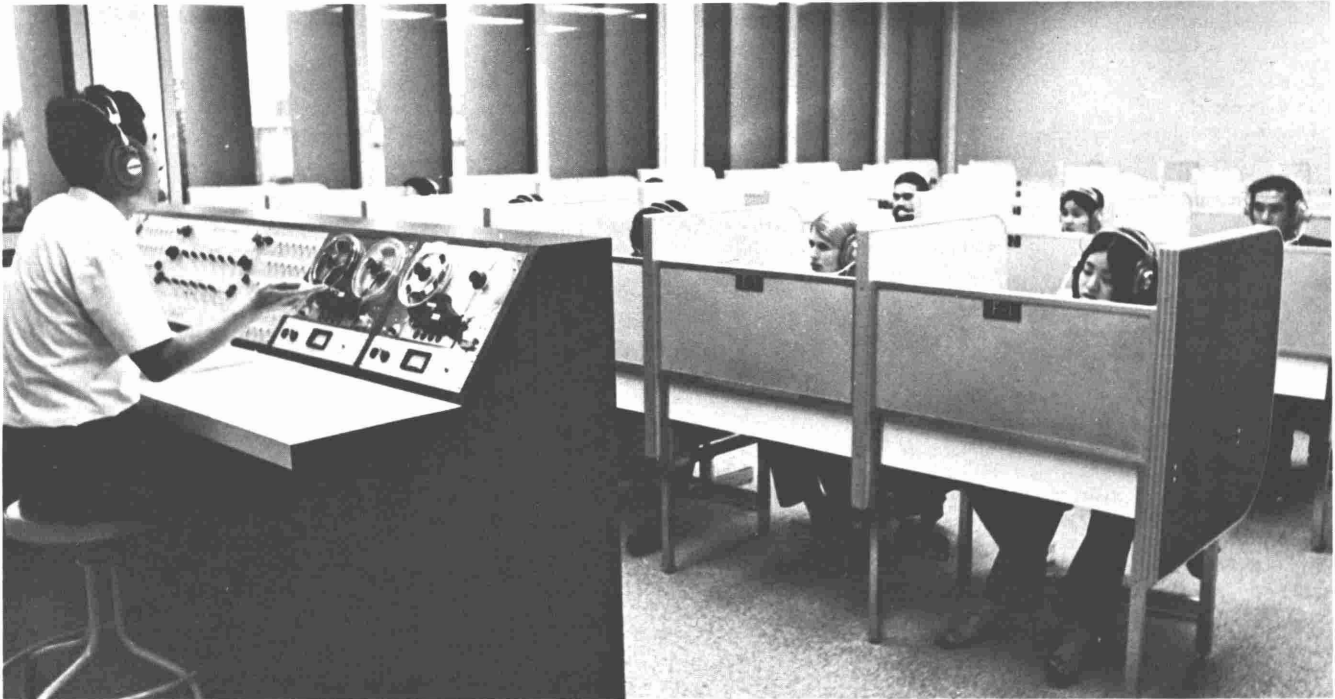
Becker, Schubert

To be pre-announced each semester. Recent topics include: Freedom and Authority, Judicial Policy-Making, Constitutional Rights.

390, 391 Colloquium in Political Science (3) I, II

Staff

Seminar dealing with specialized subjects in subfields of political science. (Admission by consent of instructor only.)

**600 Scope and Methods of Political Science (3) I, II** **Staff**

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.)

601 Political Analysis, Theory Building and Techniques (3) I, II **Staff**

Research techniques in current use by department members, including content analysis, survey and interviewing, experimentation, etc. Students will assist in a relevant research project.

602 Research Practicum (3) I, II **Staff**

Introduction to statistical analysis from simple bivariate through multivariate analysis.

610 Political Thought (3) I, II **Henningsen, Kariel, Neubauer, Shapiro, Wilson**

Each semester a topical or chronological section on normative Western political thought; in addition, sections with geographical delimitation (as American, Asian, etc.) offered as staff conditions permit.

620 American Government (3) I, II

At least one section a semester, with focus on sections varying among national, state, local governments, and special topics.

630 International Relations (3) I, II **Chadwick, Haas, Jacob, Levi, Kent, Lee, Rummel**

At least one section a semester, with focus on sections varying among foreign policy, international law, theoretical problems in international relations, global or regional organization.

631 International Relations of Asia (3) I, II **Chadwick, Lee, Levi, Jacob**

At least one section a semester on international relations of all or part of Asia.

640 Comparative Government and Politics (3) I, II **Bwy, Kuroda, Stauffer**

At least one section a semester, with focus on sections varying among East Asia, Southeast Asia, South Asia, Europe, and development politics. (Frequent offerings of Asian sections scheduled.)

650 Public Administration Theory (3) I, II **Friedman, Meller, Riggs**

One section each semester, with focus on sections varying among theoretical approaches to study of administration, comparative, development administration.

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, Schubert**

At least one section a year surveying literature on interaction of judiciaries and political systems.

670 Politics (3) **Staff**

At least one section a year surveying literature on study of politics and political interaction.

699 Directed Reading and Research (v) I, II **Staff**

Pre: consent of instructor.

710* Seminar: Political Thought (3) **Henningsen, Kariel, Neubauer, Nitz, Wilson**

Pre-announced topics; at least one section a year.

720* Seminar: American Government (3) **Staff**

Pre-announced topics; at least one section a year.

730* Seminar: International Relations (3) I, II **Chadwick, Haas, Jacob, Kent, Lee, Levi, Rummel**

Pre-announced problems of both international organization and politics; at least one section a semester.

740* Seminar: Comparative Government and Politics (3) I, II **Bwy, Kuroda, Stauffer**

Pre-announced topics; at least one section a semester.

*Consent of instructor prerequisite. Seminars may be repeated for credit.

- 750* Seminar: Public Administration (3) I, II** 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, Schubert
Research projects emphasizing American system or comparative analysis, as pre-announced; at least one section a year.
- 770* Seminar: Politics (3)** Nitz
Pre-announced topics; at least one section a year.
- 800* Thesis I, II** Staff

* Consent of instructor prerequisite. Seminars may be repeated for credit.

Population Studies (Pop)

Professors: Chapman, Cho, Demeny, Fuller, Howard, Overbeck, Palmore, Pirie, Rosario.

- 650 Introduction to Demography (3) I** Palmore
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** Cho
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.
- 692 Techniques of Estimation from Limited Data (3) II** Staff
Special techniques for obtaining demographic measures from limited data, with particular reference to Asia and the Pacific; demographic models; new approaches in generating and processing demographic information. Pre: 691.
- 699 Directed Reading and Research (v) I, II** Staff
Pre: consent of program director.
- 750 Interdisciplinary Seminar in Population Studies (3) II** Pirie
Major theoretical developments and research problems in the field of population studies as seen from vantage point of various behavioral sciences and related applied disciplines.

Psychology (Psy)

Professors: Arkoff, Bitner, Bitterman, Crowell, A. Diamond, Diggman, Herman, Jakobovits, Johnson, Staats, Tharp, Ullman, Weaver.

Associate Professors: Blanchard, Dubanoski, MacDonald, Mansson, Shapiro, Watson, Carlson.

Assistant Professors: M. Diamond, Evans, Marsella, Minke, Murray, O'Donnell, Tanabe, Warner.

- 100 Survey of Psychology (3) I, II**
Principles of human behavior, individual differences, motivation, emotion, perception, learning.
- 110 Psychology of Adjustment (3) I, II**
Understanding and improving adjustments: needs, frustrations, conflicts, anxiety, patterns of adjustment. Concepts of mental health.
- 112 Introductory Laboratory in Psychology (3) I, II**
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.
- 113 Statistical Techniques (3) I, II**
Frequency distributions; graphic methods, central tendency; variability; correlation; reliability; tests of significance. Pre: two years of high school algebra or equivalent.
- 214 Learning and Motivation (3) II**
Major conditions influencing learning and forgetting; the role of practice, reward, motivation, drive and emotion; theoretical interpretations of learning and motivation. Pre: 112.
- 215 Sensory Processes (3) II**
Psychophysics; vision, audition, taste, smell. Pre: 100, 112.
- 216 Individual Differences and Measurement (3) I, II**
Individual differences in personality, aptitude, intelligence; construction, validation, administration of tests; interpretation of scores. Pre: 113.
- 317 Physiological Psychology (3) I**
Psychological basis of vision, audition, motivation, emotion, and learning.
- 318 Animal Psychology (3) I**
Animal studies in learning, perception, motivation, physiological mechanisms. Pre: 100, 112.
- 319 Experimental Psychology (3) II**
Original experiments with emphasis upon laboratory techniques. Control of variables, apparatus design, statistics in research. Pre: 100, 112, 113.
- 320 Developmental Psychology (3) I, II**
Emotional, mental, physical, social development from infancy to adulthood; interests and abilities at different age levels. Pre: 100.
- 321 Psychology of Personality (3) I, II**
Scientific study of personality, its meaning, assessment, development, relation to cultural-social determinants. Pre: 100.
- 322 Social Psychology (3) I, II**
Interpersonal relations; social attitudes; group dynamics; intergroup relations; class and cultural influences. Pre: 100.
- 401 Experimental Analysis of Behavior (3) I**
Theory, methods, data, and implications of the systematic laboratory study of the behavior of individual organisms. Pre: 100, 112.
- 423 History of Psychology (3) II**
Background of modern psychology. Origin and development of contemporary points of view. Pre: 100.
- 424 Abnormal Psychology (3) I, II**
Nature and causes of psychoneuroses and psychoses; abnormalities of intelligence; psychotherapy. Pre: 100.
- 426 Industrial Psychology (3) I**
Job motivation, satisfaction, morale, leadership. Job analysis, selection, training, safety, fatigue, efficiency, human engineering. Consumer research. Pre: 100.
- 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. Topics may be initiated by instructors or by request of six or more students. May be repeated for credit. Pre: consent of instructor.
- 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.
- 432 Psychological Aspects of War and Peace (3) I, II**
Examination of social and personal factors involved in movements toward war and peace. Pre: 100 or equivalent.

- 434 Seminar on the Psychology of Knowledge (3) II**
Psychology of the acquisition, communication and employment of human knowledge; historical, contemporary and futuristic contributions of psychology to the expansion of human knowledge. (Topics may vary from semester to semester.) Pre: consent of instructor.
- 471 Environmental Psychology (3) I**
Psychological aspects of problems of ecology, environment, and the future. (Cross-listed as Arch 471.)
- 485 Seminar on Humanistic Psychology (3) I**
Self-actualization and fulfillment of human potential; values of increased awareness, sensitivity, self-disclosure, and feelings; humanistic psychotherapy; exploration and expansion of consciousness; existential and phenomenological psychology. Pre: consent of instructor.
- 490 Seminar on Psychology Today (3) I, II**
Discussion of series of topics concerning contemporary developments in psychology and the relevance of psychology to contemporary world. Topics jointly selected by instructor and students. May be repeated. Pre: consent of instructor.
- 491 Teaching Psychology (v) I, II**
Supervised experience in teaching psychology. Pre: See instructor as early as possible in previous semester for information and consent.
- 493 Practicum in Psychology (v) I, II**
Supervised psychological experience in school, clinic, hospital, industry, social welfare, government and other settings in Hawaii and on the mainland. Pre: consent of instructor.
- 499 Directed Reading or Research (v) 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.
- 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**
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.
- 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.
- 639 Selected Topics in Comparative Psychology (3) II**
In-depth review of comparative, communicative, sensory, or learning mechanisms in animals. Pre: 633 or equivalent.
- 640 Verbal Learning (3) I**
Basic variables, processes, and theories in field of verbal learning and memory.
- 641 Skill Learning (3) II**
Human learning, with special reference to information processing, attention, memory, motor involvement in performance of skilled acts. (Alt. yrs.)
- 642 Behavior Processes of the Marine Mammal (3) II**
Review of sensory, learning, and social processes in the marine mammal. Pre: 633 or equivalent.
- 643 Cognitive Processes (3) II**
Selected topics in human thinking and higher cognitive processes; research techniques; inferential processes; imagination and creativity; cultural influences; altered states of consciousness; abnormal cognitive processes.
- 645 Current Issues in Learning and Motivation (3) II**
Intensive analysis of one or more contemporary problems in the areas of learning or motivation: conditioned reinforcement; stimulus control; aversive stimulation. Pre: 636 or 637.
- 649 Instrumentation (3) I**
Basic concepts of electricity and electronics and their application to instrumentation 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 EP 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 determinants 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 differences 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 attitudes, 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**
Conflict, dissent, community issues, problems; social change and its relation to mental disorder. (Alt. yrs.)
- 670 Applied Social Psychology (3) II**
Problems in use of social psychological principles in human affairs, including multi-disciplinary considerations.
- 671 Advanced Environmental Psychology (3) II**
Psychological aspects of problems of ecology, environment, and the future. Pre: 471. (Cross-listed as Arch 671.)

- 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.
- 684 Cognitive Approaches to Behavior Change (3) II**
Theories and techniques of contemporary developments in cognitive-clinical psychology. Practicum experience will be provided. Pre: 682 or equivalent.
- 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 (v) I, II**
Pre: consent of instructor.
- 699 Directed Reading or Research (v) I, II**
Pre: consent of instructor and department chairman.
- 700 Seminar (3) I, II**
(1) General, (2) history and theory, (3) statistics and measurement, (4) experimental, (5) physiological, (6) personality, (7) social, (8) developmental, (9) applied-industrial, (10) clinical, (11) comparative, (12) learning, (13) perception, (14) psychopathology, (15) psychological therapies. May be repeated.
- 710 Seminar in Teaching Psychology (1) I, II**
Theory and methods for the teaching of psychology. Observation of psychology classes. Experience in preparation of lectures, discussions, quizzes and examinations, and practice in class presentations. Consideration of current and needed research. 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 organization 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.
- 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. Pre: consent of instructor.
- 795 Internship in Clinical Psychology (0) I, II**
Pre: consent of instructor and department chairman.
- 800 Thesis or Dissertation Research (v) I, II**

Religion (Rel)

- Professor:* Aoki.
Associate Professors: Bloom, Bobilin, Crawford, Klimenko, Long, Olson, Seifert.
Assistant Professors: Chappell, Douglass.
- 150 Introduction to World's Major Religions (3) I, II, SS**
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, SS**
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.
- 201 Understanding the New Testament (3) II** **Seifert**
Origin and development of early Christian message as set forth in New Testament, with special attention to Jesus and Paul.
- 309 The Life and Teachings of Jesus (3) II**
Critical study of life and teachings of Jesus. Interpretation of meaning of Jesus Christ for Christian faith. (Not offered 1972-73.)
- 322 Survey of Social Organization and Change (3) I, II**
Topics to be pre-announced each semester. Some recent topics include industrial sociology, race and ethnic relations, social stratification. (Cross-listed as Soc 322.)
- 361 The Nature and Destiny of Man (3) I, II** **Long**
Religious views of human nature in their bearing on man's activities in politics, education, law, economics, literature.
- 422 Comparative Religion (3) II** **Luomala**
Comparative, structural, and functional analysis of supernaturalism, primarily in tribal and folk societies. Anthropological theories of religion and magic. Pre: Anth 200. (Cross-listed as Anth 422.)
- 435 Philosophy of Religion (3) II**
Problems concerning existence of God, nature of religious experience, faith and reason, immortality, religious language, alternatives to theism. (Cross-listed as Phil 435.)
- 452 Analysis in Social Institutions (3) I, II**
Topics to be pre-announced each semester. Some recent topics include education, religion, family, institutions of Japan, China, and Korea. Pre: Soc 200 or consent of instructor. (Cross-listed as Soc 452.)

- 474 Religion, Reform and Revolution (3) I** **Bobilin**
Analysis and discussion of classical and recent sources dealing with religion and rapid social change, non-violence, black power, and theology of revolution.
- 476 Chinese Religions (3) I, II** **Chappell**
Survey of Taoist, Confucian, Buddhist and popular beliefs and practices in their social and historical contexts. Pre: 482 or equivalent.
- 480 Russian Religion (3) I** **Klimenko**
Historical background of Orthodox Christianity in Russia from the beginnings of the 9th c. and following up to the 19th c. and its impact on people and culture.
- 481 Russian Religion (3) II** **Klimenko**
Russian State Church, rational and mystical sects from the 19th c. through the Communist Revolution up to the present. Marxism and religion.
- 482-483 The History of Living Religions (3-3) Yr.** **Olson, Bobilin**
482: Basic beliefs and practices of Hinduism, Confucianism, Taoism, Buddhism, Shinto. 483: Judaism, Roman Catholicism, Protestantism, their history, beliefs, contributions. Semesters independent.
- 485 Ethics in Asian Religions (3) I** **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) II** **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 Marx, Weber, and Mannheim (3) I** **Bobilin**
Study of religion and its significance for social thought and research in the writings of Karl Marx, Max Weber, and Karl Mannheim. Pre: upper division standing or consent of instructor.
- 488 Theology of Peace (3) I** **Douglass**
Study of the nature of peace, revolution, and war, violence and non-violence, as revealed especially in contemporary history, from a theological perspective.
- 490 Buddhism in Japan (3) I** **Bloom**
Survey of major features and trends in the development of Buddhist institutions and traditions in the context of Japanese history and culture. Major expressions of Buddhist thought and life will be examined against the social background of the various periods of Japanese history from its introduction in the 6th c. to the Heian Period in the 12th c. Pre: 482 or equivalent.
- 491 Buddhism in Japan (3) II** **Bloom**
Same as first semester but amended: From the Kamakura Period in the 13th c. to modern times. Pre: 490 or equivalent.
- 498 Religion and Modernization in the Third World (3) II** **Bobilin**
Comparative analysis of the role of Catholicism in Latin America, Islam in the Middle East and Asia, and Christianity and various pagan and animist beliefs in Subsaharan Africa, in the process of social modernization. Emphasis will be on differences between official theology and folk religion, on relation between the religious institution and other social and political forces, as well as on future prospects of organized religion in rapidly-changing societies.
- 499 Directed Reading or Research (3) I, II**
Pre: 2.7 or 3.0 in religion; consent of instructor.
- 602 Religious and Social Thought of Mohandas Gandhi (3) II** **Douglass**
Study of the life and teaching of Gandhi, with special emphasis on his religious beliefs and his social and political ethics. Pre: graduate standing and/or consent of instructor.
- 630 History and Theory of the Study of Religion (3) II** **Bobilin, Olson**
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**
Pre: graduate standing; consent of instructor.
- 682 Studies in Indian Religion (3) I, II** **Olson**
Advanced study of one of the religions of India. Fall: Religious morphology in the Vedas and Upanishads. Pre: 482 or equivalent; consent of instructor.
- 685 Studies in Japanese Religions (3) I, II** **Bloom**
Advanced study of one of the religions of Japan. Fall: Shinto. Spring: Lotus Sutra—Nichiren. Pre: 482 or 630.
- 686 Buddhism in China (3) I, II** **Chappell**
Historical study of the assimilation of Buddhism into Chinese society, the development of Chinese Buddhist doctrine and schools, and the evolution of popular practice. Pre: 476 or equivalent.
- 784 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. Pre: 482 or equivalent.

Science, General (Sci)

Professor: Kay.

Associate Professor: Newhouse.

Assistant Professors: Fellows, Haraway, Lipparelli.

Instructors: Bigelow, Hubbard, Langford, Nishimoto, Shank, Wilson.

- 121 Introduction to Science: Biological Science (4) I (3L-1Lb)** **Fellows**
Characteristics of science and interaction of society with science illustrated by topics from biological science. Not open to students who have had 123.
- 122 Introduction to Science: Physical Sciences (4) II (3L-1Lb)** **Lipparelli**
Characteristics of science and interaction of society with science illustrated by topics from physical sciences.
- 123 Introduction to Science: Hawaiian Perspectives (4) I (3L-1Lb)** **Kay**
Characteristics of science and interaction of society with science illustrated by topics in geology, astronomy, oceanography, and biology of the Hawaiian Islands. Not open to students who have had 121.
- 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.
- 320 The Atoll (3) I** **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.
- 330 Man and Science in the Pacific (3) I** **Newhouse**
Anatomy, history and activity of science in the Pacific area; discussion of selected topics. Pre: one year of introductory science. (Alt. yrs.; offered 1972-73.)
- 420 Case Histories in Science (3) II (2L-Lb)** **Haraway**
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 Haraway
Man's changing ideas concerning the universe reflected against historical setting. Pre: one year of natural science. (Cross-listed as Hist 430.)

551-552 Seminar in Science for Secondary School Teachers (3-3) Yr. Townsley
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 Newhouse
Seminar. The scientist; productivity in science; comparisons of several fields; anatomy of science; science and society. May be repeated.

Sociology (Soc)

Professors: Ball, Bloombaum, Freeman, Kassebaum, Volkart, Yamamura.

Associate Professors: Babbie, Barringer, Cho, Maykovich, Palmore, Sakumoto, Sunshine, Swift, Won, Yamamoto.

Assistant Professors: Chandler, Cheng, Endo, Seldin, Steinhoff, Weinstein.

Students should consult sociology departmental adviser and the current descriptions of course offerings each semester.

100 Survey of General Sociology (3) I, II
Survey of basic social relationships, social structures and processes.

200 Introduction to Principles of Sociology (4) I, II
Introduction to basic theory, methods and analytic techniques used in sociology.

312 Survey of Demography and Ecology (3) I, II
Topics to be pre-announced each semester. Some recent topics include population problems, ecology.

322 Survey of Social Organization and Change (3) I, II
Topics to be pre-announced each semester. Some recent topics include industrial sociology, race and ethnic relations, social stratification. (Cross-listed as Rel 322.)

332 Survey of Social Control (3) I, II
Topics to be pre-announced each semester. Some recent topics include juvenile delinquency, criminology.

342 Survey of Social Psychology (3) I, II
Topics to be pre-announced each semester. Some recent topics include culture and personality, small groups, collective behavior.

352 Survey of Social Institutions (3) I, II
Topics to be pre-announced each semester. Some recent topics include education, religion, family, institutions of Japan, China and Korea.

362 Survey of Applied Sociology (3) I, II
Topics to be pre-announced each semester.

412 Analysis in Demography and Ecology (3) I, II
Topics to be pre-announced each semester. Some recent topics include demographic problems, ecology. Pre: 200 or consent of instructor.

422 Analysis in Social Organization and Change (3) I, II
Topics to be pre-announced each semester. Some recent topics include industrial sociology, race and ethnic relations, social stratification. Pre: 200 or consent of instructor.

432 Analysis in Social Control (3) I, II
Topics to be pre-announced each semester. Some recent topics include juvenile delinquency, criminology. Pre: 200 or consent of instructor.

442 Analysis in Social Psychology (3) I, II
Topics to be pre-announced each semester. Some recent topics include personality and culture, small groups, collective behavior. Pre: 200 or consent of instructor.

452 Analysis in Social Institutions (3) I, II
Topics to be pre-announced each semester. Some recent topics include education, religion, family, institutions of Japan, China and Korea. Pre: 200 or consent of instructor.

462 Analysis in Applied Sociology (3) I, II
Topics to be pre-announced each semester. Pre: 200 or consent of instructor.

472 Analysis in Sociology: Theory, Methods, Statistics (3) I, II
Topics to be pre-announced each semester. Pre: 200 or consent of instructor.

495 Topics in Sociology: Faculty Projects Normally Limited to 10 Students (v) I, II
Topics to be pre-announced each semester. Pre: 200 or consent of instructor.

496 Topics in Sociology: Student Projects (v) I, II
Students will create their own study group and solicit an adviser from the faculty. Students should consult the department for assistance.

499 Directed Reading or Research (v) I, II

620 Proseminar I: The Sociological Profession (3) I
Graduate introduction to the profession of sociology; an examination of sociologists at work; research, teaching and related intellectual activities. To be taken concurrently with Proseminar II. Pre: consent of instructor.

621 Proseminar II: The Field of Sociology (3) I
Graduate introduction to the history and substance of sociological thought; examination of various specialties within the profession, their history and contemporary status; a comprehensive study of the sociological perspective. To be taken concurrently with Proseminar I. 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) I, 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) criminal correction. 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.

732 Seminar in Comparative Sociology (3) I, II

Major theoretical and research developments in comparative examination of societies; (1) comparative social institutions, (2) methods of comparative research, (3) comparative institutions of East Asia. Pre: consent of instructor. May be repeated for credit.

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.

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 (v) I, II

Pre: graduate standing; consent of instructor.

800 Thesis Research (v) I, II

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Speech-Communication (SpCom)**PROGRAM IN COMMUNICATION (Comun)**

Professors: Bystrom, Dykstra, Ellingsworth, Heinberg, Rider.

Associate Professors: Byers, Harms, Welden.

Assistant Professors: Kunimoto, Rosario, Sanderson.

Instructor: Bond.

145 Interpersonal Communication (3) I, II

Introduction to communication theory through participation in interpersonal communication activities.

200 Introduction to Theories of Communication (3) I, II

Introduction to communication theory through various models of the process. Examination of major variables and how their interaction affects human communication.

201 Message Development (3) I, II

Theory and practice in development of messages and the selection and use of appropriate media. Pre: 200 or equivalent.

221 Communication for Creative Learning Contexts (3) I, II

Building viable learning contexts through interpersonal relationships, verbal and nonverbal messages, and multiple channels. Focus upon creativity, group interaction, and planning and measurement of learning outcomes. Recommended for prospective members of the helping professions: teaching, counseling and guidance, management, medicine, and social work. Pre: 145 or 200.

261 Broadcasting (3) I

Analysis and survey of radio and television as communications media. Attention to the interrelations of press, radio-TV, and film.

263 Broadcast Laboratory (3) I, II

Introduction to equipment and operation of radio and television studios, and the roles of members of the production team. Basic production techniques. (1) Radio production; (2) television production; (3) performance.

304 Communication Characteristics of the Source (3) I, II

Acoustical, anatomical, physiological and psychological variables of the source and their relation to the process of communication. Pre: 145 or 200.

305 Language and Meaning in Communication (3) I, II

Effects on communication process attributable to language forms and meanings. Pre: 201 or concurrent registration.

365 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. Pre: 263. (Alt. yrs.)

366 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 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 Communication Among Cultural Groups (3) I, II

Survey of social-psychological and cultural variables which affect communication among peoples of different cultures. The use of this knowledge in understanding and facilitating social and cultural change. Pre: Majors—200 and 201; Non-Majors—social science background.

390 Organizational and Administrative Communication (3) I, II

Analysis of organizational communication theories, organizational structure and communication networks with special emphasis on task-oriented administrative communication problems. Pre: social science core.

397 Communication and the Future (3) I, II

Human communication as a means to shape and guide the future. Major world trends and probable breakthroughs. Interaction between global transportation and telecommunication networks. New technologies and human capacities. Freedom and control. The alternative futures of man as communicator.

399 Broadcasting Workshop (3) I, II

Advanced study of an experience in the preparation and presentation of broadcast programs. Same sub-sections as 263. (1) Radio; (2) television; (3) performance. Pre: 263 under appropriate sub-heading.

406 Evaluation of Communication (3) I, II

Development of skill in evaluation of appropriate variety of communication activities. Pre: 200, 201, 304 or 305.

454 Communication Strategies in Social Action and Development (3) I

Analysis of the role which interpersonal and mass communication play in programs of social action and development. Practice in planning communication strategies for social and technological change. Pre: 145.

467 Broadcasting and Government (3) II

Responsibilities of broadcasters as regulated by law, government policies and court decisions. Comparison of communication media. Systems of media control in other countries. Pre: 261.

469 World Broadcasting (3) II

Comparative analysis of principal broadcasting systems of the world, with detailed study of specific examples. World-wide communication systems. Typical examples of international broadcasting. Pre: 261, six hours beyond introductory courses in social sciences.

471 Broadcast Programming (3) II

Objectives and methods of creating and implementing program formats. Special emphasis on individual contemporary formats and their possible results. Pre: 201 or 261.

499 Special Problems (v) I, II

(1) Communication theory and process; (2) intercultural communication; (3) communication training; (4) mass media; (5) teacher preparation. Pre: consent of instructor and department chairman.

PROGRAM IN SPEECH (Sp)

Professors: Bilborrow, Klopf.

Associate Professors: Breneman, Wong.

Assistant Professors: Ekroth, Krause, Larson, Nishiyama, Sitaram, Oxford.

Instructor: Kido.

151 Introduction to Speech (3) I, II, SS

Introduction to major elements of speech. Activities for students to acquire competence in two-person, small group, and public situations. Practice in basic speech forms and techniques. Models and concepts to explain the speech act.

211 General Phonology (3) I, II

Phonology of American English, using the International Phonetic Alphabet. Application to dialect description and speech modification.

231 Interpretative Reading (3) I, II, SS

Principles of interpretative reading. Practice in textual analysis and in transmitting intellectual and aesthetic content of literature.

232 Group Interpretation (3) II

Material selection; techniques and procedures for choral speaking; adaptations of Reader's Theatre; extensive practice in participation and direction. Pre: 231 or equivalent.

251 Principles of Effective Speaking (3) I, II, SS

Adaptation of rhetorical theory to particular speakers, audiences, occasions. Extensive practice in planning and delivering speeches. Pre: 151 or equivalent.

252 Voice and Diction (3) I, II

Speech mechanism and voice production. Techniques to enhance voice and diction for effective speech communication. Special section for foreign students offered alternate semesters.

253 Argumentation and Debate (3) I, II

Adapting communication theory to the structuring of forensic strategies for social action. Extensive practice in formal argument. Pre: 151 or 251.

255 Presentational Speaking in Business and Industry (3) I

Study of the special role of presentational speaking and conference leadership in business and industry. Practical experience in developing and presenting speeches; organizing training sessions and conferences.

321 Speech for the Classroom Teacher (3) I, II, SS

Analysis of and practice in using major models of speech communication in the classroom. Focus placed on the role of speech in various academic disciplines as needed by teachers. Pre: 151 or 251.

333 Storytelling (3) I, II, SS

Esthetic communication through storytelling for entertainment and education. Oral tradition; analysis of story types; techniques of preparation and presentation; performance. Pre: 151 or equivalent.

385 Culture and Communication (3) I, II, SS

Survey of major factors affecting interpersonal communication between members of different cultures. Emphasis is upon interaction between U.S. and Asian-Pacific peoples.

403 Research Methods in Speech (3) I

Study of traditional and current research methods in speech. Examination of major theories, hypotheses and findings in various areas of the speech field. Development of competence in basic skills for research. Pre: one course in statistics or consent of instructor.

413 Trends in Language Teaching (3) I

Contemporary studies in the use, learning, and teaching of language. Examination of language teaching materials currently used in Hawaii. Pre: 211 or Ling 102.

431 Advanced Interpretative Reading (3) I, II, SS

Problems in selected literary forms; development and arrangement of programs; individual and group reports and performances. Pre: 231 and sophomore literature.

432 Readers Theatre (3) II, SS

Origins and concepts; performing art for the classroom and the public; techniques for the participant and the director; creative projects and performance. Pre: 231 or 232.

491 Semantics (3) I, II

Understanding language; verbal meaning and implication; roles of perception and assumption in human relationships; relation of language symbols to emotion and attitude.

499 Special Problems (v) I, II, SS

(1) Public address; (2) teacher preparation; (3) oral interpretation; (4) group processes; (5) intercultural communication. Pre: consent of instructor or department chairman.

SPEECH-COMMUNICATION (SpCom)

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: Comun 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.

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: Comun 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 problems involved in analyzing various aspects of the speech-communication process. Theoretical frameworks of analysis. Pre: consent 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: consent 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: Comun 384 or Sp 385 or at least one course in cultural anthropology, or consent of instructor.

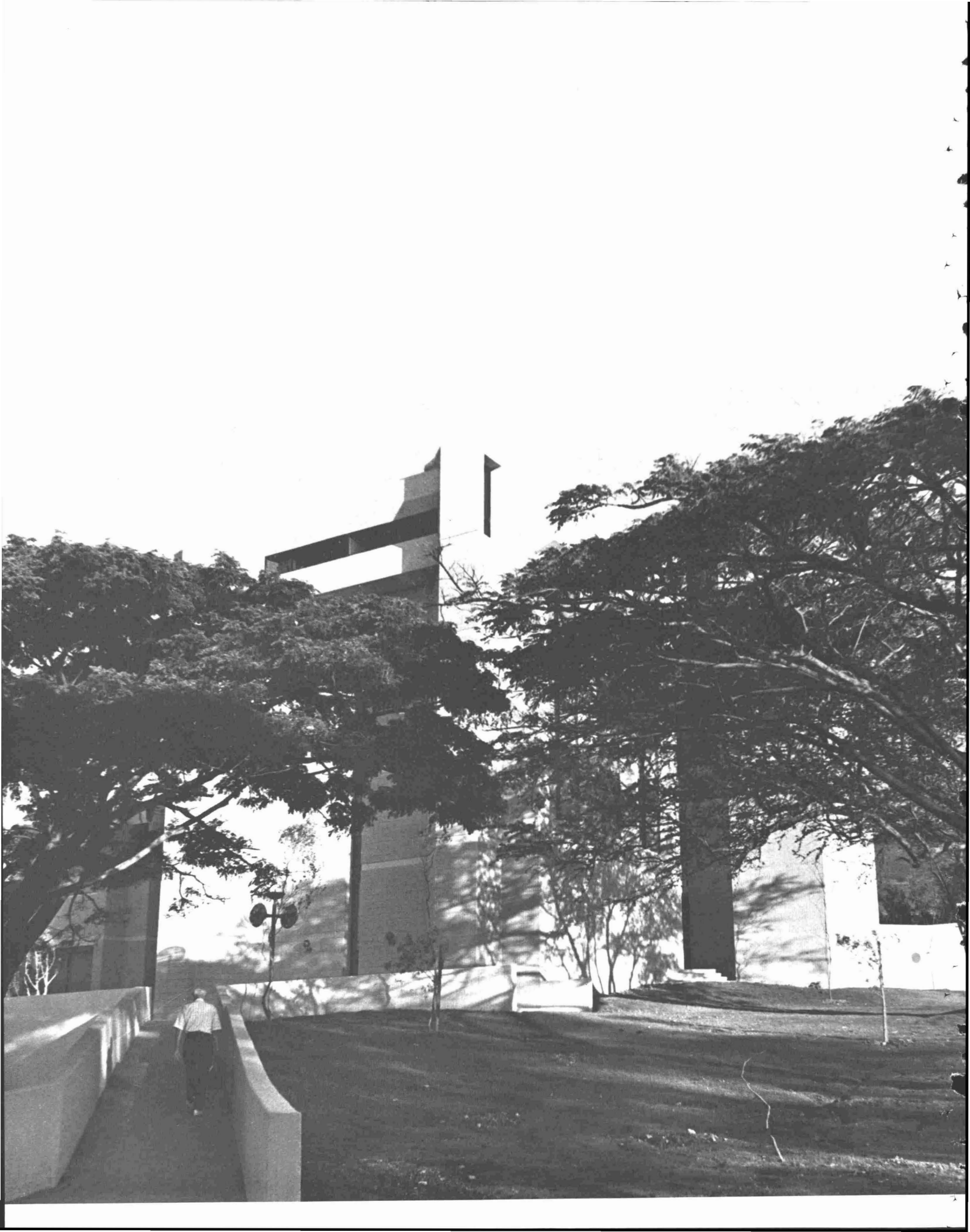
785 Seminar in Speech-Communication in Innovation (3) II

Role of speech and other forms of communication in facilitating 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: consent of instructor.

799 Research (v) I, II

See instructions under 499.

800 Thesis (v) I, II



College of Business Administration

The College of Business Administration was founded in 1949 and accredited by the American Association of Collegiate 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	Credits	
Communications	6	
Quantitative Reasoning (BAS 121-122 or 125)	3	
World Civilizations	6	
Humanities (including one course in literature)	9	
Natural Sciences	9-12	
Social Sciences (BEc 201 or Econ 120 or Econ 150 or Ag 220 is required)	9	
		42-45

Lower Division Business Requirements	Credits	
BEc 201 (<i>see above</i>)		
Accounting 201, 202 (sophomore standing)	6	
BAS 121-122 or 125 (<i>see above</i>) (Math 205 may substitute for BAS 121-122 or 125)	3	
		9
		51-54

Additional Requirements for Lower Division Business Students in Travel Industry Management	Credits	
TIM 101	3	
FSA 181	3	
TIM 100-200	0-0	
		6

In order to qualify for a degree a student must:

1. Meet all pre-admission requirements to the College;
2. complete one of the 9 curricula of the College;
3. complete the University curricular requirements (*see p. 37*);
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 (6 credit hours):** Business Economics 341, 343.
- Group II. Business Core (21-24 credit hours):** Business Analysis and Statistics 301-302 or 305; Finance 300; Law 300; Management 301-302; Management 345; Marketing 300, and one course in business responsibility and society.
- Group III. A major of 15 credit hours (18 for Accounting).*** See below.
- 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 or BAS 305, Eng 309, and BEc 341 early in their program. In addition each student must take GE 251 or BAS 351 or ISc 301 and 302.

Majors

Accounting. Required: Acc 305, 307. **Electives:** four of Acc 321, 323, 325, 331, 335, 341, 361, 365, 437, 445; BAS 321. Students desiring to concentrate in management accounting should select from Acc 341, 361, 365, 445, and BAS 321. Those desiring to concentrate in financial accounting should select from Acc 321, 323, 325, 331, 335, 437. Candidates for the CPA examination should prepare in both areas.

Finance. Required: Fin 305. **Electives:** three of Fin 307, 311, 315, 321, 390, and any upper-division business administration course with special consideration given to Acc 307, 341, BEc 361, 362, RE 321.

Business Economics and Quantitative Methods. Required: BAS 321, BEc 349 (old BEc 342). **Electives:** three of BAS 311, 313, 322, 352, 396, 451, 455, BEc 352, 345, 361, 362, 375.

Foreign Trade. Required: BEc 361, 362; Mkt 315, 381. **Elective:** one upper-division business administration course.

Management. Required: Mgt 321, 322, 341. **Electives:** two of Acc 361, BAS 321, BEc 375, Mgt 344, Mkt 321, PIR 351, 361.

Marketing. Required: Mkt 315, 321, 391. **Electives:** two of Mkt 331, 341, 361, 371, 381.

Personnel and Industrial Relations. Required: PIR 351, 361. **Electives:** three of PIR 353, 363, 365, 367, Mgt 341.

Real Estate. Required: RE 300, 310, 330, 360. **Elective:** one of Acc 307, RE 321, 350, 441.

*Travel Industry Management is an exception; see requirements listed under majors.

BUSINESS ADMINISTRATION COURSES

See p. 3 for a discussion of course descriptions.

Professors: Adler, Bailey, Baird, Barnet, Buchele, Corbin, Crampon, Ferguson, Gee, Gilson, Hook, Ige, Jacobsen, Lowe, Miccio, Ompps, Pendleton, Richman, Seo, Spencer, Taussig, Whitehill.

Associate Professors: Bess, Carol, Chung, Congdon, Cotlar, Currie, Faison, Freitas, Hopkins, Jacobs, Kessner, Kim, Kramer, Laitila, Lee, Lie, Reeser, Smith, Sprague.

Assistant Professors: Bell, Bonbright, Bury, Choi, Cox, Dawson, Edge, Ellis, El-Ramly, Hass, Hicks, Ibrahim, Jonish, Johnston, Kau, Kelley, Kesling, Kimball, Kirkpatrick, Marsh, Metelka, Moscovice, Otsuki, Peterson, Simkin, Stellmacher, Thomas, Vlachos, Williams, Worthley.

Instructors: Jungbluth, Hill.

Lecturers: Amioka, Hamilton, Helber, Ledford, Mett, Reid, Savio.

DEPARTMENT OF ACCOUNTING AND FINANCE

Accounting (Acc)

201 Elementary Accounting I (3) I, II

Introduction to accounting theory and methods used to record and report financial information; analysis of methods for valuing the assets, liabilities, and ownership of an organization. Pre: sophomore standing.

202 Elementary Accounting II (3) I, II

Introduction to methods for evaluating financial performance, including cost accounting, budgeting, break even analysis, ratio analysis, and sources and uses of funds. Pre: 201.

305 Cost Accounting (3) I, II

Output of cost accounting systems relevant to managerial decision making, planning, and control. Topics include: job order, process, direct, and standard cost systems, with emphasis on the creative application and analysis of costs. Pre: 202.

307 Income Tax Problems (3) I, II

Study of the concepts involved in determination of federal income tax liability and preparation of tax returns, with emphasis on tax problems of individuals, tax research, and tax planning. Pre: 202.

321 Financial Accounting I (3) I, II

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) I, II

Application of generally accepted accounting principles to accounting for corporate equities, long-term debt, investments, funds flow, and analysis of financial statements. Pre: 321.

325 Financial Accounting III (3) I, II

Venture accounting, consignments, installment sales, insurance, branch accounting, consolidated statements, fiduciary accounting, statement of affairs, and foreign exchange. Pre: 323.

331 Auditing (3) I, II

Auditing concepts including standards, objectives, and ethics for

external auditors. Emphasis on reporting standards, internal control, evidence, statistical sampling, and EDP audits. Pre: 305 and 323 or 365.

335 Governmental Accounting (3) II

Concepts and principles of accountability for nonprofit seeking entities, with emphasis on governmental units. Includes budgetary control and fund accounting systems and principles. Pre: 202.

341 Accounting Systems and Procedures Analysis (3) II

Examination of accounting subsystems and the role of computers in accounting process. Includes field trips and examination and evaluation of actual systems in present-day use. Pre: 202. BAS 351 recommended.

361 Accounting for Managerial Planning (3) I, II

Strategic and long-range planning, short- and long-term budgeting, behavioral applications of budgeting and control systems, funds flow, PPBS and cost-benefit analysis in private and public sectors. Pre: 305.

365 Enterprise Analysis and Reporting (3) I or II

Analysis and interpretation of alternative valuation, income determination, and financial reporting policies in various industries and under varying economic conditions. Pre: 202. Designed for students concentrating in managerial accounting.

399 Directed Research (3)

Reading and research in a special area within the major field under direction of a single faculty member. Limited to senior majors with grade-point averages in accounting of 3.0 or better.

437 Advanced Tax Problems (3) I, II

Study of advanced aspects of federal tax problems as related to individuals, partnerships, estates, trusts, and corporations; estate and gift taxation also included. Tax research and tax planning emphasized. Pre: 307 or equivalent.

445 Advanced Cost Accounting (3) I, II

Use of advanced analytical methods in solving complex managerial accounting problems. Emphasis on behavioral concepts of cost systems and budgeting analysis. Includes statistical and mathematical techniques pertinent to cost analysis. Pre: 305.

703 Advanced Auditing (3) I

Philosophy and environment of auditing and reporting, including behavioral aspects. Emphasizes recent developments and research in auditing standards, professional ethics, legal liabilities, auditing EDP systems, statistical sampling, management audits, and international auditing. Pre: 331.

704 Computers and Accounting in Business Systems (3) I

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.

705 Advanced Accounting Problems (3) I

Complex accounting problems with emphasis on assets, liabilities, owners' equity, partnerships, corporations, cost accounting, consolidations, funds flow, and other advanced problems. Pre: undergraduate accounting major.

706 Accounting History and Theory (3) II

Historical development of accounting theory emphasizing pronouncements of American Institute of CPA's and American Accounting Association. Pre: consent of instructor.

707 Accounting for Management Planning and Control (3) II

Conceptual approach to managerial accounting's role in the planning and control function of an organization. Topics emphasized include behavioral implications of managerial planning and control systems, budgeting and programming by objectives, and advanced quantitative tools available to the managerial accountant. Pre: Bus 601 or equivalent.

708 Seminar in Advanced Accounting (3) I or II

Special problems in professional accounting: systems, auditing, cost accounting, fund accounting, consolidations, governmental accounting, taxes, budgeting and control.

Finance (Fin)

300 Business Finance (3) I, II

Introduction to functions, techniques, and problems of business finance; investing in assets, financing strategies, planning and control. Pre: Acc 202.

305 Problems of Business Finance (3) I, II

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.

307 Quantitative Financial Decision Making (3) I or II

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 consent of instructor and Fin 300.

311 Investments (3) I, II

Basic concepts of investment media and strategies. Topics include the investment environment, securities markets, alternative vehicles for investment, selection of securities, investment techniques and strategies, mutual funds, and personal portfolio management. Pre: 300.

315 Security Analysis and Portfolio Management (3) I or II

Security analysis and portfolio management from standpoint of the professional analyst and the institutional investor. Topics include recent advances in security valuation models, portfolio selection, and techniques for appraising portfolio performance. Pre: 300 and 311 or consent of instructor.

321 International Business Finance (3) I or II

Financial management of foreign and international business operations: the regulatory environment of international finance, financing international transactions, international capital markets, taxation. Emphasis on financial decision making in the firm. Pre: 300.

390 Seminar in Finance (3) I or II

Advanced topics both of a theoretical and an empirical nature in areas of finance, investments, and capital markets. Topics vary from semester to semester. Course designed to prepare the student for independent research. Pre: consent of instructor.

399 Directed Research (3)

Reading and research in a special area within the major field under direction of a single faculty member. Limited to senior majors with grade-point averages in finance of 3.0 or better.

733 Problems in Business Finance (3) I or II

Application of financial principles and analytical techniques to current financial problems and developments from viewpoint of business firm.

734 Investment Analysis and Management (3) I or II

Techniques of securities, theory of investment and investment decisions, applications to portfolio planning for institutional and individual investors.

735 The Financial System (3) I or II

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

Analysis and treatment of pure risks; utilization of insurance programs to provide protection against financial losses caused by property losses; third party claims; illness and premature death.

311 Property and Casualty Insurance (3) I

Treatment of risk of financial loss of personal and business property and resulting loss of income occasioned by fire and allied perils. Emphasis upon forms of insurance used by individual businessmen and firms; including crime, transportation, liability, and workmen's compensation.

331 Life Insurance (3) II

Treatment of the risk of premature death through use of various life insurance policies. Analysis and study of policy forms, calculation of premiums, reserves, non-forfeiture values, underwriting, regulation of policy provisions, related coverages.

Law (Law)**300 Legal Environment of Business I (3) I, II**

Introduction to legal environment in which business operates with particular attention to principles of law relating to contracts, agency, partnerships, corporations and government regulation.

311 Legal Environment of Business II (3) I

Critical study of legal environment of business administration including legal aspects of competition, monopolies, mergers, labor, taxation and regulatory agencies. Pre: 300.

313 Law for the Accountant (3) II

Intensive study of areas of law of particular importance to accountants with attention to principles of law relating to sales, commercial paper, property, bailments, trusts and wills. Special emphasis on CPA exam law section questions. Pre: 300.

786 Legal Environment of Business (3) I

The law aspects of business, including contract law principles and a penetrating review of laws related to the functions of regulatory agencies, marketing, competition, corporate trust and mergers, and labor.

Real Estate (RE)**300 Principles of Real Estate and Urban Land Economics (3) I, II**

Principles including legal, physical, economic elements; valuation, market analysis, finance; and public and private externalities affecting the allocation and utilization of real estate resources.

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) I

Economic, social, legal, physical factors influencing property values; emphasis on local residential market. Pre: 300.

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.

360 Real Estate Administration (3) II

Management of real property resources; including brokerage, legal and economic environment, finance, and investment. Case materials used extensively. Pre: 300, 310, 330, senior standing.

399 Directed Research (3)

Reading and research in a special area within the major field under direction of a single faculty member. Limited to senior majors with grade-point averages in real estate of 3.0 or better.

441 Urban Land Economics (3) I

Application of business and economic analysis to urban problems; including benefit-cost analysis, land use, transportation, metropolitan growth, public facilities, housing, urban renewal, poverty, race relations, and environment. Pre: any of the following: 300; BEC 341; Bus 621; Econ 151; AgEc 220.

773 Advanced Real Estate (3) I

Application of business principles to real property resources: finance and investment, legal environment, concepts of value.

774 Land Resource Development (3) II

Analysis of the techniques of planning, developing and marketing of land resources.

**DEPARTMENT OF BUSINESS ECONOMICS
AND QUANTITATIVE METHODS****Business Analysis and Statistics (BAS)****121 Mathematics for Decision Making I (3) I, II**

Applications of mathematical operations to business and economics; laws of algebra, algebraic operations, laws of exponents, theory of sets, relations and functions, linear equations, inequalities, vectors, matrix operations, and linear programming. Students may not earn credit for this and Math 134.

122 Mathematics for Decision Making II (3) I, II

Applications of mathematical operations to business and economics; equations and their graphs, limits, continuity, derivatives and their use in minimax problems, partials, indefinite and definite integrals, techniques and applications, improper and numerical integrations, distribution functions and multiple integrals. Pre: 121. Students may not earn credit for this and Math 205 or BAS 125.

125 Accelerated Mathematics for Decision Making (3) I, II

Accelerated combination of QM 121 and 122. Content includes all topics of QM 122 plus vectors, matrix operations, and linear programming of QM 121. Pre: high school math grades of B or better, consent of instructor. Students may not earn credit for this and Math 205 or BAS 122.

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. Pre: 122 or 125, BEC 201 or equivalent.

305 Business Statistics (3) I, II

Accelerated version of BAS 301-302 for qualified students, includes descriptive statistics, probability, decision making, statistical inference, time series, regression and correlation. Applications to business problems. Pre: 122 or 125 with a grade of B or better, and BEC 201 or equivalent.

311 Sampling Methods (3) I, II

Design and use of random systematic, stratified and sequential samples for estimation of universe characteristics. Pre: 302 or 305.

313 Experimental Business Statistics (3) I, II

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 or 305.

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, 305, or concurrently.

322 Decision Theory (3) I or II

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 Introduction to Computers and Data Processing (3) I, II

Introduction to computer hardware and software systems, with emphasis on the impact of computers and their use in organizations. Actual experience in computer programming using an algorithmic language. (FORTRAN, BASIC, PL/1) Pre: 122 or 125.

352 Computer Systems and Applications in Organizations (3) I, II

Examination of current and potential computerized information systems and computer applications in organizations. Emphasizes cross functional systems including accounting, finance, marketing, personnel, production, and management. Programming experience with a data oriented language. (COBOL) Pre: 351.

396 Methods of Scientific Research Applied to Business and Economic Problems (3) I or 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, 305 or concurrently.

399 Directed Reading and Research (v) I, II

Limited to seniors on recommendation of department chairman.

451 Non-Parametric Methods for Business Application (3) I or II

Techniques for estimation of parameters and testing hypotheses which require no assumption about the form of the distribution function, and their application to business problems; contingency tables, tests for proportions, nonparametric analysis of variance and trend analysis, and comparisons of measures of central tendency. Pre: 302 or 305 or concurrently.

455 Applied Regression Analysis (3) I or II

Application of statistical technique of multiple regression analysis to practical business problems. Related techniques of analysis of variance and discriminant analysis also discussed. Pre: 302 or 305.

713 Statistical Decision Theory (3) I or II

Modern statistical decision theory as applied to business decision making. Topics include probability theory, statistical decision problems, including Bayes decision rules. Pre: Bus 611.

714 Operations Research (3) I or II

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, queuing theory, replacement theory, etc. Pre: Bus 611.

715 Quantitative Methods of Business and Economic Forecasting (3) I or II

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. Pre: Bus 611.

783 Computer Data Processing (3) I or II

Hardware structure, I/O, files, memory; programming and machine languages, indirect addressing; files, multiprogramming, operating systems; software, examples of COBOL use, introduction to systems. Pre: 351 or equivalent work experience. No credit for experienced computer people or those with credit for 352 or equivalent.

784 Management Information Systems (3) I or II

Management information concepts; the technology of information systems, corporate data base, file organization, data management systems, information retrieval, data transmission, real time systems, planning and control, MIS evaluation, problems. Pre: 783 or equivalent.

785 Systems Analysis (3) I or II

Model building concepts, probability, methods of systems definitions, control systems hierarchies, simplification methods, search techniques, logic and probability in systems diagnosis, inventory models, Monte-Carlo processes, Binomial and Poisson processes, process generators, simulation of queuing systems, large scale simulation models, design of information systems, and problems of introducing change. Pre: 783 or equivalent, Bus 611.

786 Computer Simulation in Business and Economics (3)

Comprehensive treatment of the nature of computer simulation as research and analysis tool, present and potential uses of simulation models, technology of model construction, and science of utilizing computer simulation models for experimentation and analysis. Pre: Bus 611 and BAS 784 or 785 or equivalent.

Business Economics (BEc)**201 Economic Environment of Business (3) I, II**

Introduction to the principles of economics, role and responsibility of business in a market economy and current social and economic issues in American economy as they affect business and industry. Acquaintance with the existence of issues and their complexity stressed. Students may not earn credit for this and Econ 150, 151, or 120.

301 Environmental Analysis for Multinational Business (3) I, II

To introduce student to the diverse social, cultural and economic patterns in the world community within which the business enterprise functions. Includes identification and critical analysis of major problems faced by domestic and foreign enterprises: national development and economic policies, the stage of industrialization, and the traditional or accepted method of business operation. Pre: Econ 150 or equivalent and Mgt 301.

341 Economic Analysis for Decision Making (3) I, II

General theory of choice. Demand analysis, production cost analysis; forms of market structure; demand creation and selling costs; factor income determination. Decision making under uncertainty will be introduced. Pre: 201, BAS 122 or equivalent.

343 Business Conditions Analysis (3) I, II

Study of interrelationships of macroeconomic events and developments to microeconomic units. Special attention given to the role that GNP, national and regional growth rates, price and employment levels, and monetary and fiscal policies should play in strategic decision making of the firm. Pre: 201, BAS 122 or equivalent.

345 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. BEc 341 students may not receive credit for both BEc 345 and Econ 340. Pre: 201, BAS 122 or equivalent.

349 Managerial Economics (3) I, II

Application of economic and statistical concepts for business decisions using case study methods. Subjects cover projection of demand and production, cost analysis, problems of forecasting, multifactors and multiproducts, technological change; capital budgeting; input-output analysis and programming techniques. Pre: 341.

352 Business Enterprise and Business Fluctuations (3) I or II

Characteristics and causes of business fluctuations; means of coping with recession and inflation by business firms and government; business forecasting. Pre: 341 and 343 or concurrently.

355 Analytical Methods of Banking (3) I or II

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: 345 and BAS 302 or 305.

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: 341 and 343 or concurrently.

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.
- 399 Directed Reading and Research (v) I, II**
Limited to seniors on recommendation of department chairman.
- 721 The Multinational Business in the World Economy (3)**
Introduction to diverse social, cultural and economic patterns in world community within which the business enterprise functions, including problems faced by domestic and foreign firms, assistance programs, national development and economic policies, industrialization stages, and accepted methods of business operation. Pre: Bus 621 or equivalent.
- 723 Operations Economics (3) I or II**
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) I or II**
Study of modern issues and problems in business economics. Topics may vary from term to term. Pre: Bus 611 and 621.
- 725 Capital Markets and International Finance (3) I or II**
Supply and demand for capital in national and international markets. Nature of capital movements and role of capital in industrialization of regions and nations. Pre: Bus 611 and 621.

DEPARTMENT OF MANAGEMENT, MARKETING, INDUSTRIAL RELATIONS

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) I, II**
Analysis of the management process with particular emphasis on human resources.
- 302 Operations Management I (3) I, II**
Management of the production and operations functions of an enterprise. Pre: BAS 302.
- 321 Facilities and Productivity Management (3) I, II**
Facilities design, the management of production systems, and productivity analysis with emphasis on quantitative applications. Pre: all core courses except Mgt 345.
- 322 Operations Management Control (3) I, II**
Inventory and production planning and control, manufacturing processes, inspection and quality control, equipment selection and replacement analysis. Pre: 302.
- 341 Human Relations in the Organization (3) I, II**
Contributions made by sociology, psychology and related behavioral sciences which assist in the resolution of interpersonal organizational problems. Pre: 301.
- 343 The Business Manager's Social Responsibility (3)**
Study of the evolving interrelationships between business and society, changing role of the businessman in his environment, and ethical problems and social responsibilities of business managers.
- 344 Seminar in Management (3)**
In-depth analysis of selected current practices and trends in administration. Pre: 301, 341; senior standing; consent of instructor.
- 345 Business Policy (3) I, II**
Case studies in assessing alternative risks in solving policy problems: an interdisciplinary approach applying and integrating many subjects in college curriculum. Pre: all other core courses and graduating senior standing.
- 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.
- 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.
- 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) I, II**
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) I, II**
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) I, II**
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.
- 371 Consumer Behavior (3)**
Analysis of consumer behavior and motivation, principles of learning, personality, perception and group influence, with emphasis upon mass communications effects.
- 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.
- 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 communication process; theoretical considerations stressed in presenting hypotheses, techniques, and research studies. Within this framework, advertising, personal selling, and promotion 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) I, II

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 Administration (3) I, II

Survey of the field covering such topics as recruitment, interviewing, selection, placement, training, transfers, promotion, appraisal, separation, health services, grievance handling, suggestion systems, communications, discipline, safety.

353 Advanced Personnel Administration (3)

Selected topics with emphasis upon trends and recent issues, job evaluation, incentive systems, salary administration, executive compensation, profit sharing, benefit programs, retirement plans. Pre: 351.

361 Labor Problems and Trade Unionism (3) I, II

Problems and economics of labor; history, structure, government, activities of trade unions; social and labor legislation.

363 Collective Bargaining and Dispute Settlement (3)

Principles and concepts of collective bargaining; methods of settling disputes over rights and interests. Pre: 361.

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 given to current problems on 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)

Review of labor history, labor legislation and labor problems including collective bargaining for public employees.

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

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 worldwide 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**

TIM 321	Tourism Prin I	3
TIM 322	Tourism Prin II	3
TIM 323	Travel Agency Management	3
TRANS 351	Economics of Transportation	3
TRANS 352	Passenger Transportation	3
TIM 361	Law & Regulation of Trav. Ind.	3
TIM 341	Resort Area Development	3
TIM 300, 400	Internship	2
		23

**EMPHASIS B—HOTEL &
RESTAURANT MANAGEMENT**

TIM 301	Hotel Management Principles	3
TIM 314	Institutional Purchasing	3
TIM 331	Hotel Design, Eng., Maint.	3
TIM 334	Hospitality Merch. & Club Mgmt.	3
TIM 351	Hotel Internal Controls	3
TIM 300, 400	Internship	2
Electives: TIM 321, 322, 323, 341, 361, 399; Trans 351, 352, 453		6
		23

Transportation (Trans)

351 Economics of Transportation (3) I, II

Development of major transportation systems and their marketing function in American economy as integral part of process of physical distribution. Pre: BEc 341 or equivalent.

352 Passenger Transportation (3) I, 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. Pre: BEc 341 or equivalent.

453 Air Travel Management (3) II

Designed to develop student understanding of the breadth and challenge of strategic problems—current and future—which confront airline and airport executives. Program cultivates awareness of environment in which the airline and airport industry must function, both today and in future. New techniques and management tools employed by effective airline and airport managers analyzed. Pre: 351 or 352.

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) (v)

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 (3) I, II

Conceptual role of management in the hotel industry, focusing special attention upon organizational structure, personnel administration, operational problems, international standards and practice; decision making and policy formulation playing the TIM/SIM game; a review of the historic and current development of the hotel industry. Pre: Mgt 300, senior standing or consent of instructor.

314 Institutional Purchasing (3) I, II

Introduction to, and analysis of, the procurement responsibilities

in travel industry management. Special emphasis given to organized institutions supplying hotels, restaurants, airlines, etc., and the legislation which controls standards of industrial supplies and goods. Pre: FSA 181.

321 Tourism Principles I (3) I, II

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) I, 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.

323 Travel Agency Management (3) I, II

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.

331 Hotel Design, Engineering, and Maintenance (3) I, II

Concepts of manager's role in architectural design, engineering and maintenance problems in hotels and resorts, including food service facilities. Pre: FSA 181.

334 Hospitality Merchandising and Club Management (3) I, II

Study of micro-economics of the hospitality industry and its marketing problems. Emphasis will be placed on specific factors dealing with food, beverage, and environmental planning. Pre: FSA 181.

341 Resort Area Development (3) I, II

Economic, legal and physical factors in use, transfer, development and administration of lands for purposes of tourism. (Cross-listed as RE 351.)

351 Studies in Hotel Management Controls (3) I, II

Cost accounting and controls for hotel and food service operations, including budgeting, front office accounting, food and beverage controls, payroll controls, financial analysis. Pre: Acc 202.

361 Law and Regulation for the Travel Industry (3) I, II

Origin, development, and principle of common, statutory, constitutional, international, and maritime law as they relate to the hotel, restaurant, travel and related industries and services. Pre: Law 300.

399 Directed Research (v) I, II

Reading and research into problems in the sphere of Travel Industry Management. Limited to students with junior standing or above and at least a 2.5 grade-point ratio. Permission of instructor required based upon the student's written proposal of content and objectives of his course program. Seminar course under direction of a single faculty member who will utilize other faculty resources as required by individual student program.

771 Lodging Industry Administration (3) I

Application of administrative science concepts and tools to problems of lodging and accommodations management and operation. Policy and decision making assisted by systems-analysis, data processing, and other internal controls techniques.

774 Land Resource Development (3) II

Analysis of the techniques of planning, developing and marketing of land resources. (Cross-listed as RE 774.)

775 International Travel & Transportation (3)

Analysis of factors fostering local, national and international development through travel industry expansion. Actions of international organizations, quasi-governmental and commercial institutions studies to identify economic and social forces melding into new marketing and complementary institutions.

776 Socio-Political Factors in Tourism (3) II

Seminar aimed at examining interrelationships of sociological, psychological, and anthropological factors as they affect the travel industry. Tourism examined both as cause and effect of identifiable societal processes.

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. An MBA Program brochure which describes the program in detail may be obtained, at no charge, from: Assistant Dean, MBA Programs, University of Hawaii, 2500 Campus Road, Honolulu, Hawaii 96822.

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 preparation, analysis and uses of financial statements.

Bus 502 Economic Analysis (3)

Economic analysis and background of business firms; economic decisions and economic environment of business.

Bus 503 Introduction to Quantitative Analysis (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)

601 Managerial Accounting (3)†

Development and utilization of financial and cost data for managerial purposes. Emphasizes analytical rather than procedural approach and management point of view. Pre: Bus 501 or equivalent.

*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.

†Undergraduate accounting majors will not be allowed to take this course.

Bus 611 Statistical Methods of Business Analysis (3)

Mathematical methods and techniques of statistical inference used in business. Pre: 503 or equivalent.

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. Pre: Bus 501, 502, 503, and 611 or equivalent.

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. IS 600 will be accepted as a substitute. Pre: 504 and 505 or equivalent.

Bus 642 Behavioral Science for Business (3)

Analysis of social and cultural forces that change the environmental context for management decision making. Business problems derived from changing patterns of life will be examined in terms of social sciences, such as: anthropology, psychology, and sociology. Pre: Bus 504 or equivalent.

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. Pre: all 500 level courses or equivalent, Bus 611, 621.

IS 600 Theory of Administration (3)

Course offered in Interdisciplinary Studies, as an alternative for Bus 641. Designed to meet the needs of students with backgrounds or interest in public administration and/or education. A 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.

GROUP III—See individual departmental listings.

Bus 747 The Nature of Entrepreneurship (3) I

Definition of "entrepreneurship" in its various forms: the economic role of small business entrepreneurs in economic development; managerial and financial problems and other barriers to starting new small businesses; relevant national policies and programs; problems of identifying, motivating and training entrepreneurs; individual student projects.

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.

Bus 799 Business Research (3)



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 early childhood education, elementary education, secondary education, or special 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 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 (B.S.) 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 (M.Ed.) 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 educa-

tion 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.

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, an academic major and student teaching. Requirements are listed in the sections following.

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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 early childhood, elementary, secondary and special education 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 EARLY CHILDHOOD EDUCATION MAJORS

Early childhood education majors have two program options. Program option "A" is designed for candidates intending to teach children, ages 5-8. Program option "B" is designed for candidates intending to teach children, ages 3-4. These options are described in the following sections.

Early Childhood Education Option "A" Program

1. B.Ed. requirements: minimum of 126 credits
 - a. General Education Core: follow requirements for pre-education majors in the College of Arts and Sciences: 55 credits in liberal arts and science courses.

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. General Education Core: follow requirements for pre-education majors in the College of Arts and Sciences: 55 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: 10 credits, full time for one semester; 2 credits, seminar for student teachers.
 - d. Academic Major: a minimum of $\frac{3}{4}$ of the credits for the major as specified.*
 - e. Distributive Major: a minimum of 15 of the credits in the 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 or above.
 - b. Academic Major: the balance of credits required for the major as specified.*
 - c. Distributive Major: 15 credits, the balance of credits required in the distributive major as specified.*

Elementary Specialist Program

1. B.Ed. requirements: a minimum of 126 credits
 - a. General Education Core: follow requirements for pre-education majors in the College of Arts and Sciences: 55 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: 10 credits, full time for one semester; 2 credits, seminar for student teachers.
2. Professional Diploma requirements: a minimum of 156 credits including work completed for the B.Ed. and the following:

- b. Professional Education Core: 16 credits taken in three blocks, including work in social and psychological foundations, foundations in curriculum and instruction, and special methods.
 - c. Student Teaching: 10 credits, full-time for one semester, and a 2-credit seminar for student teachers.
 - d. Human Development Sequence: 18 credits in courses dealing with human development and family relations.
 - e. Academic or Distributive Major: 18-20 credits taken either in one field or distributed among several fields.*
 - f. Electives: 4-6 credits.
2. Professional Diploma requirements: minimum of 156 credits, including work completed for the B.Ed. and the following:
 - a. Professional Education Core: 6 additional credits in education courses numbered at the 600 level or above.
 - b. Human Development Sequence: 9 additional credits in courses in human development.
 - c. Academic or Distributive Major: 6-7 additional credits completing balance of courses required for the academic or distributive major.*
 - d. Electives: 7-8 credits.

Early Childhood Education Option "B" Program

1. B.Ed. requirements: minimum of 126 credits
 - a. General Education Core, Professional Education Core, and Student Teaching requirements are identical to those in Option "A".
 - b. Human Development Major: 27 credits in courses in human development and family relationships.
 - c. Distributive Major: 12 credits in courses distributed among several fields.
 - d. Electives: 2 credits.
2. Professional Diploma requirements: a minimum of 156 credits, including work for the B.Ed. and the following:
 - a. Professional Education Core: 6 additional credits in education courses numbered at the 600 level or above.
 - b. Human Development Major: 12 additional credits to complete requirements of the major in human development.
 - c. Distributive Major: 12 additional credits to complete requirements of the distributive major begun at the B.Ed. level.

*Specific requirements are available in the College of Education, Division of Student Services.

- a. Professional Education: 6 additional credits in education courses numbered at the 600 level or above.
- b. Academic Major: the balance of credits required for the major and other courses as specified.*

PROGRAM OF STUDIES FOR
SPECIAL EDUCATION MAJORS

Special Education majors are prepared to be teachers of the mentally retarded trainables, the mentally retarded educables, or the children with learning and behavior disorders. Requirements are listed below.

1. B.Ed. requirements: minimum of 129 credits
 - a. General Education Core: follow requirements for pre-education majors in the College of Arts and Sciences: 55 credits in liberal arts and science courses.
 - b. Professional Education Core: 6 credits in social and psychological foundations; 16 credits in special education courses.
 - c. Student Teaching: 10 credits, full time for one semester; 2 credits, seminar for student teachers.
 - d. Academic Major: a minimum of 18 credits in courses for an academic major.*
 - e. Distributive Major: a minimum of 15 credits in courses dealing with the curriculum of the public schools as specified.*
 - f. Electives: variable number.
2. Professional Diploma requirements: minimum of 159 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 or above.
 - b. Academic Major: the balance of credits required for the major as specified.*
 - c. Distributive Major: 15 credits, the balance of credits required in the distributive major as specified.*
 - d. Electives: variable number.

PROGRAM OF STUDIES FOR
SECONDARY EDUCATION MAJORS

1. B.Ed. requirements: a minimum of 126 credits
 - a. General Education Core: follow requirements for pre-education majors in the College of Arts and Sciences: 55 credits in liberal arts courses.
 - b. Professional Education Core: 9 credits in social, psychological, and curriculum foundations; 3-7 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: 10 credits, full time for one semester; 2 credits, seminar for student teachers.
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 or above.
 - b. Teaching Field Major: additional credits in the major and/or other courses as specified.*

Teaching Field Majors—Secondary Education

(For B.Ed. and Professional Diploma)

Total number of credits are approximations.*

Agriculture: 60 credits in agriculture and agricultural technology courses.

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.

Biology: 32 credits in biology; general physics; organic chemistry; introductory geoscience; history/philosophy of science; introductory calculus.

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.

Chemistry: 32 credits in chemistry; general and modern physics; introductory biology and geoscience; history/philosophy of science; integral calculus.

Distributive Education: 36 credits in business, including a minimum of 21 credits in economics, marketing and management.

English: 60 credits in English and related subjects.

Foreign Languages: 60 credits in a foreign language (Chinese, Japanese, French, German, or Spanish) and related subjects.

Geosciences: 32 credits in geosciences; general and modern physics; inorganic chemistry; introductory biology; history/philosophy of science; integral calculus.

Health and Physical Education: 60 credits in health and physical education.

Home Economics Education: a minimum of 56 credits (45 B.Ed., 11 Professional Diploma) in home economics to include course work in family economics, consumer education and home management (9 credits); housing, home furnishings and equipment (6 credits); food and nutrition (9 credits); clothing and textiles (10 credits); family life and child development (6 credits); and electives in the above areas (16 credits).

Industrial Arts Education: 60 credits in industrial and technological education.

Mathematics: Junior High—30 credits in mathematics; Senior High—42 credits in mathematics.

Music, Instrumental: 74 credits in instrumental music and related subjects.

Music, Vocal: 70 credits in music theory and voice and related subjects.

Physics: 32 credits in physics; inorganic, qualitative and physical chemistry; introductory biology and geoscience; history/philosophy of science; differential equations.

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.

Speech: 60 credits in speech and related subjects.

*Specific requirements are available in the College of Education, Division of Student Services.

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 freshman 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 Distributive 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 generally enroll in the College of Tropical Agriculture's division of human resources development, department of home economics, for their general education during the freshman and sophomore years. They transfer to the College of Education at the end of the sophomore year to complete their program of studies for the Bachelor of Education degree and Professional Diploma. Their major teaching field work is completed through courses taken in the division of human resources development in the departments of human development, fashion design, textiles and merchandising, food and nutritional sciences, and home economics. See page 200 for course requirements.

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 College of Education in cooperation with the University of 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 Policies

The College of Education considers students for admission to the Bachelor of Education or Professional Diploma programs on the following basis:

1. Students must have completed application procedures to the College of Education. These are:
 - a. All undergraduate students from the Manoa Campus must submit a completed application form along with official transcripts of all previous college work to: Division of Student Services, College of Education, University of Hawaii. Professional Diploma and undergraduate applicants from other campuses must submit their completed application materials to: Office of Admissions and Records, University of Hawaii.
 - b. All applicants must arrange for a personal interview with staff members of the division of student services after admission materials have been filed. Outer island or mainland students may file a letter of recommendation in lieu of the interview.
 - c. In addition, applicants who wish to enroll in the music education program are required to ensure that official transcripts of all university studies are on file in the music department office on the date of application; make an appointment for interview with the music education faculty at the time of application; and present evidence of musical and vocational aptitude in support of application.

These procedures should be completed by the following deadlines:

- May 1—for fall semester
- November 1—for spring semester

2. Students applying for admission to the Bachelor of Education program must have achieved upper-division status by completing a minimum of 55 semester hours in any accredited college. Students applying

- for the Professional Diploma program must have a bachelor's degree from an accredited college/university.
- Students must have a minimum cumulative grade point average of not less than 2.0 on a 4.0 scale. Students on probation will not be considered for admission.
 - Students must meet all prevalent admissions criteria for the college.

Graduation Requirements and Procedures

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:

- Fulfill all University requirements;
- complete the College of Education undergraduate curriculum in early childhood, elementary, secondary or special education;
- acquire a minimum aggregate of 114 semester hours of credit in addition to student teaching;
- have a cumulative GPA not less than that required for admission to the College;
- 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:

- Meet all admission requirements of the College of Education;
- have been awarded a bachelor's degree from an accredited institution;
- have successfully completed student teaching;
- have completed all course requirements for the Professional Diploma;
- have acquired a minimum of 156 semester hours;
- have a final cumulative GPA not less than that required for admission to the College;
- 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:

- To be enrolled in the College of Education as a classified student;

- to complete a 30-hour field experience with children of the age group requested in student teaching;
- 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 2.5;
- 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);
- to be cleared for student teaching by the division of field services;
- 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).

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 DOE. 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 educational 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.

Media Specialist Certificate Program. The College offers a 30-semester hour graduate program which qualifies candidates to meet the DOE's Professional Media Specialist Certificate. For further information, contact the chairman of the department of educational communications.

EDUCATION COURSES

See p. 3 for discussion of course descriptions.

Curriculum and Instruction (Ed CI)

Professors: R. Alm, Austin, Carr, Hayes, Ihara, In, Inn, Jenkins, Lang, Martin, Morris, Nelson, Noda, Pickens, Poyzer.
Associate Professors: Braun, Brown, Campbell, Fujita, Fultz, Pang, Picard, Reddin, E. Sato, Uehara, Whitman, Zane.
Assistant Professors: Becker, Chattopadhyay, Thompson.
Acting Assistant Professor: Whitesell.
Instructors: Jackstadt, Kiehm, Young.

Courses numbered from 312 through 399 have as prerequisite enrollment in the College of Education as a classified student.

312 Foundations in Curriculum and Instruction (3) I, II Braun, Brown, Chattopadhyay, Fujita, Fultz, Inn, Jenkins, Kiehm, Lang, 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 Austin, 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 Braun, Chattopadhyay, Jenkins, Kiehm, Reddin
Modern approach to teaching of language arts—oral, written expression. Pre: 312 or concurrent registration.

321 Reading Elementary (2) I, II Austin, Braun, Uehara, Young
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 current 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 Becker, 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, II 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 Staff
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, II 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 Staff
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 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) Sato
1. European Languages I
2. Asian Languages I
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 Staff
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) I, 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 Staff**
Curriculum design. Current educational philosophies and practices in home economics education. Teaching materials and techniques.
- 390 Student Teaching (v) I, II Staff**
Supervised experience in public schools. Sections: (1) elementary education, (2) secondary education. Course taken on mandatory credit-no credit basis. Pre: requirements for registration listed under "Student Teaching."
- 391 Seminar for Student Teachers (2) I, II Staff**
Seminar relating current educational theories with experiences in student teaching. To be taken concurrently with 390. Course taken on mandatory credit-no credit basis. Pre: requirements for registration listed under "Student Teaching."
- 397-398 Early Childhood Curriculum (5-5) Yr. Staff**
Introduction to theories of curriculum and programs for young children (preschool through primary). Applications to development and learning through guided observations and participation in school situations. Part I: emphasis on communication skills. Part II: emphasis on mathematics and the sciences. Related arts integrated with content of both semesters. Pre: HD 231-232; Ed EF 310, Ed EP 311 recommended or concurrent registration.
- 399 Directed Reading (v) 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.
- 433 Seminar in Interdisciplinary Science Curriculum (3) II Staff**
Fundamental science concepts from the viewpoints of physical, biological and earth sciences; integrative processes and conceptual schemes; methods, tools and models of different disciplines. Pre: introductory courses in the various sciences.
- 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.
- 438 Foundations of Vocational Education (2) I, II Zane**
Historical and philosophical foundations of vocational-technical education, overview of federal-state legislation and contemporary practices.
- 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 Staff**
Individual and group problems selected according to interests and needs of fourth-year and fifth-year students in home economics education. Development of teaching materials.
- 488 Creative Process in Development and Learning (3) I, II, SS Hayes**
Study of creative process and its values in education. Designed to modify behavior of classroom teacher in identifying and encouraging creative ability of children. Many teaching models examined and assessed as to their usefulness in developing creative teaching. Laboratory experiences will include experimentation with several models. Pre: teaching experience or consent of instructor.
- 497 Cooperative Vocational Experiences (v) I, II Staff**
Pre: consent of instructor. (Identical with IE 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 (v) I, II Staff**
Designed for teachers-in-service to upgrade subject matter and develop new teaching methods and materials for instruction in courses of study. (1) art, (2) business, (3) English language arts, (4) foreign language, (5) health and physical, (6) home economics, (7) industrial, (8) mathematics, (9) science, (10) social studies, (11) speech, (12) reading, (13) general curriculum and teaching problems, (14) Asian studies, (15) adult education. Development of curriculum materials and methods by participating teachers. Pre: related undergraduate methods course; teaching experience. Field of study must be designated at registration. May be repeated for credit.
- 590 Internship (v) 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 Austin, Jenkins, Reddin**
Examination in depth of traditional and modern literature for children, with emphasis upon genre, historical development, research, curriculum development. Pre: 319 and teaching experience.
- 620 Teaching Reading in the Elementary School (3) I, II Braun, Uehara, Young**
Developmental and psychological aspects of the reading process, studying current trends, research, techniques of evaluation. Pre: 321 and teaching experience.
- 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.
- 622 Elementary School Curriculum (3) I, II Braun, Inn, Jenkins, Lang**
Theoretical foundations of curriculum development; curriculum research; critical examination of current practices in curriculum development for elementary school. Pre: 312 or equivalent and teaching experience.
- 623 Elementary Science Curriculum (3) I, II Carr**
Application of recent developments in science, curriculum construction and learning theory to elementary school. Science content and methodology stressed. Pre: 323 and teaching experience.
- 624 Elementary Mathematics Curriculum (3) II Picard**
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.
- 625 Elementary Social Studies Curriculum (3) II Inn, Lang**
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.

- 626 Art in Elementary Education (3) I** **Becker, Pickens**
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 and teaching experience.
- 629 Curriculum Development in Creative Expression (3) I, II** **Hayes**
Leadership training for teachers of creative dramatics, rhythmic movement, related arts. Pre: 329 or consent of instructor and teaching experience.
- 634 Extraclass Activities in Secondary Schools (2) I** **Staff**
Exploring potential contribution and utilization of extraclass activities: homeroom, student council, athletics, intramurals, clubs, dramatics, publications, speech activities, assemblies, etc. Pre: teaching experience.
- 635 Junior High School Curriculum (3) I** **Fultz, Martin**
Programs for intermediate school; relationship of teachers, administrators, parents; curriculum problems; evaluation. Pre: teaching experience.
- 636 Secondary School Curriculum (3) I, II** **Fultz, Martin**
Principles and techniques of curriculum improvement at secondary school level. Pre: teaching experience.
- 637 Art in Secondary Education (3) I** **Pickens**
Principles of and problems in teaching art in secondary school; current approaches in teaching art. Pre: 336, consent of instructor and teaching experience.
- 639 Business Education Curriculum (3) I** **Morris**
Theory, philosophy, objectives, and development of business education curriculum. Pre: teaching experience or consent of instructor; 349 or 460.
- 640 Seminar in Teaching Fields (3) I, II** **Staff**
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.
- 643 Public School Curriculum for Physical Education (3) I, II** **Little**
Detailed examination of contents of adequate curriculum for physical education in public schools, K-12. Pre: 343, 636, HPE 203, or consent of instructor and teaching experience. (Identical with HPE 643.)
- 646 Reading Difficulties (3) I, II** **Austin, Young**
Causes, prevention, and correction. Evaluation and remedial practices useful to classroom teacher. Pre: course in teaching of reading and teaching experience.
- 647 Clinical Procedures in Reading (3) I, II** **Austin**
Diagnosis; methods and materials for improvement of an individual's reading ability. Pre: 646; consent of instructor and teaching experience. May be repeated once for credit.
- 649 Theory & Practices in Cooperative Business Education (3) I** **Morris**
Study of theory and practices of coordinating cooperative training programs in business education. Pre: teaching experience or consent of instructor; 639.
- 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** **Staff**
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 (v) I, II** **Staff**
Individual reading and/or research. Pre: consent of instructor and department chairman.
- 722 Seminar in Elementary Curriculum Foundations (3) II** **Braun, 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; teaching experience; consent of instructor. May be repeated once for credit.
- 733 Seminar in Curriculum, Secondary (3) I, II** **Martin, Noda**
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; teaching experience; 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; teaching experience; consent of instructor; Phil 500 desirable.
- 800 Thesis Research (v) I, II** **Gorter**

INDUSTRIAL EDUCATION (IE)

- 300 Industrial Crafts—Jewelry and Lapidary Processes (2) I** **Poyzer**
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** **Poyzer**
Design and fabrication of leather products. Materials and processes taught through creative projects and problems.
- 302 Industrial Crafts—Plastics and Wood Sculpture (3) II** **Poyzer**
Design and fabrication of plastic projects; materials and processes of metal enameling; other industrial crafts native to Hawaii.
- 309 Graphic Arts (3) I** **Staff**
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** **Poyzer**
Hand and simple machine tool instruction taught through selected elementary education projects and units.
- 401 Problems in Industrial Education (v) I, II** **Poyzer**
Problem arranged for specialization in several technical areas. May be repeated for total of 5 credits.
- 402 Improvement of Instruction, Industrial Education (v) I, II** **Poyzer**
Consideration of problem in teaching industrial education. May be repeated for total of 5 credits.
- 497 Cooperative Vocational Experiences (v) I, II** **Staff**
Planned work-experience program for special areas of vocational-technical education. Learning experience includes an acceptable type of wage earning employment. Minimum of six 40-hour weeks or 240 work hours required for each 3 semester hours of credit. May be repeated. Pre: consent of instructor. (Identical with Ed CI 497.)
- 764 Seminar in Industrial Education (2) II** **Poyzer**
Individual study of special problems. May be repeated once for credit.

Educational Administration (Ed EA)

Professors: Dunwell, Everly, Ingils.

Associate Professors: Araki, J. Thompson, Varney.

- 480 Organization and Administration of Schools (3) II** Araki
Principles and practices of school administration in relation to the function of the teacher. Special emphasis placed on Hawaii's state organization of public education, and its laws and regulations.
- 600 Theory of Administration (3) I, II** Staff
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 IS 600.)
- 601 Introduction to Educational Administration (3) I, II** Dunwell
Develops view of administrative process and organization elements in context of system of personal, social and physical variables. Emphasis on role and functions of school administrator.
- 602 Research in Educational Administration (3) I, II** Thompson
Develops basic concepts of research in educational administration: methodology, status of particular topics, communication, and application of findings to problems of school administration.
- 605 Collective Negotiation in Education (3) I, II, SS** Thompson
Principles and practices of collective negotiations as they apply to public and private education. Special emphasis placed on negotiation practices under Hawaii Public Employee Collective Bargaining Act S.B. #1696-70, CD-1.
- 610 School-Community Relations (3) I** Araki
Application of principles, techniques, policies, organization of school-community information program.
- 620 School Finance (3) II** Thompson
School revenues, apportionments, budgetary procedures, costs, business management.
- 623 Administrative Problems in Physical Education (3) I, II** Chui
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 423 or equivalent and consent of instructor. (Identical with HPE 623.)
- 630 School Law (3) I** Thompson
Functions, relationships, responsibilities of school districts and school personnel with interpretations of legal status as shown by constitutions, statutes, court decisions.
- 640 Systems Approach—Program Planning (3) I, II, SS** Varney
Basic concepts and techniques in systems approach to educational management. Emphasizes preparation of program plans required at various organizational levels for PPBS.
- 645 Principles of School Management (3) I, II, SS**
Relates identified management functions to operational problems of school administrators at various organizational levels. Principles and issues of management in relationship to practice of school administration.
- 650 Human Factors in Organization (3) I, II, SS** Ingils
Analysis of the nature of organizations, human nature and needs, and their relationship to leadership, staffing, and staff development. Implications of group structure and human conflict, communications, and supervision and evaluation considered.
- 660 School Plant (3) I** Ingils
Problems and techniques in school plant planning, operation, maintenance; working with other agencies and with classified personnel.
- 670 School Supervision (3) I** Araki
Principles of supervision and development of supervisory programs.

- 699 Directed Reading and/or Research (v) I, II** Staff
Individual reading and/or research. Pre: consent of instructor and department chairman.
- 720 Administrative Internship (6) I, II** Staff
Supervised intern experience in school principalship. Emphasizes administrative functions related to total educational program and development of leadership skills. Pre: approval of cooperating agencies and department.
- 775 Seminar on the Principalship (3) I, II, SS** Staff
Series of planned seminar experiences on problems and issues confronting school principal, such as contract administration, program planning and budgeting (PPBS), teacher evaluation. Topic to be announced. May be repeated.
- 780 Advanced Seminar (3) I, II, SS** Staff
Series of advanced seminars on problems and issues in areas such as higher education, community college, technical and vocational education. Topic to be announced. May be repeated.
- 800 Thesis Research (v) I, II** Gorter

Educational Communications (Ed EC)

Professor: Wittich.

Associate Professors: Butler, Kucera, Sanderson.

Assistant Professors: Lum, Sparks, Vollan.

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, Vollan
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 (v) 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, Vollan
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.
- 549 Current Developments in Educational Media (3) I, II, SS** Staff
Survey of educational media in terms of curricular developments and of technological changes. Emphasis on selection, production, evaluation, and utilization. Includes laboratory experiences.
- 550 Planning and Directing New Media Programs (3) I, II, SS** Staff
Techniques and procedures of effective planning and directing media programs based on survey of current status and on research findings.
- 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.
- 605 Seminar in Media Research Foundations (3) I, II** Kucera
Basic concepts in educational media research. Study and discussion of current research in various topics of educational communications. Development of overview of research findings. Required of all

Educational Communications majors. Pre: consent of department chairman.

620 Production of Instructional Materials (3) I, II Sparks, Vollan
Preparation of two- and three-dimensional instructional materials, charts, graphs, learning displays, television graphics, overhead transparencies, audio recordings, and use of Ektagraphic visual maker.

623 Survey and Production of Asian and Pacific Study Materials (3) II Lum
Selection, evaluation and use of instructional materials available to teachers of Asian and Pacific studies subjects. Adapting existing materials or creating new materials; maps and models, audio recordings, flat pictures, slide sets, projectuals, filmstrips, realia and films. Pre: consent of instructor.

625 Educational Still Photography (3) I, II Sparks, Vollan
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 Educational Motion Pictures (3) I, II Sparks, Wittich
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 or II Kucera, Sparks
Development and utilization of television for purpose of improving the teaching-learning process. Practical exploration of possibilities with simple TV systems (including the capability of recording). Pre: basic TV skills or 599 (3).

635 ETV Systems and Programs (3) I or II Kucera
Study of planning, acquisition, utilization, and evaluation of educational television programming. Analysis of systems of organization, administration, transmission, and distribution. Pre: 630 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 Sparks
Learning theory, experimental procedures and related systems and readings in study and development of programmed learning. Evaluation, selection, and utilization of programs in classroom. Pre: Ed EP 672 or consent of instructor. (Identical with Ed EP 640.)

650 Media Service Administration (3) I, II Lum
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.

670 Educational Communications Systems (3) I, II Wittich
Review 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 and interrelated techniques. Pre: 620 or equivalent.

690 Seminar and Internship in Media Leadership (3) I, II Kucera
Supervised activity in analyzing and developing media-related learning experiences; establishing and testing strategies and procedures with communications media and techniques. May be repeated. Pre: consent of department chairman.

699 Directed Reading and/or Research (v) I, II Kucera
Individual reading and/or research. Pre: consent of instructor and department chairman.

750 Seminar in Administration and Management of Media Programs (3) I, II Wittich

Current principles and practices in organization, administration, and management of programs utilizing new learning media: audio-visual, ETV, facilities for such management. Topics selected from (1) elementary, (2) intermediate, (3) secondary, (4) community college, (5) special education, (6) higher education, (7) district-state levels.

800 Thesis Research (v) I, II Gorter

Educational Foundations (Ed EF)

Professors: Amioka, Anderson, Boyer, Ezer, Keppel, Potter, Stueber.
Associate Professors: Frazier, Jaeckel, Kobayashi.
Assistant Professor: Fruehling.
Acting Assistant Professor: Beauchamp.

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.

397 Tune to Future (3) I Staff
Emphasis on Hawaii's problems and future developments and alternatives. Some major areas covered: problems in social systems, experiences of social change, determining our future, social impact of new technologies, learning to become, changing modes of education, human values and human valuing, and changing sex roles.

399 Directed Reading (v) 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 Ezer, Frazier, 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 Sp Ed 409.)

445 Educational Sociology (3) I, II Ezer
Examination of development of theoretical and practical aspects of social structure and their relationship to education. Pre: 310 or 3 hrs. of sociology.

480 Anthropological Applications (3) II Fruehling
Education as means of transmitting culture. Socialization in non-literate societies; universal aspects of process. Cross-cultural education. (Identical with Anth 480.)

484 Education in America (3) I Kobayashi
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.

498 Education and the Idea of Mankind (3) I, II Staff
Can education translate into classroom experience the practical importance of "mankind" rather than of habitual notions of nation, race, religion, class, or other constrictions that limit the role of students and teachers in an age of global communication and confrontation? Without prejudgments, cooperative investigations of conflicting interpretations critically analyzed.

650 Historical Foundations of Western Education (3) I, II Jaeckel, Keppel
History of European thought and practice as basis for study of modern education.

- 651 History of American Education (3) I, II** **Jaekel, Keppel**
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 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.
- 657 Community College (3) II** **Potter**
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.)
- 660 Philosophy of Education (3) I, II** **Kobayashi, Frazier**
Philosophical considerations essential to theories of education. Pre: student teaching.
- 664 Seminar in Problems in Education (2) I, II** **Staff**
For Plan B M.Ed. candidates. Topics determined by Plan B projects. Required seminar for completing the M.Ed. in Plan B.
- 665 Comparative Ideologies and Education (3) I** **Boyer**
Critical analyses of contemporary ideologies with particular reference to implications for educational policies and practices.
- 669 Foundations of Comparative Education (3) I, II** **Kobayashi**
Introduction to the comparative analysis of educational processes in different societies.
- 670 Comparative Education: Europe and America (3) I, II** **Staff**
Comparison of ways in which contemporary Western societies undertake to meet their educational problems.
- 671 Comparative Education: Asia (3) I** **Anderson, Kobayashi**
Educational institutions, practices and problems in Asian countries, viewed against backdrop of their traditional cultures.
- 683 Social Foundations of Education (3) I, II** **Staff**
Impact on education of major social trends and forces operating in American society; social change and education.
- 684 Education and World Order (3) I, II, SS** **Boyer**
Global futurism focuses on major problems such as war prevention, ecological planning, and world poverty as a basis for developing transnational education. Pre: 310 or 683 or consent of instructor.
- 686 Environmental Education (3) I, II, SS** **Boyer**
Focus in environmental problems such as pollution, resources depletion, and over-population to develop programs of relevant education. Uses action projects in schools and community.
- 699 Directed Reading and/or Research (v) I, II** **Staff**
Individual reading and/or research. Pre: consent of instructor and department chairman.
- 725 Education and Social Change (3) I, II** **Staff**
Theory and practice of socio-cultural innovation as these relate to school and profession of teaching.
- 751 Recent History of American Education (3) II** **Jaekel, Keppel, Potter**
19th- and 20th-century history of American educational thought and practice. Pre: 650 or 651.
- 757 Educational Utopias (2) II** **Staff**
Intensive study of English translations of major contributions to Western educational thought from Plato to Dewey. Pre: 650 and consent of instructor.
- 761 History of American Higher Education (3) I, II** **Jaekel, Keppel**
Genesis and evolution of college and university from colonial America to present. Pre: 651 or 6 hrs. in U.S. history; consent of instructor.
- 763 Seminar in Educational Theory (2) I, II** **Staff**
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.

- 767 Seminar in Special Problems in Educational Foundations (2) I, II** **Staff**
Study and discussion of significant topics and problems in the field for doctoral students in the College of Education. Pre: admission to candidacy.
- 770 Seminar in Comparative Education (2) I, II** **Anderson, Kobayashi**
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.
- 800 Thesis Research (v) I, II** **Gorter**

Educational Psychology (Ed EP)

Professors: Adkins, Beyers, Collins, Fullmer, Haehnlén, Leton, Reid, Ryan, Ryans, Staats.
Associate Professors: Chang, Dunn-Rankin, Fargo, Fujita, Gust, Kozuma, Nunokawa, Sherrill, Westcott, Whittaker.
Assistant Professors: Ayabe, Bail, Comcowich, O'Malley, Shapiro, Vitale.
Acting Assistant Professor: Blaine.

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 (v) I, II**
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.
- 416 Tests and Measurements (3) I, II**
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.
- 508 School Project Design and Evaluation (3) I or II**
Fundamental design and evaluation procedures for school programs. Topics to include determining needs, defining objectives, program design, instrumentation, data collection, and evaluation.
- 597 Interpersonal Relations in the School (2) I, II, SS**
Knowledge and practice of skills for improvement of interpersonal relations in the school. Primarily concerned with classroom situations. Pre: teaching experience.
- 598 Research Utilizing Problem Solving (2) I, II, SS**
Knowledge and practice of skills for systematic definition, analysis, and solution of classroom problems. Pre: teaching experience.
- 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.
- 603 Introduction to Practicum (3) I or II**
Experiential learning to prepare students for supervised experience in the schools. Pre: consent of instructor.
- 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**
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**
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**
Tests and inventories for measuring aptitudes, interests, modes of behavior. Pre: 416, 601.
- 610 Counseling: Theory and Practice (3) I, II**
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**
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.
- 629 Educational Statistics (3) I, II**
Statistical inference including applications of parametric and non-parametric methods to educational problems. Pre: 429 or its equivalent.
- 640 Programmed Learning (3) II**
Learning theory, experimental procedures and related systems, readings in study 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**
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: Psy 430. (Identical with Psychology 655.)
- 672 Advanced Educational Psychology: Learning (3) I, II**
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 Psychology 685.)

- 699 Directed Reading and/or Research (v) I, II**
Individual reading and/or research. Pre: consent of instructor and department chairman.
- 701 Seminar in Guidance (3) I, II**
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. (9) student personnel work in higher education, (10) rehabilitation. Pre: 8 credits in guidance courses; consent of instructor. May be repeated for credit.
- 702 Group Guidance (3) II**
Principles, practices, materials, techniques used in group guidance in schools. Pre: 601.
- 703 Guidance Practicum (3) I, II**
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**
Research techniques and thesis development. Pre: 429 or equivalent; consent of instructor.
- 709 Advanced Problems of Educational Measurement and Evaluation (3) II**
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 Psychology 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.
- 768 Seminar in Educational Psychology (3) I, II**
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 (v) I, II** Gorter

Health and Physical Education (HPE)

Professors: Chui, Saake.
Associate Professors: Little, O'Brien, Tracy, Vasconcellos.
Assistant Professors: Asato, Beamer, Kaina, Krahenbuhl, Martin, Rocker, Seichi, Thompson, Tominaga.
Acting Assistant Professor: Mock.
Instructors: Hanson, Hisaka.
Lecturers: Furuhashi, Pang, G. Sakamoto, Tagomori.

Medical Clearance Requirement: *To register for the following courses, a student is requested to present a medical clearance issued by Student Health Service: 101-167, 233-236, 332-337, 433, 434, 454, 474, 476. Students without medical clearance will be allowed to register in these courses but will not be allowed to participate or perform in class until the clearance is obtained.*

- 101 Physical Fitness (1) I, II** Thompson, Staff
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** Mock, Seichi
Adjusting to and immersing in water, floating, sculling; correct arm stroke, leg kick, breathing techniques and their coordination.

- 104 Swimming: Intermediate (1) I, II** **Mock, Seichi**
Perfecting and integrating basic strokes with added emphasis on swimming for distance and speed.
- 105 Swimming: Advanced (1) I, II** **Mock**
Correct techniques used in competitive swimming, racing starts, correct turning techniques, long distance swimming.
- 107 Tennis: Beginning (1) I, II** **Asato, Rocker**
Rules, etiquette, grip, forehand and backhand strokes, serving, volleying; singles and doubles play.
- 108 Tennis: Advanced (1) II** **Saake**
Improving the serve, forehand and backhand strokes, volleying, chop shot, competitive strategy, problems in rules.
- 110 Golf: Beginning (1) I, II** **Vasconcellos, Krahenbuhl, Seichi, Chui**
Rules, etiquette, grip, stance, drive, normal iron shots, approach shots, putting.
- 111 Golf: Advanced (1) I, II** **Seichi, Chui**
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** **Hanson, Kaina**
Rules, etiquette, arm swing, approach, execution, scoring, spare pickups. Students pay charge for use of alley.
- 120 Badminton (1) II** **Rocker**
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** **Kaina**
Popular dances of various national groups, including square dances.
- 124 Dances of Hawaii (1) I, II** **Kaina**
Background and fundamentals of hula. Selected dances with and without instruments.
- 126 Rhythmic Activities (1) II** **Kaina**
Social dances including ballroom dances, mixers, etc.
- 135 Volleyball (1) I, II** **Asato**
Rules, serving, passing, setting-up, spiking, blocking, offensive and defensive team play strategy. Separate sections for men and women.
- 137 Basketball (1) I** **Rocker**
Rules, passing, shooting, dribbling, rebounding, individual defensive and offensive maneuvers; team offense and defense. Separate sections for men and women.
- 152 Weight Training (1) II** **Staff**
Kinesiology of lifting and weight training, various types of exercises and methods of training with resistance.
- 154 Tumbling and Rebound Tumbling (1) II** **Staff**
Single and combination stunts on tumbling mats and trampoline, balancing stunts; techniques of spotting; safety procedures.
- 156 Heavy Apparatus (1) II** **Staff**
Single and combination stunts on side horse, horizontal bar, parallel bars, still rings; techniques of spotting; safety procedures.
- 160 Judo (1) I** **Furuhashi**
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.)
- 161 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.)
- 162 Karate (1) I, II** **Tagomori**
Rules, etiquette, basic stances, blocks, thrusts, kicks, ippon kumite, and selected kata. (Student must provide own gi.)
- 163 Tai Chi Ch'uan (1) I, II** **Pang**
Analytical and laboratory study of classic forms of Tai Chi Ch'uan (advanced form of Kung Fu).
- 167 Wrestling: Beginning (1) I, II** **Little**
Rules; fundamental defensive and offensive maneuvers and competitive strategy, i.e., takedowns, reversals, escapes, and pinning combinations; conditioning exercises.
- 190 Modern Health: Personal (1) II** **Staff**
Mental-emotional health, family-living and scientific health information for personal hygienic living.
- 195 Modern Health: Personal and Community (2) I, II** **Tominaga**
Primarily for majors in health education, physical education and recreation. Mental-emotional health, family-living and scientific health information for personal and community health.
- Courses numbered 201 and above are not open to lower division students (except for pre-education majors with the consent of department chairman).*
- 201 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.
- 202 School Health Problems: Secondary (2) I, II** **Tominaga**
Responsibilities of secondary school teacher in recognizing and meeting pupils' needs, emphasizing health instruction, health services, healthful school living, school health policies.
- 203 Introduction to Physical Education (2) I, II** **Rocker, 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, Seichi**
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** **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) II** **Tominaga**
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) I, II** **Tominaga**
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.
- 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.
- 332 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.
- 333 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.
- 334 Coaching of Baseball and Volleyball (2) II** **Seichi, Tominaga**
Fundamentals, position play, team play, strategy, rules, scouting, planning and conduct of practice, specific training problems. Pre: 204.
- 335 Coaching of Track and Field (2) II** **Tracy**
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.
- 336 Coaching of Swimming (2) I, II** **Mock**
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.
- 337 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.
- 338 Field Work in Recreation: Basic (v) I, II** **Saake, Staff**
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.
- 348 Programs in Recreation (2) I** **Harada**
Factors in planning recreation programs; standard classification of recreation programs with critical analysis of nature, scope, materials, resources of each classification. Pre: 208 desirable.
- 399 Directed Reading (v) I, II** **Hanson, Rocker**
Individual problems. Limited to senior majors in health education, physical education or recreation with 2.7 overall grade-point ratio in major field.
- 401 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.
- 423 Organization and Supervision of Physical Education (3) I, 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 problems. Pre: 203 and 233 desirable.
- 433 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.
- 434 Techniques of Officiating in Athletics (2) I, II** **Hisaka**
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.
- 436 Methods and Materials of Aquatics and Life Saving (2) I** **Mock, 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.
- 453 Anatomy in Physical Education (3) I, II** **Tracy**
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, II** **Tracy**
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) I, II** **Little**
Concepts and scientific principles essential to efficient human movement; proper application 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 463 or consent of instructor.
- 476 Motor Learning and Performance (3) I, II** **Martin**
Basic considerations in kinesthesia, 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** **Krahenbuhl**
Conceptions of physical, social, emotional and intellectual growth and development 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** **Krahenbuhl**
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 education and related fields. Pre: 423 or equivalent; consent of instructor. (Identical with Ed EA 623.)
- 634 Adapted Physical Education (3) I, II** **Little**
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.

- 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) I Chui**
Analysis of variety of sports activities in terms of applications of fundamental principles 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 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 (v) I, II Chui**
Individual reading and/or research. Pre: consent of instructor and department chairman.

Special Education (Sp Ed)

Professors: Dunn, Dupont.

Associate Professors: Blumberg, Fargo, McIntosh.

Assistant Professors: Apffel, Foster, Takeguchi-Feldman.

Instructor: DelaRosa.

- 399 Directed Reading (v) 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 Introduction to Special Education (3) I, II Apffel**
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 Curriculum and Instruction in Special Education (3) I Blumberg**
Introduction to planning and organization of instruction in special education. Prospective teachers shall learn through theory and guided observations the learning characteristics of exceptional learners and develop objectives and instructional systems for education of exceptional children. Pre: 404.
- 406 Learning Characteristics of the Mentally Retarded (3) I, II Apffel, Blumberg, Takeguchi-Feldman**
Characteristics and abilities of mentally retarded children in relation to generalized learning characteristics, readiness, motivation, perceptual motor and communications. Pre: 404. (Not offered 1972-73.)
- 407 Learning Characteristics of the Child with Learning and Behavior Disorders (3) I, II Dupont, Fargo, McIntosh**
Characteristics of abilities of children with learning and behavior disorders in relation to generalized learning abilities, readiness, motivation, perceptual motor, communications, teacher considerations, including organization and planning. Pre: 405. (Not offered 1972-73.)
- 408 Methods and Materials in Teaching the Trainable Mentally Retarded (3) I, II Apffel**
Methods and techniques of instruction employed in application of skill development to learning in content areas: analysis and evaluation of instructional materials with consideration of programmed, basal, linguistic, audio-visual resources and other types of materials; demonstrations of techniques of instruction; criteria for selection and application of instructional materials; review of findings with implications for classroom teacher of trainable mentally retarded. Pre: 405 and consent of instructor. (Not offered 1972-73.)
- 409 Culturally and Economically Disadvantaged Pupil (3) I, II Dupont, Fargo, McIntosh**
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 Methods and Materials in Teaching the Child with Learning and Behavior Disorders (3) II Apffel, McIntosh**
Materials, methods, and techniques applicable to instruction of children with learning and behavior disorders. Emphasis given to criterion selection of materials, sequencing and programming of materials, evaluation of programs, pertinent related research in field. Pre: 405 and consent of instructor.
- 411-412 Identification and Remediation of Learning Difficulties (3-3) Yr. Staff**
Theory, survey, demonstration, evaluation, and clinical practices for diagnosis and remediation of learning difficulties; including use of instruments in diagnosis, of psycholinguistic skills and perceptual-motor functions. Pre: 405.
- 414 Education of Gifted Children (3) II McIntosh**
Characteristics and educational provisions for gifted children. Particular attention to psychological aspects of creativity.
- 418 Methods and Materials in Teaching the Educable Mentally Retarded (3) II Apffel, Blumberg, Takeguchi-Feldman**
Methods and techniques of instruction employed in application of skill development to learning in content areas: analysis and evaluation of instructional materials with consideration of programmed, basal, linguistic, audio-visual resources and other types of materials; demonstrations of techniques of instruction; criteria for selection and application of instructional materials; review of findings with implications for classroom teacher of educable mentally retarded. Pre: 405 and consent of instructor.
- 422 Introduction to Learning Disabilities (3) I Dupont, McIntosh**
Introduction to education of learning-disabled children. Survey course covering mental, physical and academic characteristics of learning-disabled children and a discussion of their programming, adjustment and school placement. Pre: 404. (Not offered 1972-73.)
- 485 Behavior Modification of Handicapped Children (3) I, II Fargo**
Application of principles of behavior modification in treatment and classroom instruction of exceptional children. Pre: 404 or consent of instructor.
- 611 Advanced Curriculum and Instruction in Special Education (3) I, II Blumberg, Takeguchi-Feldman**
Examination of issues, trends, and principles in curriculum development and consideration of multiple approaches to teaching methodology in special education. Pre: 405 and student teaching.
- 615 Clinical Assessment of Exceptional Children (3) I, II McIntosh**
Review of special problems in program development, program evaluation and research with exceptional children. Pre: Ed EP 429 and consent of instructor.
- 616 Seminar in the Education of Exceptional Children (3) I, 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, (4) gifted. Pre: 404, 405, 410.
- 619 Theory and Practice of Clinical Teaching (3) I, II McIntosh**
Theories and techniques of clinical teaching with mentally retarded children and children with learning and behavior disorders. Pre: 411-412, 615 or concurrent registration, and consent of instructor.
- 627 Advanced Practicum (v) I, II Staff**
Supervised experiences in clinical teaching or related activities in special education activities in public and private schools or agencies in Hawaii. Pre: 611, 615, 619.



College of Engineering

The quality of life on this planet in year 2000 A.D. will be 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. Particular emphasis is placed on problems related to the preservation and enhancement of the environment.

Engineering education has been a major program of study at this institution since the beginning of the University of Hawaii in 1907. Over 2000 engineering degrees have been granted, and many 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. 28-31. Additional screening of aptitude tests and high school records is provided 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 instruc-

tion and a reduction in the number of credits now required for an engineering degree, many students are receiving their degrees in eight semesters.

An increasing number of students are transferring into engineering from Hilo College and from some of the community colleges. Programs have been developed so that students can transfer in at full junior status after completing two years of pre-engineering course work on their initial campus. In some cases it is necessary to take an additional semester or summer session to make up for any introductory engineering subjects not taken during the first two years.

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 course work included in each of the curricula offered by the College of Engineering 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 on the Manoa Campus enroll initially in the department of general engineering and are advised by engineering faculty from the beginning of their academic program. The first two years provide a flexible core of courses that is common to all four curricula and includes the following:

Common Two-Year Flexible Curriculum

General Educational Requirements	Credits
Communications & Required Humanities	9
English 100 & One Literature course from the 251 through 256 series. Speech 145 or 251	
Quantitative Reasoning	12
*Mathematics 205, 206, 231, 232	
World Civilizations	6
History 151, 152	
Natural Sciences	17
†Chemistry 117, 118 Physics 170, 171, 272, 273, 274	
Humanities & Social Sciences Electives	3-6
Total	47-50
Pre-Engineering Requirements	
One year of high school mechanical drawing or GE 61	0-1
GE 251 or 253 Digital Computer Programming	2
(Must be 253 for Mechanical majors)	
CE 270 & 271 Applied Mechanics	6
(Electrical Engineering majors may substitute an additional mathematics course and Physics 310)	
Total	8-9

*Math 134 may be required if math preparation is inadequate.

†If prerequisite for Chem 117 has not been met, 113-115 and 114-116 will be substituted.

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Additional Department Requirements

Civil Engineering	7
GE 113 Introduction to Engineering Design (2)	
GE 121 World of Engineering (2)	
CE 211 Surveying (3)	
Electrical Engineering	6
GE 113 or 121 (2)	
EE 311 Basic Circuit Analysis (3)	
EE 313 Circuits Laboratory (1)	
General Engineering	7
GE 113 (2)	
GE 121 (2)	
CE 370 Mechanics of Materials I (3)	
(For Ocean Option Only)	
Mechanical Engineering	9
GE 203 Technology and Society (3)	
(or any other Humanities or Social Sciences Elective)	
EE 311 Basic Circuit Analysis (3)	
ME 311 Thermodynamics (3)	

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 following curricula. The course work for each of these programs of study satisfies the general educational requirements of the University.

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 additional flexibility in course selection from the curricula that follow.

Civil Engineering

Civil engineering is concerned with the activities of man and his environment. The civil engineer conceives, plans, designs, constructs, operates and maintains the physical works necessary to the environmental needs of people—a pure water supply, disposal and recycling of waste, environmental health, transportation, water power developments, and structures of all types. The expanding scope of civil engineering encompasses such diverse fields as control of environmental pollution, solid waste management, industrial wastes, eutrophication, space vehicles, radio telescopes, and nuclear plant installations.

Civil engineering continues to meet the demands of business, industry and government where a broad, fundamental education is required. The curriculum, however, develops depth in the various areas of the civil engineering professions such as environmental and sanitary engineering, structures, applied mechanics, water resources, hydraulics, surveying, soil mechanics, transportation and urban engineering. It is designed to give the student the broad educational background essential to modern civil engineering practice, including a better understanding of societal and environmental problems. The course offerings reflect the changes that are constantly taking place in civil engineering such as an emphasis on computer use and the systems analysis approach to large engineering projects. With the assistance of a faculty adviser, the student can pursue a flexible program designed to meet his individual needs and interests.

Electrical Engineering

The curriculum for the department of electrical engineering consists of a number of requirements carefully chosen to provide for the general education of the student, to lay a firm foundation in pre-engineering courses in the first two years, and to conform to the University's general requirements for the baccalaureate degree. During the third and fourth years the student, with the assistance of a faculty adviser, will choose from the broad selection of courses offered by the electrical engineering department and by related departments, to develop a program of study that satisfies his curricular requirements.

To help the student choose a selection of courses consistent with these requirements and to encourage him to group these courses into a coherent set related to an area of contemporary electrical engineering practice, the department offers a number of options—pre-planned sequences of courses—leading to a mild level of specialization. Options are offered in biomedical engineering, computers, control and power systems, electronics, fields and waves, and general systems. Each option includes sufficient electives so that the student may further tailor his course of study to his particular interests, and prepare himself for a challenging career opportunity in one of the advanced technology areas identified by his option.

General Engineering

General engineering administers the common two-year flexible curriculum and provides advising for all engineering students until they transfer to one of the other disciplines. In addition, general engineering offers a baccalaureate degree in engineering with several different options:

Agricultural Engineering Option Management Engineering Option
Information Sciences Option Ocean Engineering Option

These options have been worked out in close cooperation with the various departments involved. In addition to providing the equivalent of a bachelor's degree in the areas mentioned above (which is not otherwise available at the University of Hawaii), they are also designed to provide a student with a good background for graduate work in these same areas.

For those students desiring an engineering background but wishing to study in other disciplines as well, such as biology, medicine, the environment, etc., the Flexible Engineering Option

is offered. This consists of the common two-year flexible engineering curriculum, plus an individualized program for the last two years which is tailored from liberal arts, science and engineering courses to produce the desired goal. Each candidate for such a program will be assigned an advising committee. One of the members of the committee will be designated as major adviser. This committee will help the student in drawing up his study plan and will provide guidance and counseling whenever needed during the course of study.

Mechanical Engineering

The main objective of the department of mechanical engineering is to provide students with the opportunity to undertake programs of study that will enable them to successfully pursue professional careers in mechanical engineering. In order that its graduates be conversant with the arts and with the problems of ethics and society, the department requires, as do all engineering departments at the University of Hawaii, that its students complete an extensive series of courses in the humanities and social sciences. The total educational program is designed to develop social and aesthetic awareness, as well as professional competence.

The department of mechanical engineering recognizes that it can achieve its main objective only if its academic programs are relevant to the needs of modern society and technology. The mechanical engineering program achieves such relevance by combining a broad base of mathematics, science and design courses with a select number of specialized technical courses.

The B.S. curriculum in mechanical engineering consists of a four-year program of study comprising 130 credits, as indicated below. This program prepares the mechanical engineering graduate to contribute effectively in such diverse professional areas of activity as design and development of mechanical components, instruments, machines and systems; generation of power and conversion of energy; and research and

consultation in scientific areas of prime concern to mechanical engineers, such as fluid mechanics, heat transfer, materials processing, acoustics, and environmental control.

Civil Engineering Curriculum

All Civil Engineering majors must confer with a College of Engineering adviser prior to registration each semester.

First Two Years

See Common Two-Year Flexible Curriculum 65

Third and Fourth Years

University Requirements	
Economics (Econ 120/150)	3
Humanities and Social Sciences Electives	6
Departmental Requirements	
CE 320 Fluid Mechanics Fundamentals	3
CE 330 Environmental Engineering	3
CE 350 Soil Mechanics	3
CE 361 Transportation Engineering	3
CE 370 Mechanics of Materials I	3
CE 381 Structural Analysis	3
Group 1: Civil Engineering (minimum of 6 courses)	18
CE 212, 322, 372, 401, 403, 405, 412, 421, 424, 426, 431, 432, 450, 462, 463, 464, 468, 469, 482, 485, 486, 487, 491, 492	
Group 2: Engineering and Applied Sciences	2-4
EE 311, 315, 411; GE 451; Geog 370, 375; GG 101, 102, 457; ME 311, 331; Ocean 201; OE 401, 411, 412; Arch 311	
Group 3: Technology-Society-Environment	3 or 4
Arch 375; GE 203; Sci 124; Geog 326	
Group 4: Biological Sciences	2-4
Bot 101; Micro 130; Sci 121; Zool 101, 330	
Group 5: Mathematics (1 required from each section)	
a. CE 411, 414, 477	3
b. Any mathematics course numbered 301 and above	3
One course selected from Group 1, 2, or 3	3 or 4
Open elective	2-4
Total Units	128
	minimum

Other alternatives differing from suggested curriculum above are possible with the consent of the student's adviser and the department chairman.

Electrical Engineering Curriculum

First Two Years

See Common Two-Year Flexible Curriculum 63-64

Third and Fourth Years

University Requirements	
Economics (Econ 120)	3
Humanities or Social Science Electives	6
	9
Departmental Requirements	
Mathematics (300 or above)	6
Thermoscience (Phys 430 or ME 311)	3
Material Science (Phys 440 or ME 431)	3
Electronics (EE 323, 324)	4
Electromagnetic Theory (EE 371)	3
EE Electives* (300 or above)	16
EE Design Elective	3

(continued on next page)

Engineering Science or Science Elective	3	
Technical Electives* (Engineering, Math and Science courses 300 or above)	9	
Other Elective*	3	
	53	62
Total	126	

*Electives must constitute a coherent program with adviser's approval.

**General Engineering Curriculum
Ocean Engineering Option*
Program One—Structures**

Third Year

First Semester		Second Semester	
Credits		Credits	
CE 381 Structural Analysis I.....	3	CE 482 Structural Analysis II.....	3
ME 311 Thermodynamics	3	EE 311 Basic Circuit Analysis.....	3
ME 375 Intro to Systems Dynamics.....	3	EE 313 Circuits Lab	1
Ocean 201 Science of the Sea ...	3	OE 401 Intro to Ocean Engineering.....	3
Human Soc. Sc. Elective	3	Econ 120 Intro to Econ (Econ 150 may be substituted).....	3
		Human Soc. Sc. Elective	3
Total	15	Total	16

Fourth Year

First Semester		Second Semester	
Credits		Credits	
CE 485 Structural Design I.....	4	CE 486 Structural Design II	4
ME 322 Mech of Fluids I	3	ME 323 Mech of Fluids II	3
ME 403 Adv. Math for Engineers I	3	ME 404 Adv. Math for Engineers II.....	3
OE 411 Buoyancy and Stability.....	3	GE 451 Computer Methods in Engineering.....	3
Human/Soc. Sc. Elective	3	Human Soc. Sc. Elective	3
Total	16	Total	16

*This is only one of several options offered in General Engineering. The other options currently offered are:
 Agricultural Engineering Option
 Information Sciences Option
 Management Engineering Option (Formerly G.E. Business Option)
 Ocean Engineering Option
 Program Two-Ocean Environment
 Flexible Engineering Option (This option combines basic engineering with other diverse disciplines in accordance with students' needs. See General Engineering narrative.)

Mechanical Engineering Curriculum

Third Year

First Semester		Second Semester	
Credits		Credits	
ME 312 Applied Thermo.....	3	ME 300 Measurements Lab.....	2
ME 322 Mech of Fluids I	3	ME 323 Mech of Fluids II	3
ME 331 Materials Science.....	3	ME 341 Materials Processing	3
ME 371 Mechanics of Solids.....	3	ME 375 Intro to System Dynamics.....	3
Math Elective*.....	3	EE Elective*	3
		EE Lab Elective†.....	1
Total	15	Total	15

Fourth Year

First Semester		Second Semester	
Credits		Credits	
ME 400 ME Experimentation	2	Math Elective*	3
ME 422 Heat Transfer	3	ME 468 Intro to Engrg Design	4

ME 467 Design of Mech Elements	3	TE§	6
TE§	6	Human/Soc. Sc. Elective	3
Human, Soc. Sc. Elective	3		
Total	17	Total	16

*Math Elective (Two courses from the following list, one of which must be ME 402)

- Any Math courses numbered 300 or above
- CE 411 Applied Probability and Statistics
- ME 402 Computer Methods in Engineering (Equivalent to GE 451)
- ME 403-404 Advanced Mathematics for Engineers

*EE Elective

- Any EE course numbered 300 or above

†EE Lab Elective

- Any EE laboratory course

§Technical Elective (Any mathematics, physics or engineering courses numbered 300 or above approved by adviser; 6 credits must be ME courses.)

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 University of Hawaii. 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.

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 any of the traditional engineering disciplines.

ENGINEERING COURSES

See p. 3 for a discussion of course descriptions.

Civil Engineering (CE)

Professors: Burbank, Chiu, Evans, Go, Lau, Mitsuda, Nielsen, Szilard, Tinniswood, Yuen.

Associate Professors: Bauman, Dugan, Fok, Grace, Hamada, Hummel, Taoka, Williams, Young, Zundelevich.

Assistant Professors: Cheng, Nader.

- 211 Surveying I (3) I, II (2L, 1Lb) Nader**
Basic principles, computations, use of instruments involving horizontal and vertical measurements, map reading, topographic surveying. Pre: trigonometry; GE 111 or GE 113.
- 212 Surveying II (3) (2L, 1Lb) Nader**
Topographic mapping; curves; earthwork; computer applications; route problems. Pre: Math 205, CE 211 and GE 251 or GE 253.
- 270 Applied Mechanics I (3) I, II Mitsuda**
Equilibrium of particles, rigid bodies, frames and machines; vectors, centroids, friction and moments of inertia. Pre: credit or registration in Phys 170.
- 271 Applied Mechanics II (3) I, II Taoka**
Dynamics of particles and rigid bodies; force acceleration, impulse-momentum, work-energy. Pre: 270, Math 206.
- 320 Fluid Mechanics Fundamentals (3) I, II Yuen, Fok**
Compressible and incompressible fluid properties; fluid statics; kinematics, energy and momentum considerations in steady flows; application of steady flow concepts to various fluid processes. Pre: 271 or Phys 310.
- 322 Theoretical Fluid Mechanics (3) II Grace, Williams**
Mechanics of an ideal fluid; potential flow and its applications; compressible flow of real fluids. Pre: 320, Math 232, credit or registration in ME 311.
- 330 Environmental Engineering (3) I, II Dugan, Young**
Introduction to the work of environmental and sanitary engineers, with special emphasis on water resources, water and wastewater treatment, solid waste management, air pollution, noise, vector control, industrial hygiene, and radiological health. Pre: junior standing in civil engineering or consent of instructor.
- 350 Soil Mechanics (3) I, II (2L, 1Lb) Evans, Hummel**
Soil classification, elementary soil mechanics theory and practice. Pre: 370.
- 361 Transportation Engineering I (3) I, II**
Introduction to the planning, design, and operation of transportation facilities. Pre: junior standing in engineering.
- 370 Mechanics of Materials I (3) I, II Evans**
Elastic stress-strain relationship and behavior of members under flexural, torsional, axial loading. Pre: 270.
- 372 Mechanics of Materials II (3) II Mitsuda**
Inelastic behavior, unsymmetrical bending, theories of failure, curved beams, torsion, energy methods, buckling. Pre: 370.
- 381 Structural Analysis (3) I, II Hamada**
Plane frameworks, graphical methods, influence lines, deflection and stress analysis of structures by classical methods. Pre: 370.
- 401 Experiments and Instrumentation (3) I, II**
Laboratory experience in mechanics of materials and fluid mechanics, and the use of electronic instrumentation in such experiments. Pre: 320, 370.
- 403 Systems Design (3) II**
Integrated design of a complex civil engineering system, involving the application of concepts drawn from the various civil engineering disciplines; introduction to the principles of optimization applied to such systems. Pre: senior standing.
- 405 Engineering Management (3) I, II Tinniswood**
Business, legal, economic aspects of engineering. Pre: engineering seniors who will graduate within 12 months.
- 411 Applied Probability and Statistics (3) I, II Grace**
Description of sample data, probability and probability distributions; inferences from samples; testing hypotheses; experimental errors; correlation and regression; introduction to random time functions. Pre: consent of instructor.
- 412 Dynamic Probabilistic Analysis (3) II Grace, Zundelevich**
Background and application to civil engineering problems of continuous random processes, decision analysis, Markov processes, and reliability. Pre: 411 and consent of instructors.
- 414 Matrix Engineering Analysis (3) II Taoka**
Determinants, matrices, system of linear equations, eigenvalue problems. Systems of differential equations, with applications to structural and mechanical systems. Emphasis on numerical solutions to actual engineering problems. Pre: Math 232.
- 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 (3L, 1Lb) 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 Water Supply and Treatment (3) I Dugan
Tinniswood, Young**
Water resources. Fundamental aspects and design of waterworks. Pre: 320 or consent of instructor.
- 432 Wastewater Engineering (3) II Dugan, Tinniswood, Young**
Pollution control. Fundamental aspects and design of wastewater works. Pre: 431 or consent of instructor.
- 450 Soils and Foundation Engineering (4) II (3L, 1Lb) Evans**
Application of soil mechanics to highways, airports, dams, foundations. Pre: 350.
- 462 Transportation Engineering II (3) II**
Traffic engineering—the operation of open-guidance transportation systems. Pre: 361, consent of instructor.

- 463 Urban Engineering and Planning (3) I** **Bauman**
Principles of engineering and planning in urban areas; contemporary urban problems; current design techniques, future concepts. Pre: consent of instructor.
- 464 Urban and Regional Transportation Planning (3) I** **Bauman**
Application of land use planning and traffic engineering techniques to the solution of the urban transportation problem. Topics considered include: forecasting methods, traffic generation and simulation theory, methods of planning and design, and future concepts. Pre: consent of instructor.
- 468 Engineering Soils Mapping and Evaluation (3) I**
Engineering and pedological soil classification, mapping systems, sampling techniques, geophysical exploration, land use suitability evaluation and mapping, term project. Pre: consent of instructor.
- 469 Airphoto Interpretation and Remote Sensing (3) II** **Nader**
Engineering applications of aerial photography and remote sensing, airphoto interpretation of soils, remote sensing of environment. Pre: consent of instructor.
- 477 Computer Methods in Civil Engineering Systems (3) I, II** **Taoka**
Application of the digital computer to solution of problems from various areas of civil engineering. Introduction to the use of the Integrated Civil Engineering Systems Program (ICES) and the Scientific Subroutine Package Program (SSP). Pre: GE 251.
- 482 Advanced 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: 381.
- 485 Structural Design I (4) I (3L, 1Lb)** **Zundelevich**
Design of elements of steel and reinforced concrete structures, with emphasis on ultimate strength theory. Pre: 370.
- 486 Structural Design II (4) II (3L, 1Lb)** **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.
- 491-492 Special Topics in Civil Engineering (3-3) I, II**
Course will reflect special interests of visiting and or permanent faculty and will be limited to students with a junior or senior standing. Pre: consent of instructor.
- 499 Special Problems (v) 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.
- 623 Hydraulic Transients (3) I** **Cheng**
Unsteady flow in closed conduits, pipeline surges, water hammer, and transients caused by pumps and turbines; unsteady channel flow, channel surges and flood routing. Techniques adapted to digital computer are stressed. Pre: 421 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.
- 628 Water Resources Planning and Development (3) I** **Fok**
Multi-purpose water resource systems: hydrologic, physical, engineering, economic, ecological, political, legal, social, and organizational aspects of project formulation, planning and development. Pre: consent of instructor.
- 629 Water Resources System Analysis (3) II** **Fok**
Design criteria for optimization in water resources systems. Deterministic and stochastic simulation design by linear and dynamic programming. Pre: 628 or consent of instructor.
- 631 Environmental and Sanitary Engineering Theory I (3) I** **Dugan**
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** **Dugan**
Principles of waste water and solids waste handling, treatment and re-use, study of factors involved in disposal of waste to natural waters. Pre: consent of instructor.
- 633 Environmental and Sanitary Engineering Design I (3) I (1L, 2Lb)** **Burbank**
Functional design of modern water and air purification systems. Pre: consent of instructor.
- 634 Environmental and Sanitary Engineering Design II (3) II (1L, 2Lb)** **Burbank**
Functional design of modern waste water and solids waste treatment systems. Pre: consent of instructor.
- 635 Environmental and Sanitary Engineering Chemistry (4) I (2L, 2Lb)** **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) I (2L, 2Lb)** **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 (2L, 1Lb)** **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** **Staff**
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.
- 639 Biology of Environmental Engineering Systems (3) II** **Dugan, Young**
Microbiology and microbiological chemistry related to environmental engineering systems. Ecology of waste water treatment and stream sanitation. Marine and estuarine pollution. Pre: consent of instructor.
- 640 Industrial Waste Treatment (3) I** **Dugan, Young**
Philosophy of industrial waste treatment. Waste characteristics, effects on collection and treatment systems and receiving waters, survey methods. Case histories of industrial waste problems including theoretical considerations for solution. Laboratory studies of specific wastes to determine design parameters for treatment. Pre: consent of instructor.
- 641 Marine Disposal of Wastes (3) I** **Grace, Young**
Types of wastes, their treatment and disposal; water quality standards; oceanographic variables and related data collection; diffusion and dispersion of effluent; ocean outfall design; ecological problems with pollutants; engineering problems with outfalls. 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.
- 664 Analysis and Design of Urban Transportation Systems (3) II** Bauman
Applications of systems engineering to the analysis and design of transportation systems. The economics, financial capacity, operating characteristics, and demand interrelationships of all transportation modes which have potential in the urbanized area are considered with respect to the development of integrated transport facilities. Pre: 464.
- 665 Simulation and Modeling of Urban Systems (3) II** Bauman
Development of methods for simulating transportation and land use development under conditions of political, governmental, and capital budget constraints. Pre: 464.
- 671 Theory of Elasticity I (3) I** Szilard
Stress-strain and strain-displacement relationships. Three-dimensional Hooke's law. Differential equations of equilibrium and compatibility. Two-and-three dimensional problems. Variational methods. Introduction into tensor approach. Pre: consent of instructor.
- 673 Theory of Plasticity (3) II** Mitsuda
Inelastic stress-strain relationships. Yield condition and flow laws. Time-independent and time-dependent inelastic behavior. Limit analysis of members and structures. Pre: 671.
- 675 Theory of Vibrations (3) I** Nielsen
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
Governing differential equations of plate problems. Rigorous and approximate solutions for static and dynamic plate problems. Ordinary and sharpened finite difference methods. Finite element approaches. Dynamics and buckling of plates. Yield line theory and various engineering solutions. Pre: consent of instructor.
- 679 Theory of Thin Shells (3) II** Szilard
Membrane and bending theories of rotationally symmetric shells. General membrane theory. Barrel shells and folded plates. Rigorous and engineering solutions. Finite difference and finite element methods in static and dynamic analysis of shells of arbitrary shape. Shallow shells. Elastic stability analysis. Pre: consent of instructor.
- 681 Advanced 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** Szilard
Finite difference, numerical integration, relaxation and matrix methods applied to analysis of structural systems. Computer applications. Pre: 681.
- 683 Advanced Reinforced Concrete Design I (3) I** Go
Ultimate strength theory, composite beams using precast and casting-place concrete, rigid frames and slabs. Pre: consent of instructor.
- 684 Advanced Reinforced Concrete Design II (3) II** Go
Continuation of 683. Spherical, cylindrical and hyperbolic paraboloid shells, circular and rectangular tanks, folded plates structures. Pre: 683.
- 686 Numerical Methods in Continuum Mechanics (3) II** Szilard, Hamada
Two and three-dimensional finite difference and finite element methods. Stability of numerical solutions. Matrix-computer solution of static and dynamic problems in solid and fluid continua. Interaction of solid and fluids. Applications to various problems in engineering and mathematical physics. Pre: Math 402 and consent of instructor.
- 687 Design of Structural Systems (3) I** Zundelevich
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.
- 691-692 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.
- 696 Selected Topics in Civil Engineering (3) I, II**
Highly specialized topics in structural, soils, hydraulics, sanitary, water resources, applied mechanics, transportation. Pre: consent of instructor.
- 699 Directed Reading or Research (v) I, II**
Pre: consent of instructor.
- 800 Thesis Research (v) I, II**

General Engineering (GE)

Professor: Avery.

Associate Professor: Hubbard.

Assistant Professors: Augustus, Stoutemyer, Takahashi.

Instructor: Boyd.

- 61 Graphical Communications (1) I, II (1 2-Hr Lb)** Staff
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.
- 113 Introduction to Engineering Design (2) I, II (1L, 1 2-Hr Lb)** Avery, Boyd
Introduction to the engineering design process. Major design phases, creative aspects. Each student completes a design project. Pre: 1 year of high school mechanical drawing or GE 61.
- 121 The World of Engineering (2) I, II (2L)** Hubbard
Discussion of the various fields of engineering by instructor and outside speakers. Audio-visual presentations relating to engineering, ecological awareness, societal interactions, aesthetics & futuristics. Elements of decision making involving models, criteria, constraints and optimization. Basic engineering analysis techniques. Pre: Math 134 or equivalent.
- 203 Technology and Society (3) I, II (3L)** Takahashi
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.)

- 251 Computer Programming PL/I (2)** **Augustus, Stoutemyer**
I, II (2L)
PL/I programming language for applied math and physical science. Basic numerical methods, program planning, writing, debugging, and running. Pre: Math 134 or equivalent.
- 253 Computer Programming FORTRAN** **Boyd, Takahashi**
(2) I, II (2L)
FORTRAN programming language for applied math and physical science. Basic numerical methods, program planning, writing, debugging, and running. Pre: Math 134 or equivalent.
- 301 Architectural Structures "A" (3) I, II (3L)** **Hubbard**
Introduction to basic mechanics. Force systems, equilibrium, truss systems, frames, and arches. Pre: Math 205. (Identical to Arch 301.) Not open to engineering majors.
- 302 Architectural Structures "B" (3) I, II (3L)** **Augustus**
Mechanics of materials. Design of simple beams, columns, and trusses in various materials. Pre: GE/Arch 301. (Identical to Arch 302.) Not open to engineering majors.
- 333 Computer Programming for Bio-Science (3) I, II (3L)** **Liang**
Introduce computer programming and its use through presentation of computer application examples in bio-sciences. (Identical to AgEng 333.)
- 451 Computer Methods in Engineering (3) I, II (3L)** **Augustus**
Review of numerical techniques in engineering computations: roots of algebraic and transcendental equations, solution of simultaneous linear algebraic equations, numerical integration and differentiation, eigenvalue problems, numerical integration of ordinary differential equations using a digital computer. Application to problems in engineering and applied science. Pre: Math 232 and GE 251, GE 253 or equivalent. (Identical to ME 402.)
- 461 Systems Fundamentals for Environmental Problems** **Staff**
(3) I, II (3L)
Non-mathematical introduction to the fundamentals of general systems theory, systems engineering and interdisciplinary research designed for all students interested in the problems of man and his environment.
- 491-492 Special Topics in General Engineering (v) I, II** **Staff**
Specialized topics in engineering sciences reflecting special interests of visiting and permanent faculty. Open to juniors and seniors. Pre: consent of instructor.
- 622 Experimental Methods in Cause-Effect** **Hundtoff**
Modeling (3) II (3L)
Factorial designs and fractional, factorial designs for screening variables and for response optimization. Response surface methodology. Experimental designs appropriate to building and testing multi-variable behavior relationships. Sequential experimental designs. Pre: knowledge of basic statistics and consent of instructor. (Identical to AgEng 622.)
- 311 Basic Circuit Analysis (3) I, II (3L)** **Kinariwala**
Analysis of electrical circuits. Transform methods. Topology. Pre: Phys 272; Math 231.
- 313 Circuits Laboratory (1) I, II (1Lb)** **Barna**
Laboratory for 311. Pre: registration in 311.
- 315 Circuit and System Analysis (3) I, II (3L)** **Gaarder, Kuo**
Laplace transform, s-plane analysis, transfer functions. Fourier analysis, sampling and correlation. Pre: 311; Math 232.
- 323 Electronics I (3) I, II (3L)** **Najita, Naqvi**
Operating principles and characteristics of diodes and amplifying devices. Their applications as circuit elements in building basic electronic subsystems. Pre: 311.
- 324 Electronics I Laboratory (1) I, II (1Lb)** **Najita, Naqvi**
Experiments on properties of linear active networks. Pre: 313; registration in 323.
- 326 Electronics II (3) I, II (3L)** **Fang, Naqvi**
Theory and design of basic electronic subsystems, e.g., feedback amplifiers and oscillators, modulators and demodulators, power supplies, switching, timing, and pulse circuits. Pre: 323.
- 327 Electronics II Laboratory (1) I, II (1Lb)** **Fang, Naqvi**
Laboratory for 326. Pre: 324; registration in 326.
- 331 Energy Conversion (3) II (3L)** **Granborg, Hwang**
Application of electromagnetic field theory to energy conversion. Magnetic circuits and transformers. A.C. and D.C. machines. Introduction to direct energy-conversion methods. Pre: 311, 371.
- 333 Energy Conversion Laboratory** **Granborg, Hwang**
(1) II (1Lb)
Experiments on electromechanical energy conversion using generalized machine, magnetic circuits and transformers. Elementary experiments on direct energy conversion. Pre: 313, registration in 331.
- 360 Logic Design (3) I, II (3L)** **Chattopadhyay, Weldon**
Binary numbers, Boolean algebra, combinational circuits, minimization methods including Karnaugh map and Quine-McCluskey techniques, use of computer to solve complex design problems, sequential circuit analysis, design of flip-flops, counters, registers and other basic computer circuits. Pre: 323.
- 371 Fields and Waves I (3) I, II (3L)** **Koide, Weaver**
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 (3L)** **Koide, Weaver**
Solution of Maxwell's equations under various boundary conditions. Introduction to microwave theory. Pre: 371.
- 411 Elementary System Theory (3) I (3L)** **Chattopadhyay, Yen**
Review of Laplace transform techniques; introduction to vectors and matrices; input-output description of a system; state equation; computation of state-transform matrix; impulse response and transfer function matrices; obtaining state equations from a transfer function matrix; computing zero-input, zero-state responses; model analysis of systems. Pre: 315.
- 422 Electronic Instrumentation (3) II (3L)** **Roelofs**
Basic transducers and signal processing amplifiers for electronic control and measurements. Data acquisition and transmission circuits. Analog and digital circuits. Pre: 315, 323.
- 423 Instrumentation Laboratory (1) I or II (1Lb)**
Laboratory for 422. Pre: 313; registration in 422.
- 424 Integrated Circuit Fabrication Techniques (3) II (3L)** **Naqvi**
Design principles, processing techniques, evaluation and testing of integrated circuits. Pre: senior standing or consent of instructor.
- 425 Integrated Circuits (3) I, II (3L)** **Roelofs**
Review of semiconductor fundamentals. Principles and applications of linear and digital integrated circuits; operational amplifiers, comparators, analog-to-digital conversion. Pre: 326.

Electrical Engineering (EE)

Professors: Abramson, Hwang, Kinariwala, Kuo, Lichtenberger, Slepian, Peterson, Weaver, Weldon, Yuen.

Associate Professors: Barna, Fang, Gaarder, Granborg, Koide, Lin, Najita, Roelofs.

Assistant Professors: Chattopadhyay, Naqvi, Yen.

- 260 Introduction to Digital Computers (3) I, II (3L)**
Binary numbers, introduction to computer machine language programming, computer organization, Boolean algebra, logic circuit design, flip-flops, counters, registers, the arithmetic, memory, input/output, and control units, introduction to computer systems.

- 427 Physical Electronics I (3) I (3L)** Fang, Naqvi
Physical principles underlying phenomena and devices based on controlled motion of electric charges in materials. Operational characteristics of electronic devices. Pre: 323.
- 428 Digital Electronics (3) II (3L)** Fang, Naqvi
Principles and design of digital electronic circuits such as basic gates, inverters, drivers, flip-flops and shift-registers. Emphasis is on integrated circuit technology. Pre: 323.
- 435 Power System Analysis (3) I (3L)** Hwang
Characteristic of transmission systems. Matrix algebra and representation of power systems. Numerical solutions of simultaneous algebraic and differential equations. Computer methods for short circuit problems, load flow studies, and stability analysis. Pre: 331.
- 441 Communication Systems (3) I or II (3L)** Gaarder, Lin
Signal representation, Fourier analysis; pulse and CW modulation; applications to communication systems including telephone, satellite, high-frequency radio, AM-FM radio, television, radar, space communications and sonar systems. Pre: registration in 323.
- 442 Statistical Communication Theory (3) I or II (3L)** Gaarder, Lin
Analysis of communication system using probabilistic methods. Probability theory, random processes, modulation methods, optimum linear filtering, the Gaussian channel, pulse modulation, the phase-lock loop. Pre: 441.
- 446 Information Theory and Coding (3) I, II (3L)** Abramson, Lin
Fundamental properties of information. Sources and channels and coding of information. Applications to communication, linguistics, and other fields. Method of study based on elementary probability theory, but emphasis on significance of results. Open to all students. Pre: Math 134; junior standing or consent of instructor.
- 451 Feedback Control Systems (3) I, II (3L)** Granborg, Hwang, Yen
Principles of linear feedback control systems with emphasis on methods, analysis and synthesis to meet prescribed performance criteria. Electronic, electromechanical, electrohydraulic components; stability criteria; Root-locus, Nyquist and Bode techniques; cascade and feedback compensation of control system. Pre: 311.
- 452 Feedback Control Systems Laboratory (1) I, II (1Lb)** Granborg, Hwang, Yen
Laboratory for 451. Pre: 313; registration in 451.
- 453 Modern Control Theory (3) II (3L)** Granborg, Hwang, Yen
Analysis and synthesis of non-linear control systems by means of Lagrange's equation, state space techniques, the maximum principle, Lyapunov's theorems, the phase plane, and Z-transform techniques. Optimization and adaptation by means of gradient methods, calculus of variation and dynamic programming. Pre: 451.
- 460 Switching Circuit Theory (3) I, II (3L)** Lin, Kuo
Number systems, Boolean algebra, truth functions, characteristics of digital devices, combinational circuit minimization methods (Karnaugh Map, Quine-McCluskey Methods), Iterative combinational circuits, adders, number coding, synchronous sequential circuits—analysis and synthesis, Mealy circuits, Moore circuits, threshold logic, relay logic, hazards, race conditions, introduction to automata. Pre: 360.
- 461 Digital Systems and Computer Design (3) I, II (3L)** Lichtenberger, Weldon
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: 360.
- 462 Digital Techniques Laboratory (1) I, II (1Lb)**
Laboratory for 461. Pre: registration in 461.
- 463 Analog Computers (3) II (3L)** Granborg
Concepts and principles of analog computation. Scaling and programming linear, non-linear, and time-varying differential equations; direct simulation of electrical and mechanical systems. Pre: junior standing or consent of instructor.
- 466 Computer Organization and Programming Techniques (3) II (3L)** Lichtenberger, Peterson
Organization and machine language of typical computers. Machine language programming techniques. Introduction to operating systems. Introduction to data structures, sorting, retrieving data from files of information. Pre: knowledge of FORTRAN programming or consent of instructor.
- 467 Algorithmic Languages (3) I (3L)** Peterson
Introduction to algorithms, languages for describing them, associated programming techniques. Commonly used languages for numerical and non-numerical computation. Pre: knowledge of FORTRAN programming or consent of instructor.
- 473 Microwave Theory and Techniques (3) I (3L)** Yuen
Theory and techniques of energy generation and transmission at microwave frequencies. Principles of operation of microwave tubes, devices, systems. Pre: 323, 372.
- 475 Radio-Wave Propagation (3) I (3L)** Weaver
Application of Maxwell's equations to study of radio-wave propagation in free space and ionized media. Study of formation and maintenance of earth's ionosphere. Geomagnetic and solar effects. Absorption and dispersion. Measurement techniques. Pre: 372.
- 477 Fundamentals of Radar, Sonar and Navigational Systems (3) I (3L)** Yuen
Discussion of basic radar detection and position- and velocity-measurement principles. Applications to various types of radar and sonar systems. Modern navigational aids. Pre: 371 or equivalent; familiarity with waveguides or waveguide theory.
- 481 Bioelectricity (3) I (3L)** Koide
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.
- 486 Basic Biomedical Electronics (3) I (3L)** Koide
Practical introductory electronics for students majoring in life or social sciences; a-c circuit theory, rectification, amplification, oscillators, power supplies, transducers, biomedical instruments. (Not intended for engineering majors). Pre: Math 206, Phys 161 or consent of instructor.
- 487 Basic Biomedical Electronics Laboratory (1) I (1Lb)** Koide
Laboratory for 486. (Not intended for engineering majors). Pre: registration in 486.
- 491-492 Special Topics in Electrical Engineering (3-3) I, II (3L)**
Course content will reflect special interests of visiting and permanent faculty, and will be oriented towards juniors and seniors. Pre: consent of instructor.
- 499 Project (v) I, II**
Investigation of advanced engineering problems. Pre: senior standing.
- 613 Linear System Analysis (3) I, II (3L)** Chattopadhyay
Linear spaces and linear operators; matrix representation of linear operators; matrix algebra; numerical methods for solving matrix equations; state transition operator; matrix representation of state transition operator for linear systems; state equations and their solutions; controllability and observability of systems. Pre: 315 or equivalent.
- 614 Analysis of Nonlinear Systems (3) II (3L)** Hwang
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.
- 616 Systems Theory (3) II (3L)** Kinariwala
Representation theory of linear operators and functionals. Short review of state space representation. Variational approach to state space theory, canonical representations of systems, irreducible systems, system identification, infinite dimensional state spaces. Pre: 613 or equivalent.

- 617 Computer-Aided Circuit Design (3) I or II (3L)** **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: 315, knowledge of FORTRAN or PL/I.
- 618 System Optimization (3) II (3L)** **Chattopadhyay**
Fibonacci and Golden section method; quadratic interpolation; Rosenbrock's method; Powell's method of conjugate directions; accelerated steepest descent; variable-metric method; gradient projection technique; penalty function method; writing computer codes of some of the above method with application to engineering problems. Pre: knowledge of matrix algebra and computer programming.
- 623 Advanced Electronic Instrumentation (3) I (3L)** **Barna**
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 (3L)** **Fang**
Recent developments in phenomena and devices of physical electronics. Pre: 427.
- 646 Signal and Noise Theory (3) I (3L)** **Gaarder, Slepian**
Envelope and phase statistics of Gaussian random process. Finite time measurements of random processes. Spectral estimates. Modulation theory. Non-linear transformations of random processes. The Karhunen-Loeve expansion. Pre: 613 or equivalent.
- 647 Applied Statistical Decision Theory (3) II (3L)** **Gaarder, Slepian**
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 (3L)** **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.
- 651 Non-linear Control Systems (3) I (3L)** **Yen**
Global stability in time domain studied via state variable by methods of Lyapunov, Krasovskii and canonical form of Lur'e. Systems involving sectorial non-linearity covered by modern frequency methods such as Ayerman's conjecture. Popov's and circle criterion functional analysis approaches introduced to relate frequency and time domain results. Other topics: describing functions, local and piecewise linearizations, limit cycle stabilities, some laboratory stimulation using analog computers. Pre: 451 or equivalent.
- 652 Optimal Control (3) II (3L)** **Yen**
Optimal controls introduced through parametric optimization. Variational calculus and functional optimization; Pontryagin's maximum principle with/without constraints; time optimal control and bang-bang systems; computational techniques of two-port boundary value problems; mathematical programming in optimal control; application to problems of space trajectory, OR and transportation concerns. Pre: 651.
- 655 Sampled-Data Control Systems (3) I (3L)** **Granborg**
Theory and application of sampled-data control systems; sampling and filtering theorems, z-transforms, modified z-transforms, digital compensation and stability, optimizations, application of state variable theory to sample-data systems, on-line digital computer systems. Pre: 451 or equivalent.
- 657 Hybrid Automatic Control Systems (3) II (3L)** **Granborg**
System components of hybrid computers. Automatic control system simulation, multi-point boundary-value problems, linear programming optimization problems and partial differential equations. Analog, digital and hybrid systems in process control. Pre: 451 or consent of instructor.
- 660 Computer Organization (3) I or II (3L)** **Lichtenberger, Kuo**
Detailed structure of a stored-program digital computer, mini-computer architecture, large-scale computers, parallel computers, pipeline machines, timesharing, computer nets. Pre: 461.
- 661 Theory of Digital Machines (3) I (3L)** **Peterson**
Introduction to sequential switching circuit theory, theory of automata, and to mathematical theory of linguistics as it applies to automata. Pre: 461 or consent of instructor.
- 671-672 Electromagnetic Theory and Applications (3-3) Yr. (3L)** **Najita**
Solutions and applications of Maxwell's equations to radiation and propagation of electromagnetic waves. Pre: 372 or equivalent; Math 232 or equivalent.
- 673 Magneto-Ionic Theory (3) II (3L)** **Weaver**
Electromagnetic waves in ionized medium with superimposed magnetic field. Applications. Pre: 475.
- 677 Antenna Theory (3) I (3L)** **Roelofs**
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.
- 691-692 Seminar in Electrical Engineering (1-1) Yr.**
Pre: graduate standing, consent of instructor.
- 693 Special Topics in Electrical Engineering (v) I, II (3L)**
Course content will reflect special interests of visiting and permanent faculty. Pre: consent of instructor.
- 699 Directed Reading or Research (v) I, II**
Pre: graduate standing, consent of instructor.
- 800 Thesis Research (v) I, II**
Pre: candidacy for M.S. or Ph.D. in E.E.

Mechanical Engineering (ME)

Professors: Burgess, Chai, Chou, Fand, Larsen-Basse, Stuver.
Associate Professors: Cheng, Fox, Htun, Kihara, Munchmeyer.
Assistant Professors: Johnson, Jones.

- 300 Measurements Laboratory (2) II** **Munchmeyer**
Techniques of engineering measurements. Methods, instruments, computation and procedures. Applications to typical problems. Pre: junior standing in ME.
- 311 Thermodynamics (3) I, II**
Basic laws. Work, heat, concept of entropy. Perfect gases, mixtures. Availability, irreversibility, efficiency. Pre: Phys 170.
- 312 Applied Thermodynamics (3) I, II** **Chou**
Gas mixtures, generalized thermodynamic relationships, combustion and thermochemistry, chemical equilibrium, power and refrigeration cycles, properties of solutions, applications to statistical mechanics. Pre: 311.
- 321 Mechanics of Fluids (3) I, II** **Fox, Kihara**
Incompressible and compressible ideal fluids, effects of viscosity. Similitude, boundary layer flow, elementary gas dynamics. Pre: Phys 170.
- 322 Fluid Mechanics I (3) I**
Fluid properties, statics and kinematics. Control volume approach to conservation of mass, momentum and energy. Relationship between systems and control volumes. Accelerating systems and angular momentum. Introduction to compressible flow, isentropic flow in ducts, choked flow. Dimensional analysis and similitude. Pre: CE 271.

- 323 Fluid Mechanics II (3) II**
Differential equations for conservation of mass and momentum. Solutions for nonviscous flow. Bernoulli flow, potential flow, streamfunction. Flow through nozzles and orifices, measurement techniques. Analysis by computer and analog techniques. Fluid machinery. Pre: 322.
- 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 274.
- 341 Materials Processing (3) I, II (2L, 1Lb)** Htun
Development, processing, fabrication of engineering materials. Energy requirements of various manufacturing methods and their effect upon material properties. Pre: 331.
- 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
Linear and non-linear modeling of discrete physical elements in dynamic systems. Formulation and solution of governing differential equations by direct (classical) analysis. Transient and steady state response of first and second order single-degree-of-freedom systems. Pre: CE 271, Math 232.
- 400 Mechanical Engineering Experimentation (2) I** Munchmeyer
Performance analysis and testing of machines, engines, systems. Experiments in automatic control. Special projects. Pre: 300.
- 402 Computer Methods in Engineering (3) I, II**
Review of numerical techniques in engineering computations: roots of algebraic and transcendental equations, solution of simultaneous linear algebraic equations, numerical integration and differentiation, eigenvalue problems, numerical integration of ordinary differential equations using a digital computer. Application to problems in engineering and applied science. Pre: GE 253. (Identical with GE 451.)
- 403 Advanced Mathematics for Engineers I (3) I** Fand
Study of various mathematical techniques with emphasis on application to engineering: infinite series, nonlinear differential equations, linear differential equations and Laplace transform, algebra and geometry of vectors, matrices, functions of several variables, vector field theory. Pre: Math 232.
- 404 Advanced Mathematics for Engineers II (3) II** Fand
Study of various mathematical techniques with emphasis on application to engineering: partial differential equations, complex variables, probability, numerical analysis. Pre: Math 232.
- 417 Air Conditioning and Refrigeration (3) II** Chou
Refrigeration processes, psychrometrics, solar radiation, applications to air conditioning design, physiological effects of thermal environment. Pre: 312.
- 418 Gas Turbine Power Plants (3) II** Chai
Principles, performance and design of gas turbine power plants as related to industrial, automotive and aeronautical applications. Pre: 312.
- 419 Design of Thermal Systems (3) I** Chou
Economics, mathematical modeling, system simulation, optimization. System components: piping, pumps, fans, heat exchangers, etc. Pre: 312.
- 422 Heat Transfer (3) I, II** Cheng, Kihara
Steady and transient conduction. Fundamentals of radiation and convection. Heat exchangers. Pre: 311, Math 232.
- 424 Introduction to Gasdynamics (3) II** Kihara
One-dimensional compressible flow involving change of area, normal shock, friction, heat transfer. Pre: 312, 321.
- 431 Electronic Processes in Materials (3) II** Jones
Physical basis of electric, magnetic, optical properties of solids. Effects arising from material and processing variables and from impurities, imperfections, domains, grain boundaries. Pre: Phys 274.
- 433 Failures in Materials (3) II** Htun
Imperfections. Fatigue. Fracture. Wear. Uniform, galvanic, fretting, cavitation, stress and high temperature corrosion. Bending, tensile and impact failures. Surface spalling, pitting, cracking. Selection of materials. Pre: 331 or consent of instructor.
- 451 Automatic Control (3) I** Stuiver
Fundamental concepts and basic techniques of automatic control engineering. Representation of components and systems. Steady-state operation and transient response. Root-locus and frequency-response methods. Pre: 375.
- 455 Nuclear Power Engineering (3) I** Chai
Nuclear reactor principles: neutron mechanics, flux distribution. Reactor heat transfer: heat generation and removal, single and two phase flow. Analysis of reactor power plants. Pre: credit or registration in 422.
- 457 Marine Engineering (3) II** Munchmeyer
Energy conversion systems for marine vehicles. System control. Propulsion devices. Pre: 311.
- 467 Design of Mechanical Elements (3) I (2L, 1Lb)** Chai
Analysis and design of machine components for strength, rigidity, fatigue, etc. Fastenings, transmission devices, selected topics. Pre: 371 and senior standing in ME or consent of instructor.
- 468 Introduction to Engineering Design (4) II (2L, 2Lb)** Stuiver
Analysis and synthesis of integrated systems. Exercise in preliminary product design. Fundamentals of search and optimization. Pre: 467.
- 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 311, or consent of instructor.
- 496 Mechanical Engineering Topics (v) I, II**
Specialized topics in thermosciences, mechanics, materials, systems or design. Pre: consent of instructor.
- 499 Project (v) I, II**
Investigation of advanced problems in mechanical engineering design or development. Student must find faculty sponsor before registering. Pre: senior standing.
- 611 Classical Thermodynamics (3) I** Fox
Critical study of foundations of thermodynamics. Definitions, laws and corollaries. Generalization to chemical, electrical, magnetic and relativistic systems. Determination of equilibrium states. Pre: 312.
- 612 Statistical and Nonequilibrium Thermodynamics (3) II** Fox
Review of probability and statistics. Study of classical and quantum mechanics. Independent particle statistics, Schrodinger wave equation, solutions for special cases of interest. Pre: 312.
- 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 of life supporting system for survival. Pre: 417 or consent of instructor.
- 621 Conduction Heat Transfer (3) I** Chai
Steady and unsteady heat conduction with and without heat sources in solids. Analytical, numerical, graphical, analog methods for solving heat conduction problems. Pre: 422.
- 622 Convection Heat Transfer (3) II** Fand
Heat transfer in laminar and turbulent boundary layer. Analogy between heat, momentum, mass transfer. Pre: 422, 626.

- 623 Radiation Heat Transfer (3) II** **Cheng**
Transmission of heat by radiation. Electromagnetic waves, Maxwell's equations, solutions for conductors and dielectrics. Radiosity methods, configuration factors, flux algebra. Radiation in gray enclosures with gases. Pre: 422.
- 624 Gasdynamics (3) I** **Kihara**
Multi-dimensional compressible flow in supersonic and subsonic regimes. Solutions by means of small perturbation theory, hodograph plane and method of characteristics. Pre: 424.
- 625 Numerical Methods in Fluid Mechanics and Heat Transfer (3) II** **Cheng**
Numerical integration of ordinary and partial differential equations. Methods of series truncation, integral relation, finite difference, finite element, characteristics, and Monte Carlo. Applications to incompressible and compressible flow, boundary layer theory, Navier-Stokes equations, conduction, convection, and radiation heat transfer. Pre: GE 253, ME 321, ME 422 or equivalent.
- 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** **Htun**
Experimental determination of thermal, mechanical, chemical, electronic properties of materials as related to structure; influence of thermal treatments and of imperfections. Pre: consent of instructor.
- 631 Advanced Materials Science (3) I**
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. Pre: 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. Pre: 331.
- 636 Materials for the Ocean Environment (3) II** **Jones**
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** **Htun**
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. Pre: 331 or consent of instructor.
- 642 Mechanical Behavior of Engineering Materials (3) II**
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. Pre: consent of instructor.
- 651 Automatic Control System Synthesis (3) II (2L, 1Lb)** **Stuiver**
Introduction to advanced control topics (describing function, state-space method, sampled-data and adaptive control systems). Synthesis of electro-mechanical systems (hydraulic, pneumatic and electro-magnetic devices; inertial guidance). Analog and digital computer techniques. Pre: 451 or equivalent; GE 251 or 253. (Alt. yrs.; offered 1972-73.)
- 657 Methods of Search and Optimization (3) I** **Stuiver**
Survey of methods. Classical analysis (extremal points, variational theory, maximum principle) and modern computational procedures (unconstrained minimization, direct methods for constrained problems). Application to numerical solution of problems. Pre: GE 251 or 253.
- 671 Mechanics of Continua I (3) I** **Johnson**
Stress and strain in continuous body. Review of vector analysis and development of Cartesian tensor calculus. Eulerian and Lagrangian descriptions of finite deformation. Equations of continuity, motion, state, energy. Applications to solids, liquids, gases. Pre: 371.
- 672 Mechanics of Continua II (3) II** **Johnson**
Constitutive relations for elastic, visco-elastic, ideally plastic, strain hardening, strain-rate sensitive materials. Applications. Pre: 671.
- 678 Advanced Dynamics (3) II** **Stuiver**
Three-dimensional motion of particles, rigid bodies and systems. Formulations of Newton and Lagrange. Orbital motion and gyro-dynamics. Variational mechanics and Hamiltonian theory. Pre: CE 271 (Alt. yrs.; not offered 1972-73.)
- 691 Seminar (1) I, II**
Current problems in all branches of mechanical engineering. All M.S.M.E. candidates are normally expected to attend, and registrants are expected to present talks. Pre: graduate standing, consent of instructor. May be repeated.
- 696 Advanced Topics in Mechanical Engineering (v) I, II**
Highly specialized topics in thermosciences, mechanics, materials, systems or design. Pre: consent of instructor.
- 699 Directed Reading or Research (v) I, II**
Directed study for graduate students on subject of mutual interest to student and a staff member. Student must find faculty sponsor before registering. Pre: consent of department chairman. May be repeated.
- 800 Thesis (v) I, II**
Thesis for degree of M.S. in mechanical engineering. Pre: admission to candidacy and consent of thesis adviser.

Ocean Engineering (OE)

Professors: Bretschneider, Gerritsen, Parvulescu, St. Denis.
Researchers: Lee, O'Brien.
Associate Professor: Seidl.
Assistant Professor: Venezian.

- 401 Introduction to Ocean Engineering (3) I** **Bretschneider, Staff**
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 systems design process.
- 411 Buoyancy and Stability (3) I** **St. Denis, Venezian**
Ship nomenclature and geometry. Hydrostatic principles of surface ships in free-floating, partially waterborne and damaged conditions and of submerged bodies. Subdivision of ships. Launching. Pre: CE 270 or equivalent.
- 412 Resistance and Powering of Ships (3) II** **St. Denis, Venezian**
Nature and determination of hydrodynamic resistance of ship and submarine hulls. Analysis of propelling devices emphasizing screw propellers. Propeller-hull interaction, powering considerations and speed power relationships. Pre: ME 321, OE 411 or equivalent courses and/or experience.
- 601 Ocean Engineering Laboratory (3) SS** **Munchmeyer, Seidl**
Design, construction and evaluation of an ocean engineering system. Field experience supplemented with appropriate theory. Pre: consent of department.

- 604 Ocean Engineering Environment (3) II** Bretschneider, Staff
Evaluation of ocean environment as it affects ocean engineering operations, design, construction, maintenance problems. Pre: Ocean 620 or equivalent.
- 607 Wave Dynamics (3) I** Venezian
Laws governing motion of fluids; boundary conditions; free surfaces. Linear waves in basin and open water. Forced oscillations. Non-linear waves, Stokes' theory. Waves in shallow water. Hydraulic jumps, shoaling. Effects of rotation. Analytical techniques necessary for analysis will be developed as course progresses. Pre: graduate standing.
- 608 Statistical Dynamics of Ocean Systems (3) II** St. Denis
The 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 analyses and experience in the application of such statistical methods to actual problems. Pre: 607.
- 609 Principles of Ocean Engineering (3) I** Seidl
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.
- 612 Seakeeping (3) II** Seidl, St. Denis
Spectral analysis in seakeeping. Ocean waves. Ship response to wave action. Effects of ship motions and application to design. Hull vibration considerations. Pre: 411 or equivalent.
- 614 Ocean Hydrodynamics Laboratory (2) II** O'Brien, Seidl, Venezian
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** Parvulescu
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 474 or consent of instructor.
- 622 Sonar System Engineering (3) II** Parvulescu
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 Structural Design of Ocean Systems I & II (3-3) Yr.** Seidl, St. Denis
Design of ocean structures to withstand 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 made to design of submarine pressure hulls, cargo ships and oceangoing platforms.
- 652 Nearshore Marine Survey Techniques (3) II** Bathen, Bretschneider
Introduction to the nearshore environment, planning and conducting field programs, reduction and analyses of data, presentation of results. Pre: consent of instructor.
- 661-662 Coastal and Harbor Engineering (3-3) Yr.** 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. (Not offered 1972-73.)
- 664 Sediment Transport, Littoral Drift and Dredging Technology (3) II** Gerritsen
Sediment transport in rivers, tidal inlets (estuaries), and along sea-coasts. 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. (Not offered 1972-73.)
- 681 Ocean Systems (3) I** Craven
Fundamental concepts of system design, development and management. Technical problems associated with major subsystems including navigation, communication, environmental sensory power sources, platforms, logistics, terminals, etc. Pre: consent of instructor.
- 682 Design of Ocean Systems (3) II** St. Denis
Continuation of 681. Techniques developed for setting up and solving mathematical models for validating the technical feasibility of proposed concepts of ocean systems and for determining general design characteristic thereof. Designed to develop techniques for solving the interface problems which obtain when component systems are combined to form systems of ever greater scope and culminating in the system intended to fulfill an oceanic mission. Pre: 411, 412, 612 (last two may be taken concurrently).
- 691 Special Topics in Ocean Engineering (v) I, II** Staff
Course content will reflect special interests of visiting and permanent faculty. Pre: consent of instructor.
- 692 Seminar in Ocean Engineering (v) I, II, SS** Staff
Seminars by faculty, students, and invited lecturers from the engineering and scientific community. May be repeated. Sections may be designated for specific subjects.
- 694 Economics of Marine Resources (3) II** Comitini
Application of techniques of economic analysis related to the unique problems of utilization and development of marine resources. Topics include: economics of 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.
- 696 Topics in Ocean Engineering (2) II** Staff
Series of seminars on topics of current interest to the ocean-oriented engineering and scientific community. Lecturers will be members of the University faculty as well as invited lecturers from other universities, governmental agencies and private industry. Pre: graduate standing, consent of instructor.
- 699 Directed Reading or Research (v) I, II** Staff
Pre: graduate standing, consent of instructor.
- 800 Thesis Research (v) I, II**
Pre: candidacy for M.S. or Ph.D. in ocean engineering.

College of Health Sciences and Social Welfare

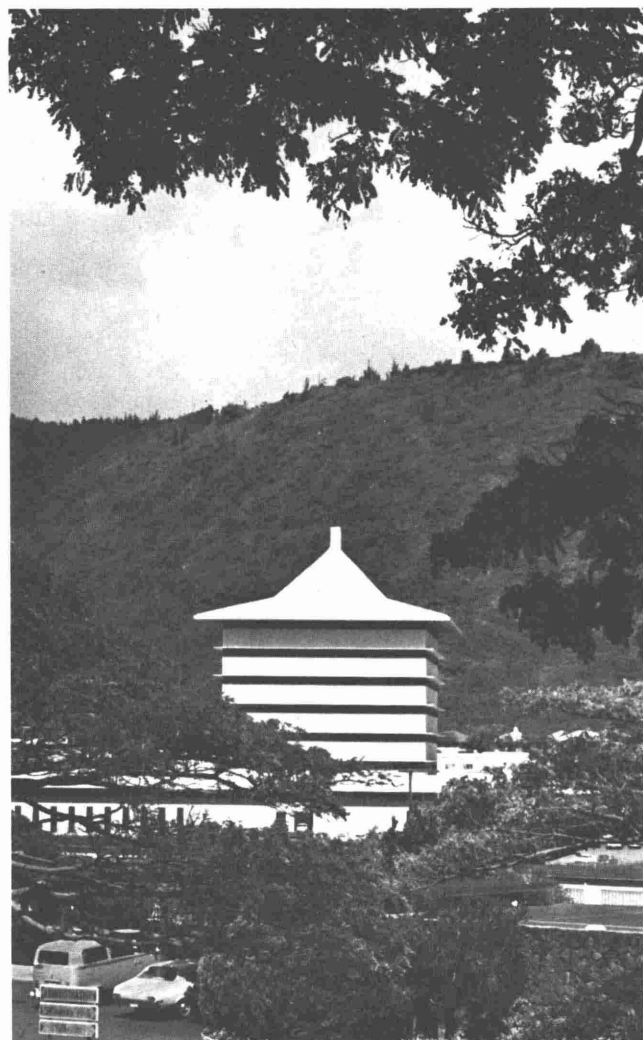
The College of Health Sciences and Social Welfare comprises the four professional Schools of Medicine, Public Health, Nursing and Social Work. The programs of the separate schools are integrated so far as possible, especially with a view to orienting students to common problems and the various approaches to solutions. Interdisciplinary courses, colloquia, institutes, and field experiences permit students to become acquainted with each other and with trends and developments in the four professions of the health care team. These interdisciplinary activities are proposed by a committee drawn from faculty and students of the four schools.

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 of its two-year basic science curriculum 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; 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. 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 organic chemistry. Organic chemistry laboratory, quantitative analysis 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 60 students. Applications are due January 1 and supporting papers must be received before February 15 for consideration for admission the following September.

Correspondence regarding admission should be directed to: Admissions Office, University of Hawaii School of Medicine, 1960 East-West Road, Honolulu, Hawaii 96822.

B. Non-medical Students

Applicants to the School of Medicine for admission to programs leading to the B.S., M.S., or Ph.D. degrees should fulfill the requirements 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 of the University.

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. Each student must do at least 1 unit of special investigative work in an area in which he is particularly interested.

Students from the Pacific area with less than the usual preparation may be admitted under a special program in which the two years work is spread over three years, or longer. With the help of the student adviser, the student is directed as to pace, and needed remedial work. Those who find excessive difficulty in medicine are directed into other health fields. Others who wish to combine work toward an M.S. or Ph.D. with the medical courses may elect a similar increase in time.

For further information, see *Bulletin of the School of Medicine*.

Two Year Curriculum

First Year		Second Semester	
First Semester	Credits	Second Semester	Credits
Cell Structure & Function (Biomd 601)	2	Functional Human Anatomy (Anat 602)	6
Organ Structure & Function (Biomd 603)	5	Neuroscience (Biomd 604)	4
Microanatomy (Biomd 605)	2	Endocrinology-Reproduction (Biomd 602)	2
Physiology Laboratory (Biomd 607)	1	Endocrinology-Reproductive Laboratory (Biomd 606)	1
Medical Biochemistry (Bioch 605)	2	Medical Biochemistry (Bioch 606)	2
Biochemistry Laboratory (Bioch 611)	1	Biochemistry Laboratory (Bioch 612)	1
Human Genetics (Genet 611)	2	History-Taking & Physical Examination (Med 602) ...	2
Introduction to Human Behavior (Psyty 607)	2		
Community Health Problems (PH 695)	1		
Clinical Correlation (Med 601)	2		
	<u>20</u>		<u>18</u>

Second Year

Clinical Judgment (Med 611)	3	Clinical Judgment (Med 612)	3
Clinical Conference (Med 671)	1	Clinical Conference (Med 672)	1
Human Pathology (Path 601)	4	Human Pathology (Path 602)	4
Laboratory Diagnosis I (Path 649)	2	Pharmacology: Actions and uses of Drugs (Pharm 600)	7
Tropical Medicine & Medical Microbiology (TrMed 605)	6	Psychopathology (Psyty 616)	2
		Community Health Concepts & Methods (PH 786)	2
	<u>16</u>		<u>19</u>

One unit of Directed Research (Course #699) must be completed by the end of the first semester, second year.

Three Year Curriculum

First Year

First Semester	Credits	Second Semester	Credits
Cell Structure & Function (Biomd 601)	2	Endocrinology-Reproduction (Biomd 602)	2
Organ Structure & Function (Biomd 603)	5	Endocrinology-Reproduction (Biomd 606)	1
Microanatomy (Biomd 605)	2	Neuroscience (Biomd 604)	4
Physiology Laboratory (Biomd 607)	1	Medical Biochemistry (Bioch 606)	2
Medical Biochemistry (Bioch 605)	2	General Biochemistry Laboratory (Bioch 612)	1
General Biochemistry Laboratory (Bioch 611)	1		
	<u>13</u>		<u>10</u>

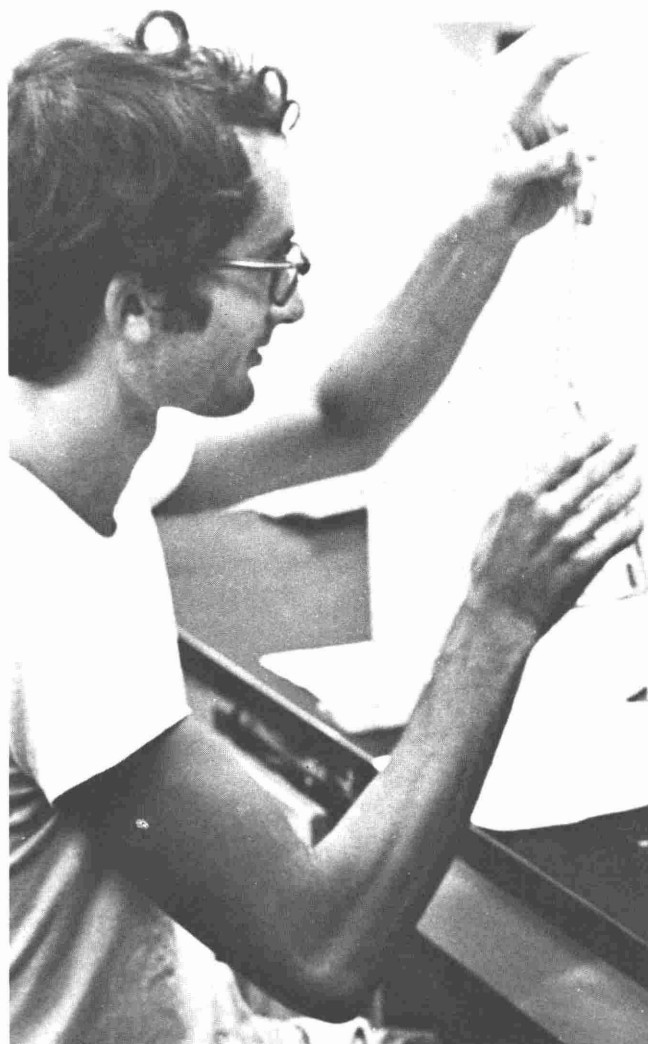
Second Year

Human Genetics (Genet 611)	2	Functional Human Anatomy (Anat 602)	6
Clinical Correlation (Med 601)	2	History-Taking & Physical Examination (Med 602) ...	2
Introduction to Human Behavior (Psyty 607)	2	Psychopathology (Psyty 616)	2
Community Health Problems (PH 695)	1		
Tropical Medicine & Medical Microbiology (TrMed 605)	6		
	<u>13</u>		<u>10</u>

Third Year

Clinical Judgment (Med 611)	3	Clinical Judgment (Med 612)	3
Clinical Conference (Med 671)	1	Clinical Conference (Med 672)	1
Human Pathology (Path 601)	4	Human Pathology (Path 602)	4
Laboratory Diagnosis (Path 649)	2	Pharmacology: Actions and uses of Drugs (Pharm 600)	7
		Community Health Concepts & Methods (PH 786)	2
	<u>10</u>		<u>17</u>

One unit of Directed Research (Course #699) must be completed by the end of the first semester, second year.



Allied Medical Sciences

Division of Comparative Medicine (CpMed)

Associate Professors: Howard, 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, Howard
To acquaint students with concepts and methods in use and care of experimental animals.

Division of Medical History (MedHx)

Professor: Judd.

- 606 Medical History (1) II** Judd
Elective course in philosophy and history of medicine, with especial reference to contributions from the Pacific Islands and Asia, and to the inter-relationships of historical, ethical, social, and scientific aspects of medicine.

- 699 Directed Research (v) I, II** Staff

Division of Medical Practice (MedPr)

Professor: Brodsky.
Associate Clinical Professors: Mills, Tomita.
Instructor: McNeil.
Clinical Hospital Administrators: Davi, Henderson, Sister Maureen.

Division of Medical Technology (MT)

Associate Professor: Bhagavan.
Associate Clinical Professor: Ho.
Assistant Professors: Moikeha, Taylor.
Instructors: Kagawa, Kuroda, Sonoda.

The medical technology program 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 certification 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.

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 33 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 128 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.

Curriculum For Medical Technology

Freshman Year	
Fall Semester	Spring Semester
Credits	Credits
Chem 113-115	Chem 114-116
Hist 151	Hist 152
Eng 100	Sp 145
Math 134	Electives
MT 151	
(Intro to Med Tech)	
2	6
16	16

There is an accelerated one semester course in Chemistry for especially well prepared students.

161

Sophomore Year	
Bio 220	Bio 250
Eng Lit	Eng Lit
Chem 241-242	Chem 133-134
MT 251	Electives
(Intro to Med Tech)	
Electives	
2	6
3	6
17	17

Electives: 3 credits in Humanities; 6 credits in Social Sciences.

Junior Year	
Fall Semester	Spring Semester
Credits	Credits
Biomd 301	Biomd 302
Micro 351	Biochem 441
MT 431	Phys 152-154
(Med Parasit or	Electives
Zoo 340)	
Phys 151-153	
3	3
4	3
15	15

Senior Year	
Micro 461-462	Micro 463
MT 451 Hematology	MT 464
MT 471-473 Clin Bioch	Immunohematology
MT 457 Clin Lab	MT 472-474 Clin Biochem
Instruments	MT 458 Clin Lab
Electives	Instruments
2	2
3	2
16	3
	16

- 151 Introduction to Medical Technology I (2) I, II** Taylor
Designed to acquaint student with relationship of medical technology to the medical field.

- 251 Introduction to Medical Technology II (2) I, II** Kuroda
Designed to acquaint student with basic principles of medical technology. Pre: one semester of college chemistry and sophomore standing or consent of instructor.
- 431 Medical Parasitology (3) I, II**
Diagnosis of parasitic diseases by laboratory methods; outstanding features of life cycles, classification and medical significance of parasites. Pre: Micro 351 or consent of instructor.
- 451 Basic Hematology (3) I** Ho, Kagawa
Fundamental study of blood in normal and pathological states: formation, development, and classification of blood cells. Pre: 251, Micro 351, Biomed 301-302, or consent of instructor.
- 457-458 Clinical Laboratory Instruments (2-2) Yr.** Moikeha
Principles, applications, and use of instruments used in clinical laboratory measurement. Pre: college physics, credit or concurrent registration in clinical biochemistry, or consent of instructor.
- 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.
- 471-472 Clinical Biochemistry, Lecture (2-2) Yr.** Bhagavan
Qualitative and quantitative changes in the biochemically determinable body constituents in health and disease. Pre: Biomed 301-302, Biochem 441.
- 473-474 Clinical Biochemistry, Lab (2-2) Yr.** Sonoda
The measurement of biochemically determinable values in health and disease. Pre: Biomed 301-302, Biochem 441.
- 495 Special Topics in Med Tech (1) I, II** Taylor
Designed to acquaint the student with role of the medical technologist today. Emphasis placed upon the overlap of major sciences in clinical situations that help the student develop the qualities unique in a medical technologist.
- 499 Directed Reading and Research (v) I, II** Taylor

Division of Speech Pathology & Audiology (SPA)

Professor: Ansberry.

Associate Professors: McPherson, Pang-Ching.

Associate Clinical Professor: Watson.

Assistant Professor: Craven.

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, 315, 320, 321, 402, 410 and 411. Other specific requirements are: a minimum of 4 credits in physics and 3 credits in mathematics; and 12 credits in psychology including Psychology of Adjustment and Developmental Psychology. 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 Catalog* for additional pertinent information.

UNDERGRADUATE COURSES

- 300 Introduction to Speech Correction (3) I** Craven
Survey of field of speech correction; study of types of speech defects and hearing problems as they relate to speech dysfunctions.
- 301 Introduction to Audiology (3) I** Ansberry
Basic concepts: psychoacoustics, anatomy and physiology, measurement of hearing, rehabilitation of hard-of-hearing.
- 302 Methodology of Speech Correction (3) I, II** Craven
Methods used in clinical procedures for organic and functional disorders of speech; observation of clinical procedures. Pre: 300, 320.
- 303 Testing of Hearing (3) I, II** Pang-Ching
Screening testing programs; conventional and special tests of hearing; interpretation of results; observations of clinical audiometry. Pre: 301.
- 315 Hearing Habilitation and Rehabilitation (3) II** Pang-Ching
Principles and methods of habilitation and rehabilitation of children and adults with hearing problems; means of developing maximum communication ability through auditory training, speech reading and other methods; educational and vocational training.
- 320-321 Speech and Hearing Science (3-3) Yr.** McPherson
Anatomic, physiologic, phonologic, and acoustic bases of speech, hearing, and language; instrumentation and methods of speech and hearing science. (320 or consent of instructor is prerequisite for 321.)
- 402 Pathology of Speech (3) I** McPherson
Etiology and symptomatology of speech and language disorders. Pre: 300, 302, 320-321.
- 410 Practicum in Speech Pathology (v) I, II** Craven, McPherson
Clinical practice in use of diagnostic procedures and rehabilitation techniques with a variety of speech disorders at various age levels. Pre: 300, 302, 320-321.
- 411 Practicum in Audiology (v) I, II** Ansberry, Pang-Ching
Clinical practice in testing of hearing, hearing conservation, auditory training, speech reading, speech correction and conservation. Pre: 301, 303.

GRADUATE COURSES

- 600 Research Methods (3) I** Pang-Ching
Research methods applicable to field of speech pathology and audiology; analysis and reporting of data; bibliography; contemporary research. Required of all graduate students.
- 602 Diagnostic Procedures in Speech Pathology (3) I** McPherson
Study of methods, tests, and instruments employed in the diagnosis of speech disorders.
- 603 Advanced Audiology (3) I** Pang-Ching
Instrumentation; selection of hearing aids; special tests of hearing; vocational problems of individuals with impaired hearing. Pre: 301, 303 or equivalent.
- 610 Organic Disorders of Speech (3)** Craven
Study of disorders of articulation, voice, rhythm, and language which result from organic anomalies with emphasis upon cleft palate, cerebral palsy, laryngectomy, and brain injury. (Offered every 3rd semester; offered Spring 1973.)

- 612 Functional Disorders of Speech (3)**
Diagnostic and therapeutic approaches to disorders of speech which are primarily functional in nature—articulation, voice, rhythm, language. (Offered every 3rd semester; not offered 1972-73.)
- 613 Language Development for Children with Hearing Deficiencies (3)** **Pang-Ching**
Language acquisition by hard-of-hearing and deaf children; methods of stimulating growth. (Offered every 3rd semester; offered Fall 1972.)
- 710 Advanced Practicum in Speech Pathology (v) I, II** **Craven, McPherson**
Supervised clinical practice in diagnostic and therapeutic procedures with various types of speech and language problems and in different clinical settings.
- 711 Advanced Practicum in Audiology (v) I, II** **Ansberry, Pang-Ching**
Supervised clinical practice in administering tests; interpretation of audiograms; counseling of individuals with impaired hearing; use of various rehabilitation techniques. Pre: 411 or equivalent, 603.
- 712 Advanced Practicum in Speech—Public Schools (6) I, II** **Craven**
Supervised clinical practice in diagnostic and therapeutic procedures with children in the public schools who have speech and language problems.
- 720 Seminar in Functional Disorders of Speech (3) I**
Advanced study of functional disorders of articulation, language, rhythm and voice. Emphasis on current literature in the area.
- 721 Seminar in Audiology—Diagnostic Procedures (3) II** **Ansberry**
Study of developments in diagnostic procedures as reflected in current literature covering those factors which assist in arriving at satisfactory diagnoses and prognoses.
- 722 Seminar in Organic Disorders of Speech (3) II** **McPherson**
Advanced study of organic disorders of articulation, language, rhythm and voice. Emphasis on current literature in the area.
- 723 Seminar in Audiology—Rehabilitative Procedures (3) I** **Ansberry**
Procedures and philosophies presented in recent literature dealing with rehabilitative phases of audiology including selection and use of hearing aids, auditory training, speech reading, speech conservation and correction for individuals with hearing dysfunctions, educational and vocational counseling and training.
- 799 Research (v) I, II** **Ansberry, McPherson, Pang-Ching**
(1) Speech Pathology; (2) Audiology. Required of all graduate students following the non thesis program (Plan B).

Division of Stomatology (Stoma)

Associate Clinical Professors: Kanazawa, Ah Moo, Wakai, Wong.
Assistant Clinical Professors: George, Lock, Ohtani, Wong.

The division of stomatology provides teaching of the diseases of the oral cavity and the treatment of these disorders. The relationship of the oral cavity to systemic conditions is stressed.

- 600 Stomatology (1) I, II** **Kanazawa, Staff**
Series of discussions and clinical demonstrations of diseases indigenous to the oral cavity; oral manifestations of systemic diseases; systemic manifestations of oral diseases; temporomandibular joint syndrome; and the treatment of oral disorders.
- 699 Directed Research (v) I, II** **Staff**

Anatomy and Reproductive Biology (Anat)

Professors: DeFeo, Diamond.

Associate Professors: Hoffmann, Jacobs, Kleinfeld, Yanagimachi.

Assistant Professors: Beasley, Bryant, Teichman.

Instruction in the department of anatomy and reproductive biology 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 department offers a master's degree at present, and the graduate program specializes in the area of reproductive biology. Programs combining work in anatomy and other fields of biology and medicine may be arranged.

- 602 Functional Human Anatomy (6) 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.
- 632 Reproduction and Sexuality (2) II** **Diamond, Staff**
Lecture-seminar course to 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 (v) 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.
- 699 Directed Research (v) 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 of faculty member. Pre: consent of instructor.
- 800 Thesis Research (v) I, II**
Pre: consent of adviser.

In addition to the specific courses above, the department of anatomy and reproductive biology is strongly involved in the following interdisciplinary Biomedical Science (Biomd) courses at the undergraduate and graduate levels.

- Biomd**
301-302 Introduction to Human Biology (4-4) Yr.
601 Cell Structure and Function (2) I
602 Endocrinology and Reproduction (2) II
603 Organ Structure and Function (5) I
604 Neuroscience (4) II
605 Microanatomy Laboratory (2) I
606 Endocrinology and Reproduction Laboratory (1) II
607 Physiology Laboratory (1) I

Section of Anesthesiology

Professor: Pearson.

Assistant Clinical Professors: S.T. Lee, Stoneback.

Clinical Instructors: Hattori, Sprague.

The section of anesthesiology conducts clinical teaching in the discipline, and also research in the fundamentals and applications of the field.

Biochemistry (Bioch) and Biophysics (Bioph)

Professors: Gibbons, Greenwood, Guillory, Mandel, Mower, Piette, Yasunobu.

Associate Professors: Bhagavan, Humphreys, Mann, McKay.

Assistant Professors: 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.

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BIOCHEMISTRY

- 341 Elements of Biochemistry (3) I, II** Mower
Description of biochemical principles and concepts as applied to living systems. Course will include sufficient organic chemistry necessary for an understanding of these principles.
- 441 Basic Biochemistry (v) I, II** Morton, Guillory
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 (1Lb)** Morton
Experiments working with substances discussed in 441.
- 480 Introduction to Human Endocrinology (2) I** Greenwood
Introduction of endocrine system, structure, physiology, hormones as chemicals, their biological effects and regulation of secretion. Pre: 441 or consent of instructor.
- 481 Introduction of Molecular Biology (2) II** Mandel
Biochemical basis of life presented in terms of the structure and function of the gene in the production of biological catalysts. Pre: 441 or consent of instructor. (Not offered 1972-73.)
- 601-602 General Biochemistry (3-3) Yr.** McKay, McConnell, Morton, 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.** Bhagavan
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 Medical Biochemistry Laboratory (1) Yr. (1Lb)** Bhagavan
Selected physio-chemical and metabolic experiments to illustrate important principles of 605-606.
- 612 Medical Biochemistry Laboratory (1) Yr. (1Lb)** Bhagavan
Selected physio-chemical and metabolic experiments to illustrate important principles of 605-606.

613 General Biochemistry Laboratory (2) I (1Lb) McConnell
Selected physio-chemical and metabolic experiments to illustrate important principles of 601-602.

620 Advanced Topics in Clinical Biochemistry (2) I Staff
Discussion of principles and applications of advanced and newer methods in clinical biochemistry. Course will also include advanced instrumentation techniques, computerization of analytical methods and the principles of systems analysis. Pre: MT 471, 472, 473, 474; or Biochem 441; or Biochem 605-606.

671 Seminar (1) I, II Staff
Weekly discussions and reports on various subjects; current advances in biochemistry and biophysics.

705 Special Topics in Biochemistry (2) I, II Staff
Advanced treatment of frontiers in biochemistry. May be repeated. Pre: permission of instructor.

710 Special Topics in Enzymology (2) II McKay, McConnell
Selected detailed discussions on properties and mechanism of several important enzymes. Relaxation methods and their application in the study of enzyme kinetics. Pre: 601-602. (Alt. yrs.; offered 1972-73.)

720 Bioenergetics (2) I Guillory
Current topics on mechanism of energy production and transformation in living organisms. Photosynthesis, oxidative and substrate level phosphorylation. Pre: 601-602. (Alt. yrs.; offered 1973-74.)

730 Nucleic Acids and Viruses (2) I Mandel
Current topics on DNA and RNA, radiation effects, cytoplasmic inheritance, mutagenesis, chemistry of the gene. Molecular biology of bacteriophages. Pre: 601-602. (Alt. yrs.; offered 1973-74.)

740 Advanced Protein Chemistry (2) I Yasunobu
Reactions of protein with various reagents, methods of amino acid sequence determination. Discussion of protein structure and evolution of biologically active polypeptides. Pre: 601-602. (Alt. yrs.; offered 1972-73.)

799 Directed Research (v) I, II
Students may register on approval of department.

800 Thesis Research (v) I, II
Approval of department faculty required.

BIOPHYSICS

601 Survey of Biophysics (3) Yr. Piette, Mandel
Theory and application of various physio-chemical techniques used in molecular biology, including optical absorption, light scattering, magnetic resonance, ultra-centrifugation, viscometry, microscopy, circular dichroism and optical rotary dispersion. Pre: Chem 351-352 and Math 206.

602 Survey of Biophysics (3) Yr. Mann, McConnell
Structure and biological significance of water, physical chemistry of biopolymers and relationships of their structure to biological function. Pre: 601.

603 Biophysics Laboratory (3) II McConnell
Application of physio-chemical techniques to biological systems. Use of analytical ultracentrifuge absorption, optical absorption, electron spin resonance, viscometry, diffusion and light scattering. Pre: 601-602.

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: 601-602. (Alt. yrs.; offered 1973-74.)

704 The Role of Free Radicals in Biological Systems (2) II Piette
Discussion of univalent biological oxidation-reduction. Electron transport phenomena in enzyme systems. Experimental techniques in following fast univalent reactions. Role of free radicals in photobiological systems. (Alt. yrs.; offered 1972-73.)

- 705 Special Topics in Biophysics (2) I, II** Staff
Advanced treatment of frontiers in biophysics. May be repeated.
Pre: permission of instructor.
- 706 Molecular Structure and Function of Cell Organelles (2) II (2L)** Gibbons
Macromolecular organization of organelles considered in relation to their function in the cell. (Alt. yrs.; offered 1973-74.)
- 799 Directed Research (v) I, II**
Students may register on approval of department.
- 800 Thesis Research (v) I, II**
Approval of department faculty required.

In addition to the specific courses above, the department is involved in the following interdisciplinary Biomedical Science (Biomd) course at the undergraduate and graduate levels.

Biomd 602 Endocrinology and Reproduction (2) II

Courses in Biochemistry Offered by Other Departments

Biology 401 Molecular Basis of Cell Function
Medical Technology 471-472 Clinical Biochemistry
Genetics 480 Molecular Genetics

Biomedical Science (Biomd)

Any member of the faculty of the School of Medicine may be involved in the teaching of these interdisciplinary courses.

Interdisciplinary graduate and undergraduate courses offered by the School of Medicine have been given Biomd numbers. These courses may, for example, provide more closely coordinated approaches to the teaching of complex structure-function relationships than has previously been possible, or alternatively, may draw upon a wide range of faculty expertise to provide new course offerings. Currently listed interdisciplinary courses are as follows.

- 301-302 Introduction to Human Biology (4-4) Yr.** Hoffman (Coordinator)
(3L, 1 3-hr Lb)
For undergraduates in the health sciences and other fields. Integrated presentation of human genetics, biochemistry, embryology, anatomy, and physiology. Pre: 1 yr. Biol or Zool, 1 yr. Chem or consent of instructor.
- 601 Cell Structure and Function (2) I** Kleinfeld (Coordinator)
Comprehensive course in cell biology (lectures only) for medical and graduate students. Pre: admission to medical school or consent of instructor.
- 602 Endocrinology and Reproduction (2) II** Bryant (Coordinator)
Comprehensive survey of the anatomy, physiology and biochemistry of the endocrine glands (lectures only). Pre: admission to medical school or consent of instructor.
- 603 Organ Structure and Function (5) I** Hong (Coordinator)
Integrated course (lectures only) for medical and graduate students, covering the fine structure and function of the major organ systems. Pre: admission to medical school or consent of instructor.
- 604 Neuroscience (4) II** Diamond (Coordinator)
Integrated course of lecture and laboratory instruction for medical students in anatomy and physiology of the nervous systems. Pre: admission to medical school or consent of instructor.
- 605 Microanatomy Laboratory (2) I** Jacobs (Coordinator)
For 601 and 603. Pre: admission to medical school.

- 606 Endocrinology and Reproduction Laboratory (1) II** Bryant (Coordinator)
For 602. Pre: admission to medical school or consent of instructor.
- 607 Physiology Laboratory (1) I** Moore (Coordinator)
For 603. Pre: admission to medical school or consent of instructor.

Community Health (PH)

(Affiliate from the School of Public Health)

Professors: Banta, Bennett, Burbank, Chung, Gilbert, Golden, Grossman, Matsumoto, Michael, Mytinger, O'Rourke, Park, Pion, Schwartz, Voulgaropoulos, Worth.
Specialists: Bertellotti, Suehiro, Wiederholt.
Associate Professors: Armstrong, Bell, Clark, Conway, Davenport, Dickinson, Furuno, Hankin, Hayakawa, Larkin, Lenzer, Lim, Marvit, Smith, Wolff, Young.
Associate Specialists: Frank, Stewart.
Assistant Professors: Chun, Coffman, Johnson, Stringfellow, Stein.
Assistant Specialists: Conway, Ho, Manner, O'Reilly.

The School of Public Health provides instruction to students in the medical school and serves the academic function of a department of community health for the School of Medicine.

The following courses are part of the required curriculum for medical students:

- 695 Community Health Problems (v) I** Gilbert, Worth
Required for 1st-year medical students, elective for social work, public health, and nursing students (both senior honors and graduate students). Introduction to ascertainment and analysis of community health problems through supervised fieldwork of small interdisciplinary groups.
- 786 Community Health Concepts and Methods (2) II** Worth, Gilbert
Limited to and required for 2nd-year medical students. Epidemiologic and statistical implications of clinical cases presented by students. Introduction to research design and biostatistical methods. Selected topics in social and preventive medicine.

For other elective courses in second semester, see Public Health catalog. Special attention is drawn to PH 665 Epidemiologic Management of Chronic Diseases, an interdisciplinary course appropriate for second year medical students.

Genetics (Genet)

Professors: Ashton, Carson, Chung, Hunt, Mi, Paik, Rosenberg.
Clinical Professors: Halperin, Waxman.
Associate Professors: Bintliff, Rashad.
Associate Clinical Professor: Yokoyama.
Assistant Professors: Arakaki, Malecha, Trimble, Vann.

The department of genetics offers courses at both the undergraduate and graduate levels. Genetics 352 is for non-biologists who are interested in genetics because of its sociological implications. 451 and 452 are designed for science majors who require a comprehensive course and laboratory covering major principles. Premedical, pre dental and preveterinary students may register for 611 Human Genetics, in the second semester.

The department offers the M.S., both plan A and plan B. Plan B is designed for those students who desire graduate training in human genetics but do not plan to become professional geneticists; for example, medical students registered under the 3-year option, medical laboratory technologists, and other paramedical professionals.

The Ph.D. may be taken without first acquiring the M.S., or may be taken after the plan A, M.S.

- 352 Genetics, Evolution and Society (3) II** Trimble
The role of genetics in evolution, medicine, behavior, plant and animal breeding, and technology; its impact on today's society.
- 451 Concepts of Genetics (3) I** Ashton, Paik
Presentation of genetic concepts at an advanced undergraduate level; aspects of genetic transmission, recombination, gene action, and mutation; population and evolutionary genetics. Examples drawn from microorganisms, plants and animals including man. Pre: Biol 220 and 250 or equivalent.
- 452 Genetics Laboratory (1) I** Vann
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.
- 604 Evolutionary Genetics (2) II** Carson
Genetic changes involved in the processes of adaptation and in species formation. Pre: Biol 220 and 250 or equivalent. (Alt. yrs.; not offered 1972-73.)
- 611 Human Genetics (2) I, II** Rashad
Principles of genetics for medical students, and premedical and pre dental students. Because of limited facilities preference will be given to medical students in the first semester, and to other students in the second semester. Pre: registration in medical school or consent of instructor.
- 618 Cytogenetics (3) II (2L, 1Lb)** Arakaki, Rashad
Correlation of genetic and cytological phenomena. Pre: 451, Bot 418 recommended. (Alt. yrs.; not offered 1972-73.)
- 625 Advanced Topics in Genetics (2) I, II** Trimble
Advanced treatment of frontiers in genetics. Pre: graduate standing in genetics or consent of instructor. 1972-73: Human Population Genetics.
- 650 Population Genetics (3) II** Paik
Mathematical, observational, and experimental results bearing on effects of mutation, selection, and systems of mating on distribution of genes. Genetic analysis of non-experimental populations. Pre: 451; elements of calculus, probability and statistics. (Alt. yrs.; offered 1972-73.)
- 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) II** 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 1972-73.)
- 671-672 Techniques in Human Genetics (3-3) I, II** Rashad, Vann
Laboratory training in procedures used in diagnosis of genetic diseases, cytogenetics, immunogenetics and dermatoglyphics.
- 699 Directed Research (v) I, II**
Pre: graduate standing; consent of instructor.

- 702 Human Polymorphisms and Immunogenetics (4) II (2L, 2Lb)** Ashton, Vann
Lectures and laboratory sessions on blood groups, immunoglobulins, other serum proteins, enzymes, pharmacogenetics and phenotypic polymorphisms. (Alt. yrs.; not offered 1972-73.)
- 712 Genetic Risk Analysis (3) I (2L, 1Lb)** Chung, Mi
Lecture and laboratory sessions in probability, segregation frequency, pedigree analysis of monogenic and multifactorial characters, empirical risks, twin studies, heritability, and aspects of population genetics. (Alt. yrs.; offered 1972-73.)
- 800 Thesis Research (v) I, II**
Pre: consent of instructor.

Graduate Courses in Genetics Offered by Other Departments

- Animal Sciences 652 Quantitative Genetics
Biochemistry 710 Special Topics in Enzymology
Biochemistry 740 Advanced Protein Chemistry

Medicine (Med)

- Professors:* Blaisdell, Brodsky, Gardner.
Clinical Professors: H. L. Arnold, Jr., Kamin, Moser.
Associate Professors: T. K. Lin, Miller, Siemsen, Tashima.
Associate Clinical Professors: Allison, A. S. Anderson, Beddow, Berk, Botticelli, Chesne, H. H. Chun, J. H. Davis, Gilbert, Goto, Hartwell, R. Ho, Holmes, R. Jim, Kagan, J. Kim, R. Kim, Korsak, W. Lee, Levin, C. M. Lum, Lumeng, Morris, Nordyke, Oishi, Orbison, Palmer, R. Smith, Yim, Yokoyama.
Assistant Professors: G. Ching, Frankel, Gulbrandsen.
Assistant Clinical Professors: R. W. Anderson, Andrew, J. Ball, Canete, W. Chang, Durden, R. Evans, Fardal, Fergusson, B. Fong, H. Fong, Fontenot (Samoa), Fryer, Garretson, Globber, G. Goldstein, N. Goldstein, R. Goldstein, Goshi, Hellreich, Helman, S. Horio, James, L. Johnson, Keller, Keenan, Kobashigawa, T. Lau, E. Lee, G. Lewis, Limber, Long, Materson, Mehta, Miyahira, Neilson, Y. Oda, Ogata, Okihira, Popper, Scaff, Schroffner, D. Seto, Suzuki, Uy, Wakai, Watt, Weiner, E. Wong, E. Yamada.
Clinical Instructors: Akina, Z. Bristol, Cheng, DeJoya, Dewey, Eith, Foti, Gresham, Hirasa, Kaneshiro, J. Moore, Palma, Peskoe, Yount.

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 History-Taking and Physical Examination (2) I Gardner

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 sub-specialists as appropriate. For first-year students. Pre: consent of instructor.

602 History-Taking and Physical Examination (2) II Gardner

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.

611-612 Clinical Judgment (3-3) Yr. Gardner

Clinical problem-solving with collection of data analyses of symptoms, signs, laboratory data and previous therapy; pathogenetic formulation; plan of management; oral case presentations; sub-specialty sessions. Instruction coordinated with concurrent courses. For second-year students. Pre: 602, consent of instructor.

671-672 Clinical Conference (1-1) Yr. Mamiya, Nishijima, McDermott, Gardner

Presentation of patient-cases and discussion in depth by specialists, including visiting professors and non-clinical scientists with emphasis on multi-factorial determinants of illness, and the importance of quantitation in diagnostic and therapeutic evaluation. For second-year students, hospital housestaff and faculty. Pre: 602, consent of instructor.

699 Directed Research (v) 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 (ObGyn)

Clinical Professors: Nishijima, Pion, Tom.

Associate Professors: McCorriston, Odom.

Associate Clinical Professors: Berger, G. Goto, Matsuoka, McCallin, Ohtani, Saiki, Sakimoto, Vaughn, J. T. S. Wong.

Assistant Professors: Hale, Hindle, Krieger, M. Seto, Terada.

Assistant Clinical Professors: Crim (Samoa), Fleming, Herrick, Hunter, G. Li, Mundt, Nakagawa, H. Nakata, Ogami, Oshiro, Sprague, Tseu, Valpey, Vu, Winn.

Instructor: Davi.

Clinical Instructors: Aiu, Brock, Lee, F. C. Li, McNamee, Shimomura, Takemoto, Teruya.

Clinical Teaching Assistants: Abbott, Berman, Chongsiriwatana, Cote, Joiner, Mitchell, Reich.

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.

Pathology (Path)

Professors: Haber, Hartroft, Hokama, Nishimura, Porta, Skinsnes.

Clinical Professors: Stemmermann, Will.

Associate Professors: Lumeng, Yang.

Associate Clinical Professors: Bennett, Hardman, Uemura.

Assistant Professors: Kobara, Paik.

Assistant Clinical Professors: Conley, Fukunaga, Hayashi, Kelley, Namiki, Sprague.

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. Systematic pathology, which is primarily concerned with the classification, causation and clinical correlation of diseases, will be offered 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 (4-4) 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 clino-pathologic correlation of diseases. Pre: consent of instructor; gross human anatomy and histology; human physiology and biochemistry. Pre: for 602: 601.

625 Advanced Topics in Pathology (v) I, II Staff

Selected topics in general and experimental pathology in the areas of experimental oncology, granulomatous, hepatology and nutritional diseases, immunobiology, and advanced anatomic pathology (surgical and autopsy pathology). Pre: consent of instructor.

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 (v) I, II Staff

Section of Pediatrics

Professor: D. Char.

Clinical Professors: Marshall, Waxman.

Associate Professors: Bintliff, Hammar.

Associate Clinical Professors: Bass, Bond, Choy, L. T. Chun, Eckles, Ewing, Hasegawa, Kometani, Nance, Peyton, Roth, Sia.

Assistant Professors: Osher, Philip, Starbuck.

Assistant Clinical Professors: Adler, Bart, Cashman, J. Chang, Y. Ching, Cook (Samoa), Hagino, R. Ho, W. Moore, Nagao, Nakamura, Oren, Reddy, Sakamaki, Sexton, Steele, M. Tottori, Watt.

Instructor: Jacang.

Clinical Instructors: Choan, W. Fisher, Huitt, Kagihara, Kaye, Langeburg, Lufkin, Mertz, Nakata, Natino-Badua, Nekonishi, O'Hara, Soo, Tenby, H. Tottori, R. J. C. Wong, Yamaoka, A. B. Yee, H.I. Yim.

Clinical Teaching Assistants: Ang, Caldwell, Choi, Flood, Goy, Higer, In, Reardon, Tan, Wilson, J. S. T. Young.

The section of pediatrics provides teaching in pedi-

atrics, 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: Casarett, Furusawa, Lum, Norton, Shibata.

Clinical Professor: Anderson.

Associate Professors: Chou, Lenney, Miyahara.

Associate Clinical Professors: Palmer, Tabrah.

Assistant Professors: Ramanathan, Read.

Assistant Clinical Professors: Cashman, Lee.

Junior Pharmacologists: Casarett, Conklin, Hylin, 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 student 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.

The departmental policies in regard to examinations which are optional to fields of study are as follows: (1) general examination for the M.S. degree: not required, (2) final examination for the M.S. degree: required, (3) Ph.D. qualifying examination: not required. A minimum of 30 credits of course work is required for the Plan A, M.S. degree program of the department with 6 credits being derived from the thesis research work.

201 Introduction to General Pharmacology (2) I (2L) Lum, Staff

Drugs will be discussed with emphasis on sites and mechanism of action, toxicity, fate and uses of major therapeutic agents. Pre: mammalian physiology or consent of instructor.

600 Pharmacology: Actions and Uses of Drugs (7) II (6L, 1Lb) Lum, Staff

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. Pre: consent of department.

613-614 Seminar in Pharmacology (1-1) Yr. Lenney

Reporting and discussion of current research in pharmacology.

615 Toxicology (4) I or II (3L, 13-Hr Lb) Casarett

Basic description of toxicology according to systems and classes of substances. Principles of toxicology stressed in context with practical biomedical toxicological problems. Pre: consent of instructor. (Alt. yrs., not offered 1972-73.)

631 Medicinal Chemistry & Structure-Activity Relations (3) I or II (3L) Norton

Organic chemistry of substances of medicinal value based on chemical classification. Chemical and physical properties will be related to pharmacological action. Pre: organic chemistry, Pharm 600. (Alt. yrs.; not offered 1972-73.)

- 634 Molecular Pharmacology (2) I or II (1L, 1Lb) 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.; not offered 1972-73.)
- 635 Experimental Chemotherapy (1) I or II (1L) Furusawa**
Use of anticancer, antiviral and immunosuppressive drugs at clinical and investigative levels evaluated from the experimental bases of chemoprophylaxis and chemotherapy. Current articles and present work in the department introduced and discussed. Laboratory exercises optional.
- 637 Autonomic Nervous System Pharmacology (2) I or II (2L) Lum, Read**
Emphasizes 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 stressed. Pre: consent of instructor. (Alt. yrs.; offered 1972-73.)
- 639 Advanced Cardiovascular Pharmacology (2) I or II (1L, 1Lb) Shibata**
Actions of drugs on the cardiovascular system 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. (Alt. yrs.; offered 1972-73.)
- 640 Neuropharmacology (2) I or II (1L, 1 3-Hr Lb) Miyahara**
Concerns the physiology and pharmacology of the peripheral and central nervous systems with particular emphasis on the chemistry of synapses (neurohumoral transmitters) and on the modes of synaptic transmission. Mechanisms by which drugs affect the nervous system and how drugs can be employed as tools to elucidate mechanisms of functions also stressed.
- 641 Pharmacological Techniques (v) I, II Lum, Staff**
Program in which new graduate students of the department will rotate through laboratories of several faculty members in order to become familiar with research projects and techniques which are ongoing within the department. Student will spend approximately one month in each laboratory. Pre: permission of the department.
- 699 Directed Research (v) I, II**
- 800 Thesis Research (v) I, II**

- 511 Introduction to Human Physiology (5) I (3L, 1 2-Hr L-Lb) Gillary**
Review of human physiology intended primarily for associate degree candidates in the School of Nursing.
- 603-604 Seminar in Physiology (1-1) Yr. Whittow, Staff**
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: Biomd 601, 603, or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 606 Comparative Physiology of Thermoregulation (3) II (2L, 1Lb) Whittow**
Physiological and behavioral mechanisms by which the major groups of animals, including man, regulate 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: Biomd 603 or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 607 Physiological Adaptation to the Environment (2) I (2L) 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: Biomd 601, 603, or consent of instructor. (Alt. yrs.; offered 1972-73.)
- 608 Advanced Renal Physiology (2) II (2L) 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 role of the kidney in maintaining homeostasis. Pre: Biomd 601, 603, or equivalent. (Alt. yrs.; offered 1972-73.)
- 609 Cardiovascular and Respiratory Physiology (3) I (2L, 1Lb) Lin**
Advanced course in cardiovascular and respiratory physiology with special emphasis on applications of control theory and on interactions between cardiovascular and respiratory systems. Pre: Biomd 601, 603, or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 610 Advanced Physiology Laboratory (2) II (2Lb) Lin**
Selected physiology experiments for graduate students to illustrate important principles of Biomd 601 and 603. Pre: consent of instructor.
- 699 Directed Research (v) I, II Staff**
- 701 Hyperbaric & Diving Physiology (3) II (2L, 1 3-Hr Lb) Hong, Whittow, Moore**
Physiologic regulation and response in diving and the wet and dry hyperbaric environment. Course includes physiology of both man and diving mammals. Regulation and response covered at various levels of organization, from organ systems through cellular mechanisms. Pre: Biomd 601, 603, or consent of instructor.
- 800 Thesis Research (v) I, II**

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Physiology (Physl)

Professors: Batkin, Hong, Rogers, Whittow.

Clinical Professor: Pegg.

Associate Professors: Koide, Moore, Rayner, Tracy.

Assistant Professors: Gillary, Lin, Smith.

Junior Researcher: Setliff.

Research Associates: Hayashi, Szekerczes.

The department of physiology offers undergraduate and graduate courses and provides a major input to those interdisciplinary courses (Biomd numbers) which are required for first year medical students. 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 the graduate level Biomd courses, basic courses in related sciences (or demonstrated competence in these fields) plus advanced 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.

In addition to the specific courses above, the department is involved in the following interdisciplinary Biomedical Science (Biomd) courses at the undergraduate and graduate levels.

Biomd

- 301-302 Introduction to Human Biology (4-4) Yr.**
601 Cell Structure and Function (2) I
602 Endocrinology and Reproduction (2) II
603 Organ Structure and Function (5) I
604 Neuroscience (4) II
605 Microanatomy Laboratory (2) I
606 Endocrinology and Reproduction Laboratory (1) II
607 Physiology Laboratory (1) I

Psychiatry (Psyty)

Professors: Bolman, W. Char, Marezki, McDermott.
Clinical Professor: K.Y. Lum.
Associate Professor: Bolian.
Associate Clinical Professors: Cody, Cottington, Eisler, Florine, Hannum, Kemble, Markoff, Schnack.
Assistant Professors: Kinzie, Stewart.
Assistant Clinical Professors: Adams, Amjadi, Bart, Devereux, Edel, Eliashof, Fisher, Gramlich, Haertig, Hinman, Jacobs, Lombard, Marvit, Moulun, Ponce, Pope, Roat, Rock, Sakamaki, Stojanovich, Watanabe, Weaver.
Instructor: Hansen.
Clinical Instructors: Bickel, Boyar, Childs, De Tata, Grant, Golden, Kostyuk, D. Lum, Pierson, Rumbaugh, Schramel, Taylor, Tillich, Trockman.
Assistant Specialist: Thompson.
Clinical Teaching Assistants: Abbott, Akina, Arensdorf, Goldberg, Hallee, Hawk, Magid, Patel.

The department of psychiatry provides teaching, training, and service and carries on research in the field of psychiatry and behavioral sciences.

- 607 **Introduction to Human Behavior (2) I** Marezki, McDermott, Staff
 Genetic, biological, familial, social and cultural forces as well as endopsychic forces considered in shaping the personality and behavior of man. Special emphasis placed on its great influence on the practice of medicine and the doctor-patient relationship. For first-year medical students. Pre: consent of instructor.
- 170 616 **Psychopathology (2) II** McDermott, Char, 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 medical students. Pre: consent of instructor.
- 681 **Cross-Cultural Psychiatry (1) II** Marezki
 Elective seminar in the cultural determinants of human behavior and illness. Attention given to historical foundations, issues, research strategies, theories and empirically-derived findings regarding family life, child rearing, religion, acculturation, and world view. Pre: consent of instructor.
- 686 **Substance Abuse (2) I, II** Char
 Comprehensive interdisciplinary clinically oriented course in problems of alcohol abuse and drug abuse for all graduate students in the College. In addition to seminar series, there will be individual field placement and/or involvement in research projects. Pre: medical students or other eligible students with consent of instructor. (Offered Spring 1973.)
- 699 **Directed Research (v) I, II** McDermott, Staff

Section of Radiology

Associate Clinical Professors: Boyer, Henry, Katz, Kendig, Liese.
Assistant Professor: R. Moore.
Assistant Clinical Professors: T. Brown, Brust, DiMauro, P.J.W. Lee, Quinlan.

The section of radiology provides teaching in radiology and radiotherapy for students and house officers.

Section of Surgery (Surg)

Professors: Batkin, Hong, Judd, Mamiya, McNamara.
Clinical Professors: F. McDowell, L.Q. Pang, O.D. Pinkerton, Waite.
Associate Professors: Kokame, Tanoue.
Associate Clinical Professors: Ceccarelli, Chinn, Cloward, Freeman, Gordon, Hutchinson, Larsen, Shim, Strahley, Watson, R. Wong.
Assistant Clinical Professors: Ballfour, W. Chang, Faulkner, Gullledge, Hata, Hay-Roe, Iritani, E. Jim, Kistner, Koike, E. Lau, Lowrey, Lum, Ma, Mason, Mookini, Morgan, H. Pang, Pavel, R. Peyton, Richardson, Scully, Tom, L. Wong.
Clinical Instructors: Bacon, Bergmanis, R. Brault, Chalmers, C. Chang, Chee, Chun-Hoon, Davis, Fernandez, Goebert, Ing, Izawa, V. Jim, Kong, R.C. Lee, Mori, Oda, Oishi, Omura, H. Oshiro, R. Pang, Sakai, Simmons, Smith, Sugiki, Turner (Samoa), Won, Young.

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.

Tropical Medicine & Medical Microbiology (TrMed)

Professors: Desowitz, Gaines, Halstead.
Clinical Professor: Rosen.
Associate Professors: Marchette, Siddiqui.
Associate Clinical Professor: Hathaway.
Assistant Professors: Berman, Diwan, Gubler, Schnell.
Assistant Clinical Professors: Beales (Samoa), Cutting, Kuberski, Wallace.
Instructor: Chow.
Clinical Instructor: Falkler.

The department of tropical medicine and medical microbiology provides instruction in medical microbiology and tropical medicine for second year students in medicine, in laboratory microbiology for graduate students in public health, and carries on research in the field.

Advanced work for the master's or doctor's degree is carried on under an interdisciplinary program with the School of Public Health.

- 605 **Tropical Medicine and Medical Microbiology (6) I** Desowitz, Gaines
 Instruction in laboratory and principles of medical bacteriology, virology, immunology, mycology, parasitology for second-year medical students. Pre: consent of instructor.
- 667 **Laboratory Aspects of Infectious Diseases in the Pacific Area (2) II** Desowitz, Gaines, Halstead
 Lectures and practical training in public health aspects of laboratory techniques relating to infectious diseases in the Pacific Basin. Three sections: 1) bacterial diseases, 2) parasitic diseases, 3) viral diseases. Pre: 666 and 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 associate degree 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 nursing 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. In addition to an area of specialization, each student selects a functional area of concentration in either teaching or nursing service administration.

Admission and Degree Requirements

Applicants for the dental hygiene program must meet University admission requirements.

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.

Applicants for the baccalaureate degree in nursing program must meet the University admission requirements. Further selection is made on the basis of scores

on selected tests, quality of high school work, a grade-point average of 2.3 or better in previous college work and references.

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 125 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 67 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 associate degree and baccalaureate programs, each faculty member is assigned 4 to 8 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 his departmental adviser or because of the specific nature of his problem, he 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 65 credits with cumulative grade-point ratio of 2.3 in the liberal arts, including the following:

Pre-Nursing Requirements

<i>General Requirements</i>	12
English 100, 110, 120, 130, 140, 150, 160, or 170 (one course)	
History 151-152 or 161-162	
Mathematics or Philosophy 210 (or other course in Quantitative and Logical Reasoning)	
<i>Electives</i>	6
<i>Humanities</i> (One course in Group I; two courses from Group II or III)	9
I. English 251, 252, 253, 254, 255, or 256	
II. Phil 100, 200 Rel 150, 200	
III. Art 101, 270, 280 Music 160, 170, 180, 265, 266 S.S. 133, I.S. 203 Am. Studies 201, 202 Asian Studies 310 Speech Communication 145 or 200	
<i>Social Sciences</i>	15
Human Development 231-232	
Psych 100	
Soc 100	
Social Science Elective	
<i>Natural Sciences</i>	23
Zoology 101	
Chem 113 and 115	
Micro 130 and 140	
Biochem 341	
Biomedical Science 301-302	
Total	65

The pre-nursing requirements will also satisfy the general requirements of the University of Hawaii.

Upper Division Requirements

The upper division curriculum in professional nursing consists of four 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 listed below.

Area Requirements

I. <i>Natural Sciences</i>	3
Food and Nutrition 385 (3)	
II. <i>Nursing</i>	48
Nursing 301-302 (3-3)	
Nursing 305-306 (7-7)	
Nursing 353 (3)	
Nursing 401-402 (3-3)	
Nursing 405-406 (8-8)	
Nursing 454 (3)	
III. <i>Electives</i>	9
Electives from Anthropology, Psychology, and Sociology recommended.	
Statistics suggested for students planning graduate study.	
Total	60

First Year			
First Semester		Second Semester	
	Credits		Credits
English 100-170	3	Micro 130 and 140	4
History 151 or 161	3	History 152 or 162.....	3
Math Phil 210	3	Zoology 101	4
Chemistry 113 and 115	4	Sociology 100	3
Psych 100	3	Elective	3
	<u>16</u>		<u>17</u>
Second Year			
Biochemistry 341	3	Human Development 232	3
Human Development 231	3	Biomedical Science 302	4
Biomedical Science 301	4	Humanities Elective	3
English 251, 252, 253, 254, 255 or 256	3	Social Science Elective	3
Humanities Elective	3	Elective	3
	<u>16</u>		<u>16</u>
Third Year			
Nursing 301	3	Nursing 302	3
Nursing 305	7	Nursing 306	7
Nursing 353	3	Food & Nutrition 385	3
Upper Division Elective	3	Upper Division Elective	3
	<u>16</u>		<u>16</u>
Fourth Year			
Nursing 401	3	Nursing 402	3
Nursing 405	8	Nursing 454	3
*Statistics Course or Upper Division Elective ...	3		
	<u>14</u>		<u>14</u>

*Statistics is required for University of Hawaii graduate programs and for most other University graduate programs.

Program for Registered Nurses

Registered nurses who have completed the general and pre-nursing requirements listed above with a grade-point average of 2.3 or better may enroll in the professional nursing 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 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 "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		Second Year	
First Semester	Credits	Second Semester	Credits
Microbiology 130	3	Psychology 100	3
Physiology 101	5	Human Development 232	3
Human Development 231	3	Sociology 100 or equiv.	3
Nursing 53	5	Nursing 54	7
	<u>16</u>		<u>16</u>
Second Year		Third Year	
Third Semester	Credits	Fourth Semester	Credits
English 100 or equiv.	3	Elective	3
Elective	3	Elective	3
Elective	3	Nursing 56	8
Nursing 55	7	Nursing 58	2
	<u>16</u>		<u>16</u>

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		Second Semester	
First Semester	Credits	Second Semester	Credits
Chemistry 113	3	Chemistry 114	3
Chemistry 115	1	Chemistry 116	1
Dental Hygiene 121	2	Dental Hygiene 140	2
Dental Hygiene 131	3	Dental Hygiene 150	1
English 100	3	Dental Hygiene 166	1
Physiology 101	5	Food & Nutrition 285	3
		Microbiology 130	3
		Microbiology 140	1
Total	<u>17</u>	Total	<u>15</u>
Summer Session*			
		Psychology 100	3
		Speech 145	3
			<u>6</u>
Second Year		Third Year	
Pharmacology 201	2	Dental Hygiene 270	3
Dental Hygiene 251	2	Dental Hygiene 272	3
Dental Hygiene 267	2	Dental Hygiene 280	5
Dental Hygiene 269	2	Sociology 100	3
Dental Hygiene 279	5		
Dental Hygiene 281	2		
Total	<u>15</u>	Total	<u>14</u>

*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.

Dental Hygiene (DH)

Associate Professor: Nobuhara.

Assistant Professors: Koga, Quong, Tanaka.

Instructor: 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 (3L, 2Lb)

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 101 or concurrent registration.

140 Introduction to Dental Prophylaxis Procedures and Techniques (2) II (1L, 2Lb)

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**

Fundamentals of dental histology and embryology. Pre: Chem 113, 115, Physl 101.

166 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 (2L, 1Lb)

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 (2L, 1Lb); (3) II (3L, 3Lb)

Principles and procedures used in dentistry. Subject areas include dental materials, operative dentistry, prosthodontics, orthodontics, periodontics, pedodontics, endodontics, oral surgery, anesthesiology, 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 economics involved; theory and practice of preventive dentistry with emphasis upon community dental health.

279-280 Dental Hygiene and Prophylaxis (5-5) I, II (3L, 1 3-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 (2L, 2Lb)

Lecture-laboratory course in study, technique, use and application of roentgen ray to dentistry.

Nursing (Nurs)

Professor: Anderson.

Associate Professors: Bermosk, Gross.

Assistant Professors: Chase, Felton, Frank, Kim, Kubo, Love, Norby, Shimamoto.

Instructors: Affonso, Burkhalter, Choy, Dunwell, Fong, Menikheim, Okamoto.

Registration is restricted to students preparing for nursing except by special permission.

301 Nursing Core I (3) I

Basic concepts common to all areas of nursing practice which provide basis for understanding man as a system and his usual responses to the health-illness phenomena. Focus on patient system and introduction to the nurse-patient system. Interventions to maintain system stability including introduction to nursing process and nurse-patient relationships. Pre: acceptance into the department of professional nursing.

302 Nursing Core II (3) II

Concepts related to system in threatened stability or instability, applicable in all areas of nursing practice. Pathophysiologic and psychologic processes which lead to threatened stability or instability. Nursing interventions to restore system stability. Pre: 301, 305.

305 Clinical Nursing I (7) I

Clinical applications of basic concepts introduced in 301 and introduction to basic nursing skills. Planning and implementation of nursing care using the nursing process to maintain man's system in balance in face of illness.

First half of 305 in the clinical laboratory focuses on learning basic nursing skills in a general medical-surgical setting. Second half of 305 introduces community health nursing experience and offers clinical practice in one of three areas: adults, children, and maternal-newborn. Focus on application of core concepts in the specific area and concurrent clinical content describing variables specific to each area which influence nursing care. Pre: acceptance into the department of professional nursing.

306 Clinical Nursing II (7) II

Clinical application in remaining two clinical areas (of three described in 305) and an introductory experience in a mental health setting with focus on development of a therapeutic nurse-patient relationship. Use of nursing process to maintain and/or restore system stability. Pre: 301-302, 305.

353 Perspective on the Nursing Profession (3) I

Study of the nursing role and the occupation of nursing. Focus is on student's view of his chosen field and developing image of himself as a becoming professional. Historical, legal, and sociological factors influencing the role and self-concept of the nurse examined.

399 Directed Reading or Research (v) I, II

Limited to juniors and seniors in nursing.

401 Nursing Core III (3) I

Basic core concepts related to the health care system as they affect patients/families such as primary, secondary, tertiary care. Nursing interventive techniques such as the multi-disciplinary approach to care and health teaching. Pre: 301-302 or consent of instructor.

402 Nursing Core IV (3) II

Basic core concepts related to the nurse in the care of groups of patients. The use of the group process, leadership principles in achieving quality nursing care for patients. Pre: 301-302, 401 or consent of instructor.

405-406 Clinical Nursing III and IV (8-8) Yr.

Clinical applications of core concepts in Nursing 401-402. Two semester course with progressively advanced practice in assessment, planning intervention and evaluation of nursing problems with patients, families and groups of patients. Clinical areas of practice

- in mental health, community health and medical-surgical settings. Demonstration of leadership concepts through quality patient care. Pre: 305-306.
- 454 Nursing in the Changing Social Order (3) II**
Study of nursing in its relationship to the overall health delivery system. Social and economic influences on health care and implications of these for nursing practice and leadership.
- 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** **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.
- 615 Interaction Processes (3) I, II** **Bermosk, Chase**
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** **Felton**
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: 615, 655.
- 624 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. (Not offered 1972-73.)
- 626 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.
- 655-656 Advanced Psychiatric Concepts (3-3) I, II**
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.
- 731 Advanced Nursing Concepts II, Mental Health-Psychiatric Nursing (4) I** **Bermosk, Chase**
Exploration of group therapy concepts and formulation of nursing interventions into maladaptive group behaviors; milieu therapy and therapeutic community. Pre: 622, 656, Soc 465.
- 732 Advanced Nursing Concepts III, Mental Health-Psychiatric Nursing (4) II** **Bermosk, Chase**
Exploration of family therapy concepts and formulation of nursing interventions into maladaptive family behaviors, community, international and cross-cultural psychiatry. Pre: 731.
- 733 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: 624, Soc 465, PH 610. (Not offered 1972-73.)
- 734 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: 733. (Not offered 1972-73.)
- 735 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: 626, Physiol 602.
- 736 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: 735.
- 743 Concepts of Leadership in Nursing (3) I or II** **Norby**
Concepts of behavioral sciences applicable to nursing leadership, development of leadership skills, effect of leadership styles on group development.
- 747 Curriculum Development (3) I or II** **Gross**
Development of philosophy and objectives for educational programs, curriculum design, content, teaching methods and evaluation.
- 748 Seminar and Practicum in Teaching/Administration (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.
- 790 Directed Study or Research (v) I, II**
Directed study of problems related to nursing theory and practice. Open only to 2nd-year graduate students.

Technical Nursing (TN)

Associate Professor: Aiu.

Assistant Professors: Grant, Johnson, Lo, Najita.

Instructors: Boggs, Goo, Grippin, Horton, Layton, McFarland, Uyehara.

53 Nursing I (5) I

Study of basic principles of nursing and fundamental skills in patient care. Opportunities to practice skills provided in School of Nursing laboratory and other health agencies in the community. 3 hours lecture and 8 hours laboratory per week.

54 Nursing II (7) II

Study of child-bearing and child-rearing periods of man's life cycle using family-centered approach. Opportunities provided to care for patients in variety of maternal-child facilities. 3 hours lecture and 12 hours laboratory per week. Pre: 53.

55-56 Nursing III and Nursing IV (7-8) Yr.

Study of major physical and mental health problems of adults using the needs approach. Opportunities provided to care for patients in medical-surgical and psychiatric facilities. 55: 3 hours lecture and 12 hours laboratory per week. 56: 3 hours lecture and 15 hours laboratory per week. Pre: 54.

58 Nursing V (2) II

Study of development of nursing, future trends in nursing and socio-economic influences on nursing. To be taken concurrently with 56. 2 hours lecture per week.

School of Public Health

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The School of Public Health, one of 17 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's objectives are not only to prepare persons who will conduct research and contribute to the enlarging base of knowledge in the basic sciences pertinent to public health. 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 are: administration (including comprehensive health planning, health services administration, public health administration); environmental health (including environmental management, environmental sanitation, public health engineering); international health (including international health and population/family planning studies); personal health services (including maternal and child health/mental retardation, mental health, gerontology); public health education; quantitative health sciences (including biostatistics, epidemiology, public health laboratory, 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 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. 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 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 students with a research-oriented education in a specific area of emphasis. A degree candidate must have at least a bachelor's degree from an accredited institution; his undergraduate record should show adequate preparation in the biological, physical and social sciences. Additionally, at least two years' work experience in a health or related field is desirable. 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 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 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: Banta, Bennett, Burbank, Chung, Gilbert, Golden, Grossman, Matsumoto, Michael, Mytinger, O'Rourke, Park, Pion, Schwartz, Voulgaropoulos, Worth.

Specialists: Bertelotti, Suehiro, Wiederholt.

Associate Professors: Armstrong, Bell, Clark, R. Conway, Davenport, Dickinson, Furuno, Hankin, Hayakawa, Larkin, Lenzer, Lim, Marvit, Smith, Wolff, Young.

Associate Specialists: Frank, Stewart.

Assistant Professors: Chun, Coffman, Johnson, Stringfellow, Stein.

Assistant Specialists: D. Conway, Ho, Manner, O'Reilly.

Lecturers: Kau, Tokuyama.

Visiting Faculty: Beck, McKenzie-Pollock.

Students in fields other than public health, including unclassifieds, generally should obtain the instructor's approval prior to registration.

601 Medical Care Systems (3) I, II **Staff**
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 **Staff**
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) II **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 **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.

607 Seminar in Health Services Administration (1)
Advanced study of current issues and problems related to social and bureaucratic organization of health services, direction of health programs, and planning and integration of health services. (Not offered 1972-73.)

609-610 Public Health Organization and Administration (3-3) Yr.
Emphasizing problem-solving approaches and interdisciplinary perspectives, participants consider the nature of man and his environment, and the interactions of them as they affect man's health. In groups small enough to permit individualization, materials studied include techniques of problem diagnosis, measurement, and of organization, implementation and evaluation of community response. Current, emerging and future public health problems explored, and innovative techniques and the leadership and commitment needed to solve such problems sought. (Not offered 1972-73.)

611 Information Systems and Planning (3) I, II **Larkin**
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) I, II **Staff**
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.

614 Political Aspects of Policy Planning (3) I **Povey**
Political aspects of policy planning, including 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; utilization of planning processes in effecting policy changes.

616 Basic Concepts of International Health (3) I **Banta, 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 **Banta, 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.

623 Behavioral Science Basis of Mental Health (3) I **Stein**
Presentation of the current state of social science-public health concepts used in developing model for understanding basic issues in mental health and illness. Approach is illustrative and provides frame of reference in areas as brain function, learning, group dynamics, etc., for man's relationship to his environment. Background provided will be helpful to students taking other mental health courses. Pre: consent of instructor.

624 Community Mental Health (3) II **Marvit**
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.

625 Mental Health Aspects of Population and Its Control (3) I, II **Stein**
How population size, change and density affect behavior. Animal and experimental studies. Population control behavior: studies of attitude and personality differences between contraceptors and non-contraceptors. Considerations involved in making public policy regarding family planning and birth control. Pre: consent of instructor.

627-628 Epidemiology and the Assessment of Mental Health (2-2) Yr. **Marvit**
Review of studies utilizing epidemiologic method to understand and control mental illness; critical analysis of specific applications in areas such as alcoholism and suicide made concurrently with latest theoretical concepts in etiology of mental illness which resulted from epidemiologic research; methodology of classification of the ill and disabled; applications of data systems to services. For mental health majors who will work with comprehensive health planning.

629 Dental Public Health (2) II **Staff**
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, Staff**
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. For students who will be directing public health nutrition programs. Pre: PH nutrition majors or consent of instructor.
- 633 **Seminar in Public Health Nutrition (2) II** **Hankin**
Selected nutrition problems in preventive medicine and public health in Southeast Asia and Pacific Basin. Pre: PH nutrition majors or consent of instructor.
- 634 **Nutrition Problems and Applied Programs (2) I, II** **D. Conway, Staff**
Review of major health and social welfare problems with nutrition components and practical methods for solving them. Designed for health, social welfare and paramedical workers who will be using nutrition services or integrating nutrition in related activities. Pre: College of Health Sciences and Social Welfare majors or consent of instructor.
- 638 **Care of Long-Term Patients (3) II** **Stewart**
Interdisciplinary consideration of the process of care for the adult patient with chronic illness or disability. Emphasis on medical and social needs of long-term patients and how these needs are met in the community. For students in public health, medicine, nursing, social work and other health related fields.
- 639 **Gerontology (3) I, II** **Lenzer, Stewart**
Interdisciplinary consideration of the aging process, problems of the aged, attitudes toward old people. Considers how current knowledge about aging can be applied in various fields of professional practice. For students in public health, medicine, nursing, social work and other fields where practitioners deal with old people.
- 642 **Maternal and Child Health I (2) I** **Smith, Stringfellow**
Basic principles and practices in maternal and child health programs.
- 643 **Maternal and Child Health II (2) II** **Smith, Staff**
Advanced course in maternal and child health. Pre: 642.
- 644 **The Handicapped Child (2) II** **Smith, Stringfellow**
Problems and programs relative to children with handicapping conditions.
- 645 **Principles of Comprehensive Maternity Care (2) I** **Stringfellow**
Objectives and organization of comprehensive maternity care from public health viewpoint. Pre: 642 or consent of instructor.
- 646 **Health Services for the Mentally Retarded (2) I** **Furuno**
Etiology, prevention, management, community programs for mentally retarded. Pre: consent of instructor.
- 649 **Family Planning in Theory and Practice (3) I, II** **Lim**
Philosophy, techniques, organization of domestic and foreign family planning programs with concentration on practical problems of medical nature.
- 650 **Demography and World Population Problems (3) I** **Matsumoto**
Introduction to study and description of human populations, including recent trends in world populations. Pre: consent of instructor.
- 651 **Fertility and Reproduction (2) I, II** **Pion**
Historical and contemporary methods of fertility control. Pre: consent of instructor.
- 652 **Components of Population Control (2) II** **Matsumoto**
Ecological considerations of factors involved in human population dynamics. Pre: consent of instructor.
- 654 **Vital and Health Statistics (3) I** **Staff**
Analysis, evaluation, interpretation, uses of statistics as related to public health problems. Pre: college algebra or equivalent or consent of instructor.
- 655 **Biostatistics I (3) I** **Bennett**
More theoretical treatment than 654 of elementary statistical concepts and methods of analysis of vital and health statistics. Pre: Math 134 or equivalent or consent of instructor.
- 656 **Biostatistics II (3) II** **Bennett**
Extension of 654 and 655. Further treatment of estimation and tests of hypotheses, analysis of variance and covariance, multiple regression and correlation as related to public health problems. Pre: 654 or 655 or consent of instructor.
- 658 **Seminar in Biostatistics (1) II** **Staff**
Discussion of specific problems in biostatistics as related to public health.
- 659 **Techniques in Demographic Analysis (3) II** **Staff**
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. Pre: 654 or 655.
- 663 **Principles of Epidemiology (v) I** **Dickinson, Staff**
Epidemiological principles and methods. Basic research methodology course of the School. Variable credit offered depending on amount of work done by student. Pre: 654 or 655 (concurrent) or consent of instructor.
- 665 **Epidemiological Management of Chronic Diseases (2) II** **Banta**
Epidemiological factors which must be considered in designing programs for early detection, treatment, control and rehabilitation of chronic diseases. Designed for College of Health Sciences and Social Welfare students. Pre: 663 or 786 or consent of instructor.
- 666 **Epidemiology of Infectious Diseases in the Pacific Area (3) I** **Bell, Staff**
Systematic presentation of existing knowledge of important infectious diseases in Pacific area. Emphasis on epidemiology, ecology and public health concepts rather than clinical aspects of each disease. Pre: 654 or 655 or consent of instructor.
- 667 **Laboratory Aspects of Infectious Diseases in the Pacific Area (2) II** **Desowitz, Gaines, Halstead**
Lectures and practical training in public health aspects of laboratory techniques relating to infectious diseases of the Pacific Basin. Three sections: 1) bacterial diseases, 2) parasitic diseases, 3) viral diseases. Pre: 666 and 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.
- 673-674 **Education and Community Health (3-3) Yr.** **Grossman, Hayakawa**
Focuses on scope and nature of educational social action processes in public health. Major elements include theory and practice of work with community groups, educational planning and evaluation, application of social and behavioral science concepts to public health practice. Lab work includes neighborhood-based group project (1st semester) and individual placements in selected community areas (2nd semester). Emphasis throughout on health educator as community worker. 673-674 taken concurrently with 675 (1st semester) and 676 (2nd semester).
- 675 **Group Methods in Public Health (3) I, II** **Clark, Golden**
Consideration of theory and practice of group development as educational aspect of community public health efforts. Lecture on theory of group process and relevance of group behavior to personal and organizational change in public health settings. Lab on group process analysis and application of theory to group problem-solving.
- 676 **Communication Processes in Public Health (3) II** **Clark, Golden**
Consideration of communication theory and application to public health practice. Review of research in mass communication and related areas. Problems in selection and use of communication techniques with emphasis on communication processes in community and health organization contexts.



- 678 In-Service Training of Health Workers (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.
- 679 Educational Approaches to Public Health Problems (3) I, II** Clark, Grossman
General survey course for non-majors covering theory and practice of health education as applies to specific areas of public health concern. Two lectures and one seminar per week; seminars organized around student interests in application of educational approaches to specific problem areas like family planning, medical care, health maintenance and consumer education.
- 681 Environmental Health (3) I, II** 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.
- 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.** Chun
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 CE 638 or consent of instructor.
- 687 Sampling and Analysis of Solid Wastes (4) I** Chun
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.
- 695 Community Health Problems (v) I** Gilbert, Worth
Required for 1st-year medical students, elective for social work, public health or nursing students (both senior honors and graduate students). Introduction to ascertainment and analysis of community health problems through supervised fieldwork of small interdisciplinary groups.
- 701 Seminar in Medical Care Organization (2) II** Staff
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) I** Staff
Budget-making and the budgetary process in public and private health services; 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 systems and facilities.
- 704 Institutional Health Care Facilities (3) I** Conway
Principles and practices relating to organization and function of general and special hospitals, extended care facilities, nursing homes and other health facilities.
- 705 Non-Institutional Health Care Facilities (2)**
Organization and function of ambulatory care services including clinics, group practices, home care services, disease detection programs, laboratory and pharmaceutical services. Pre: concurrent enrollment in 604.

- 706 **Case Studies in Health Service Administration (2) I** **Conway**
Detailed analysis of selected administrative cases with view towards applying a wide spectrum of general principles and concepts of management to diagnosis and solution of administrative problems.
- 707 **Health Program Planning and Evaluation (3) I, II** **Michael**
Review of process, key sequential events and management tools involved in health program planning and evaluation as applied to governmental and non-governmental organization and health facilities; development of planning strategy, P-P-B selection of goals and objectives, selection of alternate tactics, documentation, executive decision, execution, feedback and evaluation. Pre: consent of instructor.
- 724 **Mental Abnormality and the Law (2) I** **Marvit**
Focus on behavioral types of individuals considered sick or immoral by majority of society's controlling elements, e.g. juvenile delinquency, the psychopath. Examination of current views on causation, treatment, prevention. Consideration of various types of mental abnormality creating characteristic problems for the legal and/or correctional process. Analysis of points of conflict between "role of psychiatry and rule of law" through study of clinical material. Visits to institutions and participation in psychiatric staff conferences. Pre: consent of instructor.
- 736 **Seminar on Health of the School-Age Child (2)**
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. (Not offered 1972-73.)
- 747 **Statistical Techniques in Epidemiological Research (3) II** **Bennett**
Introduction to design, data processing, analysis of epidemiological studies of non-infectious diseases with emphasis on computer applications.
- 749 **Sampling Techniques in Public Health (3) I** **Bennett**
Methods appropriate for sample surveys in public health and medical fields. Use of random, stratified, cluster or systematic sampling illustrated with current surveys of human populations.
- 765 **Evaluative and Action Research in Public Health (3) I** **Clark, Grossman**
Seminar for advanced students focusing on evaluative and action research in community health and social action programs. Consideration of case studies and development of concepts for effective action research within constraints of community settings. Development and testing of evaluative and action research proposals.
- 766 **Staff Development in Health Systems (3) II** **Golden, Hayakawa**
Consideration of concepts, skills and practice of organizational development and renewal as they apply to public health systems. Designed to develop competency in educational strategies of organizational diagnosis, planned change, intervention theory and practice and consultation required to assist in coping with changing goals and technology. Emphasizes design of training activities to meet system-wide needs of health organizations in areas as personal growth, managerial styles, team development in temporary systems, inter-group collaboration and problem-solving.
- 771 **Environmental Control of Disease Through Food Protection (2) I** **Burbank**
Organization, administration, application of sanitary methods used to investigate and control food-borne diseases of environmental significance.
- 772 **Environmental Factors in Health Problems (3) I** **Burbank**
Introduction to air pollution, occupational diseases, industrial hygiene; particular reference to common industrial processes, presence and recognition of hazards associated with them, evaluation of hazards; methods of determining effectiveness of control measures. Pre: CE 638 or consent of instructor.
- 773 **Measurement of Environmental Factors (3) II** **Chun**
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 (2) II** **Worth, Gilbert**
Limited to and required for 2nd-year medical students. Epidemiologic and statistical implications of clinical cases presented by students. Introduction to research design and biostatistical methods. Selected topics in social and preventive medicine.
- 791 **Advanced Public Health Practice (3) I, II, SS**
Observation, study and additional practical work in student's area of emphasis. Limited to public health degree candidates only. Pre: consent of instructor.
- 792 **Seminar in Public Health (v) I, II, SS**
Advanced seminar in selected public health topics. May be repeated for credit. Pre: consent of instructor.
- 799 **Directed Reading/Research (v) I, II, SS**
Pre: consent of instructor.
- 800 **Thesis Research (v) 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. It was reaccredited in 1971. For specific information on admission and degree requirements write: School of Social Work, Hawaii Hall 117, 2500 Campus Road, Honolulu, Hawaii 96822.

Social Work (SW)

Professors: Aptekar, Fisher, Gochros, Kurren, Polemis, Sikkema, Takasaki, Walsh.

Associate Professors: Fischer, Hartman, Krisberg, Kumabe, Lister, Merritt, Nagoshi.

Assistant Professors: Asato, Caulfield, Chung, Ishimoto, Kunioka, Masuda, Morris, Oda, Rosen, Shimomura, Takase, Verdeyen, Wong, Woodruff.

Instructors: Chamberlin, Erhart, Ibrahim, Okazaki, Whittington.

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. Focused on the social worker in action with individuals, families, groups, neighborhoods, organizations and communities.

605-606 Social Work Practice with Individuals and Groups (3-3) Yr.

This course in the practice of social casework and group work provides a foundation for succeeding courses. Introduction to basic principles and processes as related to social work practice in these two fields. Considerable emphasis placed on understanding the individual in a family or group situation. Societal factors which may impinge on the problem considered. Methods of helping individuals having problems in social functioning are related to understanding of personalities of individuals involved and their interrelationships.

607-608 Social Work Practice in Community Organization (3-3) Yr.

Community work practice sequence in the first year organized around three major themes; strategies for developing and maximizing community participation for effective problem solving; assessing the realities of organizational need and influencing their response to change; knowledge and skill in developing and utilizing community indigenous personnel as workers.

610-611 Human Development and Behavior in Cross-Cultural Perspective (2-2) Yr.

Designed to provide the student with opportunity for comparative study of individual physical, mental, and emotional growth, giving special emphasis to social and cultural influences on the individual's development.

620-621 Integration Seminar (1-1) Yr.

Designed to enable the student to see the interrelationships of field and classroom instruction. Also serves to bring together into a coherent whole the student's simultaneous experience in areas of social policy and services, behavioral studies, practice courses and social welfare research.

626 Prevention and Treatment of Juvenile Delinquency (2) II

Focus on major problems, issues, and developments in field of juvenile delinquency in the United States with related emphasis on local scene; juvenile justice system; social planning approach to delinquency; new and innovative treatment techniques.

627-628 Policies and Services in World Social Welfare (2-2) Yr.

Societal needs, policies with respect to them, and planned services are principal themes in this year-long course. Comparative analyses of social welfare policy, programs, and services in the U.S.A. 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

Relationship of theory, hypothesis, conclusion, generalization and fact. Testing data. Rules of evidence; relationship between concept and operational definitions; components in decision making; factors related to gathering of evidence, construction of rules for decision and taking action.

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.

655-656 Selected Topics in Social Welfare (3-3) Yr.

Designed to bring to the student an introductory understanding of current trends in field of social welfare. Recently developed technical approaches as well as administrative problems encountered in newly established programs treated.



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660-661 Practicum (3-3) Yr.

Field units are maintained by the School in public and voluntary 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. Provides an opportunity for the student to see the applicability and experience the use of concepts and principles in actual practice.

703-704 General Social Work Practice (2-2) Yr.

Designed primarily to broaden and deepen understanding of the student who has taken 603-604. Practicum is held in a different setting, and problems of individuals, families, groups, organizations and communities are analyzed from standpoint of the mature practitioners. Skills required for problem-solving 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 Advisers (1-1) Yr.

Designed to enable the student to see interrelationships of field and classroom instruction. Also serves to bring together into a coherent whole the student's simultaneous experience in 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

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.

755-756 Advanced Seminar in Substantive Fields of Social Welfare (3-3) Yr.

Open to second year students only. Current problems and issues in fields such as mental health, child welfare, income maintenance, institutional care, et al, explored and possible solutions examined. Components and level of technical competencies required in various fields given special attention.

760-761 Practicum (v-v) Yr.

Instruction in the field continued. Second-year practicum provides opportunity for the student to test out concepts, principles and theories which he has acquired and to develop his own individual manner of using them in actual practice.

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

Continuation of first year practice with individuals and groups with emphasis on processes of casework. Focus on differential diagnosis and treatment. Collaboration and consultation. Emphasis given to family diagnosis and treatment. Opportunity to study and evaluate related theories and treatment approaches.

766 Seminar in Social Casework (2) II

Students have responsibility for the presentation, analysis and evaluation of material from their field experiences. Generic aspects of social work as related to casework practice in diverse settings demonstrated. Opportunity to study and assess adaptations and innovations in practice in a variety of local settings. Synthesizes, deepens and enriches the student's past learning, and emphasizes the flexible and adaptive use of core casework concepts.

767 Casework with Children (2) I

Casework concepts and practice in the care of children in various settings. Special areas of child welfare, such as protective services, child placement, treatment of children in institutional settings, etc., explored.

770 Advanced Social Group Work (2) I

Further emphasis on the needs of individuals in groups and analysis of the group worker's activity in groups with a treatment focus. To be taken concurrently 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.

774-775 Studies in Individual and Social Behavior (3-3) Yr.

Provides students with opportunities to select for intensive review and critical analysis areas of theory and research in human behavior which are of particular interest to individual students and of relevance to social work practice. Goals of the course are both mastery of a substantive body of knowledge, and the ability to utilize specific criteria for the evaluation of theory and research.

776 Social Work and Social Psychiatry (3) II

This course, given by a social worker with assistance of psychiatrists, covers problems of pathological behavior met by social workers in various specialized fields. The autistic or schizophrenic child, the alcoholic or drug user, the mental patient returning from an institution and other similar problems which are often both social and psychiatric in character treated from respective standpoints of the social worker and the psychiatrist.

777-778 Planning, Policy-Making and Administration in Social Welfare (2-2) Yr.

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. Translation of social policies into administrative action is stressed throughout.

781-782 Seminar in Community Organization Processes (2-2) Yr.

Content extending over 2 semesters, intended to provide student with the opportunity to learn theoretical bases, knowledge areas, and methods for social work practice in community development and organization.

Course content organized sequentially in relation to three major areas of knowledge and practice: organizing at the neighborhood level, the political processes in community decision making, and social work manpower development.

785 Methods of Supervision in Social Work (2) II

Supervision in social work as it relates to practice. Supervision as way of accomplishing goals of the agency. The administrative aspect of supervision as an important component. Also considers education or training as part of supervisory method. Emphasis on helping the supervisor use social work knowledge and skills in new ways. Open to agency workers who are potential or actual supervisors, and as an elective to second-year students who are going into supervisory positions. 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 report or thesis.

796-797 Directed Individual Study in Substantive Field (v) 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 (v)

Research on an individualized basis, under supervision, by students working for the master's degree in social work.

UNDERGRADUATE PROGRAM

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 provides students with a well-rounded education and a professional competence in agriculture and related industries and in human resources development. There are agricultural curricula in technology, economics, science, and pre-veterinary medicine with various majors, as detailed, to fit the individual student's needs.

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 pro-

grams 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 (p. 37);
2. complete the course requirements of a curriculum;
3. have a 2.0 grade-point ratio for all registered credits.

Preprofessional Programs

By careful planning, students in the College can prepare themselves adequately for admission to professional and graduate schools. Each department provides advisers familiar with the recommendations of appropriate national professional organizations. In addition, they will assist the student to select courses for specific programs and schools.

The animal sciences department maintains a Pre-Veterinary Sciences Committee prepared to give specific aid to students preparing to enter schools of veterinary medicine.

Opportunities for special research studies are available under the 399 and 499 series.

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CURRICULA IN AGRICULTURE

The various curricula are designed to give the students a knowledge of the fundamental principles underlying agriculture as a science, and the relationship of man to his natural environment. These programs of study should prepare them for effective service in business, industry, research, and teaching, as well as in practical farming.

In addition to the general University requirements for a B.S. degree, the College requirement is Chem 113, 114, 115, 116; Ag 100; An Sc 141; Hort 262; Ag Econ 220; Ento 261; and Soils 204 or 304.

There are three general curricula in the College: Agricultural Technology, Agricultural Science, and Agricultural Economics.

1. **Agricultural Technology:** There are at present four majors within this curriculum, with a minimum requirement of 18 credits from: AgEng 351, 352, Agron 201, An Sc 241, Ento 374, Hort 450, PPath 411, Soils 350, Fd Sc 201.

(a) **General Agriculture major:** 18 credits from Agriculture including Ag 299, 18 credits of non-agriculture electives, and additional credits to make 128 credits.

(b) **Mechanized Agricultural Production major:** 15 credits in Agricultural Engineering courses including Ag Eng 499, GE 109, and 27 credits from the following: Ag Econ 428; Agron 411, 412; An Sc 241; Fd Sc 401; Soils 350, 460; Acc 201, 202; BAS 301, 302; Bot 470; Math 205, 206, 231, 232; Phys 170, 171, 272, 273; CE 270, 271, 320, 421; EE 200, 304, 305; ME 311, 312, 424; and additional credits to make 128 credits.

(c) **Horticultural Technology major:** 3 credits of Hort 499 (Summer Practicum), 25 credits from the following: Agron 201, 411, 412; Ag Bio 402, Ag Econ 321, 322, 427; AgEng 351, 352, 435; FdSc 201, 401; Hort 350, 453, 460, 471, 481, 499; PPath 420; Soils 340, 440, 460, 461, 470; Bot 4--; Geog 300, 314; Acc 201, 202; and additional credits to make 128 credits.

(d) **Animal Technology major:** 30 credits from Agron 201, 413; Ag Bio 402; Ag Econ 321, 322, 427, 430; Ag Eng 351, 352, 431, 435; An Sc 341, 342, 351, 352, 353, 354, 444, 445, 451-452, 453; Fd Sc 201, 401; Hort 453, 481; PPath 420; Soils 340, 440, 460, 461, 470; Geog 300, 314; Acc 201, 202; and additional credits to make 128 credits. A minimum of 18 Animal Science credits overall are also required.

2. **Agricultural Science:** There are at present four majors within this curriculum. All four majors require the following: Chem 243, 245; Chem 244, 246 or Ag Bio 402, 403; Genet 451, 452; Phys 151-154 and Micro 130.

(a) **Animal Science major:** An Sc 241, 341; 9 credits from An Sc 342, 351, 352, 353, 354; Zool 320; 16 credits from AgBio 402, 403, AgEng 351, 352; Agron 201, 413; An Sc 444, 445, 451-452, 453; Chem 133; Econ 150; Ento 374, 376; Zool 340, 416, 417, 430. The following are essential for Pre-Veterinary Medicine but can be applied towards the Animal Science curriculum: Biol 250, Bot 101, Chem 113-116, 133, 134, 243-246; Eng 100, 251 or 315, Genet 451, 452; Math 134, 205; Phys 151-154; Zool 101, 420, and 4 credits each of Humanities and Social Sciences.

(b) **Entomology major:** Ento 361, 362, 374, 376; one year of a foreign language approved by adviser; 15 credits from Ag Eng 351, 352; Bot 105, 461, 470; Chem 133; Geog 300; Hort 450, 453; Phil 210; PPath 411; Soils 340, 350; Zool 330, 340, 416, 417, 430, 631, 632.

(c) **Agronomy and Soil Science major:** 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, 402, 411, 412, 413; Ag Econ 327, 433, 434, 481; Ag Eng 351, 352, 435; An Sc 444; Bot 160, 201, 410, 412, 430, 453, 461, 470; Chem 133, 134, 351, 352, 422; Geog 101, 300, 314, 400, 406; GG 101, 102, 301, 302, 424; Hort 450, 453, 481; Math 205, 206, 231, 232; Phil 210; PPath 411, 420; Soils 340, 350, 404, 440, 460, 461, 470; Zool 631, 632; one year of an approved foreign language.

(d) **Tropical Horticulture major:** Hort 450 and 28 credits from the following: Ag Bio 402, 403; Ag Eng 351, 352, 435; Agron 310, 402, 412; Biol 220, 250, 401, 440; Bot 105, 160, 201, 399, 410, 412, 430, 435, 436, 450, 454, 461, 470, 480; Chem 133; Ento 374, 376; Hort 350, 453, 460, 471, 481, 499; Math 205, 206; PPath 411, 420; Soils 340, 350, 404; one year of a foreign language approved by adviser.

3. **Agricultural Economics**

(a) Econ 150, 151, 300, 301; Ag Econ 321, 322, 428, 432, 434.

(b) Electives totalling 33 credit hours, none of which may overlap with courses taken to satisfy the various core requirements and distributed so as to have at

least six credit hours from *each* of the following groups:

(1) Ag Econ 427, 429, 430, 480, 481.

(2) Econ 310, 340, 399, 400, 404, 405, 410, 411, 412, 414, 415, 425, 426, 430, 440, 450, 452, 460, 461, 470, 480, 490, 492, 496.

(3) Pol Sc 110; Law 300, 311; Acc 201, 202, 305, 307, 361, 365; RE 300; BEc 342, 361, 362; Mgt 301, 341, 344, 345; Mkt 315, 321, 381, 397; PIR 361, 365, 367.

(4) Ag 299; Ag Bio 402, 403; Ag Eng 351, 352, 431, 432, 435; Agron 201, 310, 411, 412, 413; Soils 340, 440, 460, 461, 470; An Sc 241, 341, 342, 351, 352, 353, 354, 444, 445, 453; Ento 374, 376; Fd Sc 201, 401; Hort 350, 450, 453, 471, 481; PPath 411, 420; Bot 105.

AGRICULTURE COURSES

See p. 3 for a discussion of course descriptions.

Agriculture (Ag)

Associate Professor: S. Goto.

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.

399 **Agricultural Thesis (v) I, II, SS** Goto
Advanced individual work in field, laboratory, library, government service practicum.

700 **Seminar: Pesticide Use, Regulation and Environmental Interactions (1) II** Green
Current research findings on use, dissipation, and analysis of pesticide; environmental aspects; pesticide regulation and legislation.

Agricultural Biochemistry (AgBio)

Professors: Bevenue, Hylin, Matsumoto.
Assistant Professors: Montalvo, Tang.

402 **Principles of Metabolism (3) I, II** Montalvo, 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** Montalvo, Hylin
This laboratory course may not be taken without lectures (402).

610 **Plant Biochemistry (3) I** Tang
Comprehensive study of chemical constituents and biochemical processes unique to plant kingdom with some emphasis upon selected aspects of current interest. Pre: 402 or equivalent; consent of instructor.

Agricultural Economics (AgEc)

Professors: Scott, Davidson, Ishida, Larson, Luykx, Philipp, Spielmann.

Associate Professors: Gopalakrishnan, Holderness, Keeler, Renaud, Staub, Yamauchi.

Assistant Professor: Anderson.

Lecturers: Baker, Hogg, 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 Price Analysis in Agriculture (3) II** **Spielmann**
Economic concepts as applied to agricultural production and marketing; introduction to forecasting and elementary demand models; capital budgeting; technological change; programming techniques; decision theory.
- 322 Marketing Agricultural Products (3) II** **Ishida**
Problems, agencies, functions, costs, prices, regulations affecting marketing; proposed improvements. Pre: introductory course in economics or consent of instructor.
- 399 Directed Study (v) I, II** **Scott**
Limited to exceptional undergraduate students qualified to carry on advanced study. Pre: consent of instructor.
- 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 discussed and analyzed. Pre: 321 or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 428 Production Economics (3) I** **Philipp**
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**
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.). This course given in conjunction with 636. Students enrolled in this course will be excused from some of the research assignments for students in 636. Otherwise instruction and readings will be the same as 636. Pre: Econ 150-151, or consent of instructor.
- 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.; offered 1972-73.)
- 432 Introduction to Natural Resource Economics (3) I** **Gopalakrishnan**
Economic principles involved in efficient utilization and management of natural resources—e.g., marine resources, water, land, timber, etc. Pre: 150 or consent of instructor.
- 434 Statistical Methods (3) I** **Renaud**
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.
- 480 Computer Programming in Agricultural Economics Research (3) II** **Yamauchi**
Computer programming: Fortran. Prepared programs. Basic concepts of matrix algebra, regression analysis, linear programming. No prerequisite.
- 481 Managerial Economics in Agriculture (3) I (2L, 1Lb)** **Keeler**
Management and organization of plantations and commercial farms and ranches; production analysis concerning inputs and outputs; planning and budgeting for economic decision making; case studies.
- 624 Research Methodology (3) I** **Gopalakrishnan**
Philosophical setting for scientific inquiry, scientific method and its antecedents, application in agricultural economics research. Original research project required. Pre: graduate standing.
- 625 Economics of Agriculture: Tropical Countries and Asia (3) II** **Philipp**
Agricultural development, economics of agricultural technology, resource utilization, comparative advantage, international and intra-country marketing problems, institutions affecting agricultural economy. Pre: 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** **Philipp**
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 Advanced Agricultural Market Analysis (3) II** **Scott**
Marketing research methodology with emphasis on techniques for measuring consumer preferences, market potentials, methods and costs of market development, and processing efficiency. Pre: basic course in statistics.
- 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: Econ 321, Econ 325 or Ag Econ 434.
- 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.
- 636 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.). See 429.
- 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.
- 638 Seminar: Land Use in Developing Countries (3) II** **Hogg, Yamauchi**
Role of land use pattern on agricultural economic development and welfare of rural people in emerging agricultural nations. Pre: 432 or consent of instructor.
- 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.
- 640 Agriculture and Rural Development Administration (3) II** **Luykx**
Consideration of formal and informal organizations and structures of government and processes by which agricultural and rural development activities are formulated and carried out.

- 680 Rural Sociology and the Agricultural Economy (3) I** Anderson
Social factors influencing economic processes related to agriculture; diffusion of innovations in rural societies.
- 699 Directed Research (v) I, II** Scott
Pre: consent of instructor.
- 701 Seminar in Agricultural Economics (1) I, II** Staff
Topics of current interest and current research related to agricultural production, marketing, statistics, rural sociology, development and policy.
- 800 Thesis Research (v) I, II** Staff

Agricultural Engineering (AgEng)

Professors: Kinch, Wang.
Associate Professors: Gitlin, Hundtoft, Liang, Smith, Wu.

- 333 Computer Programming for Bio-Science (3) I, II** Liang
Introduce computer programming and its use through presentation of computer application examples in bio-sciences. (Same as GE 33.)
- 351 Mechanization Principles and Practices (3) I** Kinch
Basic principles and practices of mechanization as applied to food and fiber industries. Pre: college math.
- 352 Mechanization Laboratory (2) II** Kinch
Laboratory experience in application of mechanization principles and practices. Pre: 351.
- 431 Agricultural Power and Equipment (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: 351, 352.
- 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 (v) I or II** Kinch
Research in the area of mechanized agricultural production. Pre: consent of instructor.
- 622 Experimental Methods in Cause-Effect Modeling (3) II** Hundtoft
Factorial designs and fractional factorial designs for screening variables and for response optimization. Response surface methodology. Experimental designs appropriate to building and testing multi-variable behavior relationships. Sequential experimental designs. (Same as GE 622.)
- 631 Analysis of Implement Design (3) II** Smith
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 Systems Analysis in Bio-Sciences (3) I, II** Liang
System concept, procedures for developing system models, characteristics of bio-systems and introduction to methods for optimal manipulation of bio-systems.
- 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.

- 699 Directed Research (v) I, II** Wang
- 700 Seminar (1) I, II** Smith
Review of recent literature. Pre: consent of instructor. May be repeated once.
- 800 Thesis Research (v) I, II**

Agronomy and Soil Science

Professors: Ekern, Fox, Kanehiro, Sanford, Swindale, Uehara.
Associate Professors: El-Swaify, Green, Ikawa, Rotar, Silva, Young.
Assistant Professors: Bartholomew, Koch, Jones, Mapes, Urata.

Agronomy (Agron)

- 201 Principles of Tropical Agronomy (4) I (3L, 1Lb)** Bartholomew
Relation of plants, nutrients, environment, cultural practices to field crop production. Emphasis on tropics. Pre: Bot 101, Chem 114.
- 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.
- 402 Plant Tissue Culture (3) II (1L, 2Lb)** Mapes
Aseptic techniques for studying growth and development of plant tissues with emphasis on chemical controls and environment on morphogenesis and plant production; bioassays and microtechnique procedures. Pre: Bot 201; Bot 410 and 412 helpful but not required.
- 410 Field Course in Tropical Crop Production (6) SS**
Field study of production of tropical crops including management, fertilization, irrigation, and weed control of tropical grain crops, root crops and selected vegetable and fruit crops.
- 411 Sugar Cane Agronomy (3) II (2L, 1Lb)** Silva
Cane plant; breeding, physiology, culture, growth, harvesting, milling, marketing; 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 1972-73.)
- 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 1972-73.)
- 499 Directed Study (v) I, II**
Pre: senior standing in agronomy, consent of instructor.
- 610 Physiology of Crop Production (3) I** Bartholomew
Physiological principles underlying development and production of crop communities. 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 1972-73.)
- 651 Advanced-Techniques in Plant and Soil Analysis (3) SS (3L, 1Lb)**
Methodology of the analysis of plant tissue and soil with emphasis on spectrophotometric, gas chromatographic, and automated techniques for the determination of inorganic and organic constituents. Pre: consent of instructor.
- 699 Directed Research (v) I, II**
Pre: candidacy for M.S. degree; consent of instructor.
- 701 Seminar in Advanced Agronomy (1) I, II**
Review of recent research findings in tropical agronomy. Pre: graduate standing.

710 Mineral Nutrition of Tropical Crops (2) I Sanford
Mineral nutrition of plants in relation to mechanisms of ion transport, salt absorption, plant metabolism. Special emphasis on problems associated with tropical crops. Pre: Bot 470; Soils 350. (Alt. yrs.; not offered 1972-73.)

799 Directed Research (v) I, II
Pre: candidacy for Ph.D. degree; consent of instructor.

800 Thesis Research (v) I, II

Soil Science (Soils)

204 Soils and Man (3) II (2L, 1Lb) Green
Fundamentals of soil science with emphasis on soil as one of man's vital natural resources which need to be conserved while being utilized; importance of key physical, chemical, and biological properties of soils to crop production, pesticide and fertilizer use, water quality, and urban development. Pre: 1 semester of general chemistry.

304 Tropical Soils (4) I (3L, 1Lb) Ikawa
Origin, development, properties, management of tropical soils; classification of Hawaiian soils. Pre: Chem 114.

340 Soil Chemistry (3) I (2L, 1Lb) Kanehiro
Study of soil reaction, availability of plant nutrients, chemical analyses of soils. Pre: 304.

350 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.

404 Soil Microbiology and Biochemistry (3) II (2L, 1Lb) Koch
Study of micro-organisms in a soil environment with emphasis on population, effect of pesticides, nitrogen fixation and other enzymatic reactions. Pre: 304, Micro 351.

440 Soil Salinity and Irrigation
Water Quality (3) II (2L, 1Lb) 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 1972-73.)

460 Soil Physics (3) II (2L, 1Lb) Uehara
Physical properties of soils; structure and moisture relationships. Pre: Phys 161 or 171; Soils 304.

461 Soil Erosion: Causes and Controls (3) II 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 1972-73.)

470 Tropical Soil Survey and Interpretation (2) I
Field study of tropical soils, soil mapping, correlation, classification, interpretation by standard U.S. methods. Field practice in preparation of soil maps and reports. Pre: 304. (Alt. yrs.; offered 1972-73.)

499 Directed Study (v) I, II, SS
Pre: senior standing in soils; consent of instructor.

640 Advanced Soil Chemistry (3) II (2L, 1Lb) El-Swaify
Physico-chemical properties of soils and soil solution with emphasis on surface, colloidal, and ionic equilibrium relationships. Pre: 340, Chem 351 recommended. (Alt. yrs.; not offered 1972-73.)

650 Advanced Soil Fertility (4) (2L, 2Lb) Fox
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 1972-73.)

661 Meteorology in Agriculture (3) I Ekern
Elements and mechanics of weather; response of plants to weather elements; manipulation of micro-climate; weather requirements of major crops; weather and plant disease and insects; weather and warm-blooded animals, including man. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)

670 Soil Formation and Classification (4) I Ikawa
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. (Alt. yrs.; offered 1972-73.)

671 Soil and Clay Mineralogy (3) II (2L, 1Lb) Jones
Identification of soil secondary minerals with emphasis on clay. Pre: consent of instructor. (Alt. yrs.; offered 1972-73.)

699 Directed Research (v) I, II, SS
Pre: candidacy for M.S. degree; consent of instructor.

704 Soil Science Seminar (1) I, II
Review of recent research findings in tropical soil science. Pre: graduate standing.

799 Directed Research (v) I, II, SS
Pre: candidacy for Ph.D. degree; consent of instructor.

800 Thesis Research (v) I, II, SS

Animal Sciences (AnSc)

Professors: Brooks, Hugh, Koshi, Ross, Stanley, Wayman.
Associate Professors: Herrick, Miyahara, Nakamura, Nolan, Palafox, Vogt.

Lecturers: Ishizaki, Smith.

141 Animals and Man (3) I, II Herrick
Study of farm and companion animals and their relationship and contributions to man, including a brief introduction to their nutrition, physiology, genetics, disease control and management.

241 Feeds and Feeding (3) I (2L, 1Lb) Ross
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 (2) I, II (1L-1Lb) Herrick
Field experience in production, marketing and disease control of livestock. Emphasis placed on subject matter covered in animal science production and disease courses. Pre: 141.

342 Beef Production (3) II (2L, 1Lb) Nolan
Principles of economic beef production including beef breeds, selection, breeding, management systems, feeding and marketing under tropical conditions.

351 Swine Production (3) I Hugh
Principles of efficient pork production including comparative breed evaluation, breeding, feeding, management, marketing and business aspects. Problems and practices associated with tropical environment are emphasized.

352 Tropical Dairying (3) II Koshi
Principles involved in economical milk production in the tropics including management, breeds, breeding, selection, culling, feeding, housing, milking, quality control and raising young animals.

353 Horses and Horsemanship (3) I (2L, 1Lb) Smith
Origin of species, breeds, nutrition, care, management. Laboratory on management practices with work on light horses.

354 Poultry Production (3) II (2L, 1Lb) 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.

444 Animal Nutrition (4) II (3L, 1Lb) 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 1972-73.)

445 Animal Breeding (3) I Vogt
Application of genetic principles to improvement of livestock, including poultry. Pre: one semester of introductory genetics, or consent of instructor.

- 451-452 Physiology of Domestic Animals (4-4) Yr. (3L, 1Lb)** **Wayman**
Organ systems of body, their anatomical arrangement, structure, function. Emphasis on most important species. (Alt. yrs.; not offered 1972-73.)
- 453 Animal Diseases and Their Control (3) I** **Miyahara**
Disease problems of livestock, poultry, and companion animals; their economic significance, causes, public health implications, and control. Pre: 141 or consent of instructor.
- 499 Directed Study or Research (v) 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.
- 641 Seminar in Animal Science (1) 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: consent of instructor. (Alt. yrs.; offered 1972-73.)
- 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: 451-452 or equivalent. (Alt. yrs.; offered 1972-73.)
- 652 Quantitative Genetics (3) II (2L, 1Lb)** **Vogt**
Concepts relating to genetic properties of populations and to inheritance of quantitative traits. Pre: one semester of Introductory Genetics and one year of Statistics. (Alt. yrs.; offered 1972-73.)
- 699 Directed Research (v) I, II, SS**
(1) Genetics—Vogt; (2) Nutrition—Brooks, Ross, Stanley, Palafox; (3) Physiology—Wayman, Herrick; (4) Microbiology and Pathology—Nakamura; (5) Management—Staff.
- 800 Thesis Research (v) I, II**

- 661 Medical and Veterinary Entomology (3) I (2L, 2Lb)** **Hardy**
Insects and other arthropods in relation to human and animal diseases. Pre: 261, desirable Zool 340 and Micro 351.
- 662 Advanced Systematic Entomology (3) II (2L-Lb)**
Principles of systematics; nomenclatorial problems; international code. Pre: 362.
- 664 Immature Insects (3) II (2L, 2Lb)** **Beardsley**
Identification, structure, literature, economic significance, emphasis on Holometabola. Pre: 362.
- 671 Insect Ecology (3) II (2L, 1Lb)** **Nishida**
Insects as living units in an environment of physical and biotic factors. Pre: 362, 374; desirable Zool 631, 632.
- 672 Acarology (3) II (2L, 2Lb)** **Haramoto**
Taxonomy, biology, ecology of mites. Emphasis on medically and agriculturally important species. Pre: 362. (Alt. yrs.; not offered 1972-73.)
- 673 Insect Pathology (3) I (2L, 2Lb)** **Tamashiro**
Diseases of insects; histopathology; microbial agents and biological control. Pre: 374.
- 675 Biological Control of Pests (3) II (2L, 1Lb)**
Fundamental concepts. Critical study of major biological control projects. Pre: 362, 374; desirable Zool 631, 632.
- 681 Insect Toxicology (3) II** **Sherman**
Mode of action and metabolism of insecticides by insects, plants and the higher animals. Pre: 374; Chem 243, 244, 245, 246. (Alt. yrs.; not offered 1972-73.)
- 683 Insect Toxicology Laboratory (1) II** **Sherman**
Toxicological techniques. Pre: credit or registration in 681. (Alt. yrs.; not offered 1972-73.)
- 686 Insect Transmission of Plant Pathogens (3) II (2L, 2Lb)** **Namba**
Problems of insect transmission of plant pathogens. Pre: 261 and PPath 410. (Alt. yrs.; not offered 1972-73.)
- 687 Entomology Seminar (1) I, II**
Current entomological literature. Reviews and reports. Required of graduate students in entomology.
- 699 Directed Research (v) I, II**
Directed research and critical reviews in various fields of entomology.
- 800 Thesis Research (v) I, II**

Entomology (Ent)

Senior Professors: Bess, Hardy.
Professors: Mitchell, Namba, Nishida, M. Sherman.
Associate Professors: Beardsley, Haramoto, LaPlante, Tamashiro.
Assistant Professor: Chang.

- 261 General Entomology (4) I, II (2L, 2Lb)** **Hardy, Mitchell**
Structure, habits, biology, classification of insects; insects characteristic of Hawaii. Pre: Zool 101 or Bot 101.
- 361 Insect Morphology (3) I (2L-Lb)** **Namba**
Comparative and gross morphology; homologies of structures; anatomy; development in representative groups. Pre: 261.
- 362 Systematic Entomology (3) II (2L-Lb)** **Hardy**
Classification of insects; orders and families. Use of taxonomic tools. Pre: 361.
- 374 Economic Entomology (3) II** **Sherman**
Destructive and beneficial insects; principles of cultural, mechanical, legislative, biological and chemical control. Pre: 261; Chem 113, 114.
- 376 Economic Entomology Laboratory (1) II** **Sherman**
Studies with Hawaiian insect pests of households, plants and animals. Pre: credit or registration in 374.
- 641 Insect Physiology (4) I (3L, 1Lb)** **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.

Food Science and Technology (FdSc)

Professors: Frank, Moser, Nakayama, Yamamoto.
Associate Professor: Hing.
Assistant Professors: Moy, Cavaletto.

- 201 Man's Food (2) I** **Cavaletto**
Study of man's past, present and future food supply; food composition, food requirements, production, processing, distribution, and consumer aspects including food safety.
- 401 Food Processing (3) II (1L, 2Lb)** **Hing**
Application of principles of canning, freezing, dehydration and chemical preservation to food processing. Laboratories on processing of fruit, vegetables, meat, nuts and dairy products. Pre: Chem 116 and Phys 151 or consent of instructor.
- 403 Microbiology of Foods (3) I** **Frank**
Description of micro-organisms encountered in foods; different types of food spoilage; various methods used for food preservation. Pre: Micro 351.
- 411 Food Engineering (3) I (2L, 1Lb)** **Moy**
Principles and application of thermodynamics, electricity, fluid mechanics, heat transfer, psychrometry, and material and energy

balances to food processing and preservation. Pre: 1 year physics or AgEng 331.

430 Food Chemistry (3) II Nakayama
Chemical properties of food constituents discussed in relation to their effect on processing, nutrition, and spoilage. Pre: Chem 113-114, 241.

440 Food Safety and Consumer Protection (2) II Yamamoto
Discussion of potential microbiological, parasitic, chemical, and natural food hazards, food laws and standards, and related aspects of consumer protection. To be taught in conjunction with 640. Cused from certain assignments required of students in 640. Pre: chemistry and microbiology or biology.

604 Special Topics in Food Microbiology (v) II Frank
Selected laboratory experiments dealing with various aspects of food micro-organisms. Pre: consent of instructor.

610 Advanced Food Processing I (3) II Moy
Engineering principles and practice of food dehydration, freeze-drying, radiation-preservation, size reduction, concentration, distillation, and extraction. Pre: 1 year each of general physics, general chemistry, and algebra. (Alt. yrs.; offered 1972-73.)

613 Advanced Food Processing II (3) I Hing
Application of physical, chemical, biological and engineering principles to the preservation of foods by thermal processing and freezing. Pre: 401 or consent of instructor. (Alt. yrs.; offered 1973-74.)

620 Seminar in Food Science (1) I Hing
Special topics, reports, discussion of basic concepts in food science.

630 Food Fermentation (3) I Nakayama
Application of microbiological, biochemical, and engineering principles in the fermentation industry. Pre: consent of instructor. (Alt. yrs.; offered 1973-74.)

640 Food Safety (2) II Yamamoto
Discussion of potential food hazards (microbiological, parasitic, chemical, and natural), food laws and standards, and practical means for reducing or eliminating health hazards. Pre: microbiology and organic chemistry.

699 Directed Research (v) I, II, SS
Directed research in various aspects of food science. Pre: consent of instructor.

701 Seminar in Recent Advances in Food Research (1) II Yamamoto
Reports and discussions from current literature in food science and technology.

730 Biochemical Aspects of Food Science (3) I Yamamoto
Properties of natural compounds of importance to food processing including application and control for selected enzyme systems. Pre: biochemistry. (Alt. yrs.; offered 1972-73.)

800 Thesis Research (v) I, II, SS

Horticulture (Hort)

Professors: Akamine, Brewbaker, Gilbert, Hamilton, Kamemoto, Nakagawa, Nakasone, Sagawa, Warner, Watson, Yee.
Associate Professor: Hartmann.
Assistant Professors: Criley, Kunisaki, Murdoch, Nishimoto, Rauch, Tanaka.

101 Plants are for People (2) I (2L)
Impact of Hawaiian flowers, fruits, trees, shrubs, vegetables to life in tropics and subtropics. (Not open to agriculture majors.)

262 Principles of Horticulture (4) I, II (3L, 1Lb) Criley, Nishimoto
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 (2L, 1Lb) Rauch
Concepts and techniques of landscape plant production, distribution, and utilization in the tropics. Pre: 262.

420 Plant Propagation & Seed Technology (3) I (2L, 1Lb) Rauch
Theoretical and applied aspects of vegetative propagation and seed technology involving fruits, flowers, vegetables and landscape plants. Pre: Hort 262.

450 Tropical Horticultural Crop Production (4) I (3L, 1Lb) Nakasone, Staff
Factors affecting the production of important horticultural crops in Hawaii. Pre: 262.

453 Plant Breeding (3) II (2L, 1Lb) Hartmann, Staff
Application of genetics to crop improvement, breeding methods, breedings of plants in Hawaii. Pre: Genet 451.

460 Turfgrass Management (3) II (2L, 1Lb) Murdoch
Selection, establishment, and maintenance of grasses for various types of turf. Pre: 262 or equivalent.

471 Post-Harvest Handling (3) I (2L, 1Lb) Akamine
Handling and storage of horticultural crops. Pre: 262 or consent of instructor. (Alt. yrs.; not offered 1972-73.)

481 Weed Science (3) I (2L, 1Lb) Nishimoto
Weed classification and principles of control. Pre: 262 or Agron 201. (Alt. yrs.; offered 1972-73.)

499 Directed Study (v) I, II
Supervised individual instruction in field, laboratory and library. May be repeated. Pre: 262.

603 Experimental Design (3) I (2L, 1Lb) 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 Plant Improvement Systems and the Plant Breeding Profession (3) I (2L, 1Lb) 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 1972-73.)

615 Advanced Plant Breeding (3) I (3L) Hartmann
Principles of population and quantitative genetics as applied to increased yield in crop plants. Pre: 453. (Alt. yrs.; offered 1972-73.)

618 Cytogenetics (3) II (2L, 1Lb) Sagawa
Correlation of genetic and cytological phenomena. Pre: Genet 451, Bot 618. (Alt. yrs.; not offered 1972-73.)

650 Advanced Vegetable Crops (3) I (2L, 1Lb) Gilbert
Recent developments in vegetable technology, crop physiology, cultural methods and vegetable systematics. Pre: 450. (Alt. yrs.; offered 1972-73.)

662 Advanced Tropical Fruit Science (3) II (2L, 1Lb) 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 1972-73.)

664 Orchidology (3) II (2L, 1Lb) Kamemoto
Classification, culture, cytogenetics, breeding of orchids. Pre: Bot 101; Genet 451. (Alt. yrs.; offered 1972-73.)

666 Radiation Biology (3) II (2L, 1Lb) Brewbaker
Types and sources of radiation; effects of irradiation on living organisms; applications in agricultural research. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)

667 Horticulture Seminar (1) I, II
Presentation of research reports; reviews of current literature in horticulture.

- 668 Growth Regulators in Horticulture (2) II (2L)** Criley
 Concepts of plant growth regulation and application in agriculture. Pre: Bot 470.
- 669 Laboratory in Plant Growth Regulators (1) II (1Lb)** 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 (2L, 1Lb)** Warner
 Climatic, edaphic, and biotic factors influencing tropical and subtropical crops; instrumentation and data interpretation. Pre: 450 or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 699 Directed Research (v) I, II**
 Pre: consent of instructor.
- 711 Special Topics in Experimental Horticulture (v) 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 (v) I, II**

Plant Pathology (PPath)

Professors: Buddenhagen, Holtzmann, Meredith.
Associate Professors: Aragaki, Hunter, Ishii, Martinez, Patil, Trujillo.
Assistant Professors: Bergquist, Ko, Laemmlen.

- 411 Principles of Plant Pathology (4) I (2L, 2Lb)** Trujillo
 Disease in plants, emphasis upon infection and development in relation to environment; ecological significance: epidemiology; methods of appraisal; control. Pre: Bot 101.
- 420 Biology and Ecology of Soil-Borne Plant Pathogens (3) II (2L, 1Lb)** Ko
 Concepts of soil micro-organisms and their relations to crop culture and plant diseases. Pre: Micro 351, Soils 304 and PPath 411; or consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 499 Directed Research (v) 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 (2L, 1Lb)** 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 1972-73.)
- 605 Clinical Plant Pathology (2) SS (2Lb)** 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: 411 and consent of instructor.
- 612 Principles of Plant Disease Control (3) II (2L, 1Lb)** Aragaki
 Methodology and application of plant disease control. Pre: 411. (Alt. yrs.; not offered 1972-73.)
- 616 Plant Nematology (3) II (2L-Lb)** Holtzmann
 Collection, classification, morphology, biology, control of nematodes which attack economic crops. Pre: 411, Zool 101, or consent of instructor. (Alt. yrs.; offered 1972-73.)
- 621 Plant Pathology Techniques (3) I (2L-Lb)** Laemmlen
 Laboratory and greenhouse methods for study of plant diseases; isolation, culture, inoculation; pathological histology and physiology, photography. Pre: 411, 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: 411, 612; or consent of instructor. (Alt. yrs.; offered 1972-73.)
- 630 Plant Virology (3) II (2L, 1Lb)** Ishii
 Plant viruses: diseases caused in economic plants, biological and physical properties. Pre: 411, or consent of instructor. (Alt. yrs.; offered 1972-73.)
- 635 Epidemiology of Plant Diseases (3) I (3L)** 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: 411 and consent of instructor. (Alt. yrs.; offered 1972-73.)
- 637 Physiology of Fungi (4) II (2L, 2Lb)** Baker, Patil
 Pre: 430 or Micro 431 or AgBio 402-403 or consent of instructor (Identical with Bot 637).
- 660 Seminar (1) I, II** Staff
 Seminars in contemporary research. Reviews and reports.
- 699 Directed Research (v) I, II, SS** Staff
 Pre: candidacy for M.S. degree; consent of instructor.
- 705 Host-Parasite Physiology (3) II (2L, 1Lb)** Patil
 Physiology of disease and interaction between host and pathogen; resistance mechanisms. Pre: consent of instructor. (Alt. yrs.; not offered 1972-73.)
- 800 Thesis Research (v) I, II** Staff

Plant Physiology

Professors: Akamine, Coolil, Friend, Kefford, Lamoureux, Mueller-Dombois, Siegel.
Associate Professors: Nakata, Putman.
Lecturer: Krauss.
Instructor: Gay.

For course descriptions, see the following listings under the department of botany.

BOTANY

- 470 Principles of Plant Physiology (4) II (3L, 1Lb)**
- 612 Advanced Botanical Problems (v) I, II**
- 637 Physiology of Fungi (4)**
- 640 Environmental and Space Biology II (v) I, II**
- 650 Ecology Seminar (1) II**
- 670 Plant Nutrition and Water Relations (3) I (3L)**
- 671 Energetics and Biosynthesis in the Plant Kingdom (3) II (3L)**
- 672 Techniques in Physiology (2) I (2Lb)**
- 673 Techniques in Physiology-Biochemistry (2) II (2Lb)**
- 675 Physiology Seminar (1) I, II**
- 699 Directed Research (v) I, II**
- 799 Directed Research (v) I, II**
- 800 Thesis Research (v) I, II**

CURRICULA IN HUMAN RESOURCES DEVELOPMENT

Human resources development is an applied field of study and service which concentrates on the problems of the family and its members as new directions for their lives emerge in response to social change. Our primary objective is to explore and communicate scientific and humanistic knowledge and experience relevant to the directing of social change toward the support of optimal human development.

The curriculum is built upon the knowledge of man and his relationship to the physical and social world and his role in problem solving, which involves decision making in relation to value priorities. This direction requires a sound knowledge of biological development coupled with essential elements of the physical and social sciences and the humanities.

The human resources development programs prepare individuals who will contribute to problem solving in response to issues and needs relevant to themselves, their families and the community at large. Some examples of these are: poor nutrition among selected age groups, inadequate day care and after school care of infants and children and need for a model delivery system for training child care and parent education personnel in Hawaii; unstable and impaired socialization of children; problems of unmet needs of youth and older members; widespread disadvantage to consumers; dehumanization in business and industry; and unawareness of the many possible dimensions of aesthetic involvement.

Behaviors and processes are studied as man adapts over his entire life cycle and, therefore, the division recommends as an education core for all majors in the division the life cycle of human development and decision making within the context of changing values. The cultural and behavioral aspects of each of the separate fields may be included as part of that core. The student, thereby, not only studies the art and science aspects of his specialized field per se, but has an opportunity to gain perspective on behavior in general and himself as a person in the process. In other words, we attempt to avoid the dehumanizing aspects of the models in education which compartmentalize the roles and activities people engage in, and thereby alienate them from the unity which is, in fact, our common humanity.

The interdisciplinary areas which represent the focal studies of this division are the following:

Human Development. The analytical study of the adaptation process of the human person over the life cycle in real life situations relating to his more immediate social and physical environment.

Food and Nutritional Sciences. The study of the complex relationships of food to man's health, welfare

and happiness, including the science of food, its components, the chemistry and physiology of their utilization and the nutrient needs of individuals; and in addition, the science of social and cultural behavior as it relates to dietary patterns and habits.

Aesthetic Aspect of the Near Environment. An interdisciplinary approach to the study of man's clothing and space arrangements with special reference to aesthetic needs of individuals in various physical and social surroundings.

Consumer Science and Family Decision Making. The study of individuals and families with special reference to their role competency in resource use and consumption as these functions apply to the individual, family and the household; and including the interrelationships of these functions with the resources of the wider community.

As services formerly performed within the family are extended to the larger community, new professional directions are emerging to deliver these services, i.e., family life education, dietetics and nutrition consulting, day care administration, housing and consumer counseling, child development consulting, and services in business and industry relating to foods, clothing and textiles, and household equipment and arrangements. The applied work in the interdisciplinary fields which are represented in human resources development programs relates to these directions in professional development.

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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).

The four departments within this division are Fashion Design, Textiles & Merchandising, Food and Nutritional Sciences, Home Economics, Human Development.

Fashion Design, Textiles and Merchandising (FDM)

The curricula in fashion design and fashion merchandising lead 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.

Arrangements may be made for students in both options to study at the Fashion Institute of Technology in New York City during the spring semester of their junior year.

Fashion Design (FDM)

First Year

First Semester	Credits	Second Semester	Credits
Eng 100 or *Humanities	3	*Humanities or Eng 100	3
Psy 100	3	*Quantitative Reasoning	3
*Art 101 (Humanities)	3	*Art Studio	3
FDM 125 or 113	3	FDM 113 or 125	3
FDM 111	3	Speech 145	3
		HPE	1
Total	15	Total	16

Second Year

*World Civilization	3	*World Civilization	3
Econ 120	3	*Natural Science or	
FDM 215 or 216	3	FDM 213	3 or 4
FDM 213 or		HE 267	3
*Natural Science	3 or 4	FDM 216 or 215	3
Elective (Art Studio		Elective (Art Studio	
recommended)	3	recommended)	3
Total	15 or 16	Total	15 or 16

Third Year

*Natural Science	3 or 4	*Humanities	3
FDM 315	3	FDM 316	3
FDM 416 or 417	3	FDM 417 or 418	3
HD 345	3	FDM 327	3
Elective (Art Studio		*FDM 324	1
recommended)	3	FDM 415	3
Total	15 or 16	Total	16

Fourth Year

FDM 419	4	FDM 420	4
Soc Sci (FDM 401		HRD Elective (Not	
recommended)	3	FDM)	3
*Written Communication	3	Electives	9
Electives	6		
Total	16	Total	16

*Courses may be taken credit/no credit. See University requirements.

60 credits in non-introductory courses required for graduation.
125 credits required for graduation in Fashion Design.

Fashion Merchandising (FDM)

First Year

First Semester	Credits	Second Semester	Credits
Eng 100 or *Humanities	3	*Humanities or Eng 100	3
Psy 100	3	*Quantitative Reasoning	3
*Art 101	3	Econ 120	3
FDM 125 or 113	3	FDM 125 or 113	3
Sp 145	3	FDM 111	3
		HPE	1
Total	15	Total	16

Second Year

*Art History or Studio	3	*Natural Science or	
*World Civilization	3	FDM 213	3 or 4
FDM 216	3	HE 267	3
FDM 213 or		*World Civilization	3
Natural Science	3 or 4	Sociology 100	3
Acct 201	3	Acct 202	3
Total	15 or 16	Total	15 or 16

Third Year

*Natural Science	3 or 4	*Humanities	3
Elective	3	FDM 328	3
*Written Communications ..	3	Mkt 371	3
FDM 327	3	HD 345	3
Mkt 300	300	*FDM 324	1
		Elective	3
Total	15 or 16	Total	16

S.S.—FDM 329, Field Experience, 2 cr. (optional)

Fourth Year

FDM 425	3	Electives	10
*HRD elective (Not FDM)...	3	FDM 417 or 418	3
FDM 416 or 417	3	Mkt 341	3
Electives	3		
FDM 403 (Optional)	3		
Total	15	Total	16

*Courses may be taken credit/no credit. See University requirements.

60 credits in non-introductory courses required for graduation.
125 credits required for graduation.

Professor: Umbel.

Associate Professors: Furer, Herrick, Troxell.

Assistant Professors: McOmber, Sankey, Walker.

Lecturers: Des Jarlais, Zinn.

111 Esthetics of Clothing (3) I, II (2L, 1Lb) Herrick
Factors involved in clothing selection. Principles of line, color, design for individual figures. Consumer buying of wardrobes.

113 Basic Clothing Construction (3) I, II Des Jarlais
(1L, 1L-Lb, 1Lb)
Principles of basic clothing construction with emphasis on standards, techniques and related fabric testing.

125 Fashion Analysis (3) I, II (2L, 1Lb) Sankey
Dynamics of fashion; environmental factors influencing fashion demand; analysis of trends. History, structure and terminology of the fashion industry.

213 Textiles (4) I, II (2L, 1Lb) Walker
Physical and chemical properties, structures and nomenclature of textiles and other related materials used in apparel and home furnishings.

- 215 Block Pattern Designing (3) I, II (3L)** 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 (2L, 1Lb)** Staff
Development of apparel design through sketching the fashion figure. Pre: 111.
- 315 Draping (3) I, II (2-3 Hr L-Lb)** Umbel
Principles of pattern making through draping muslin models on professional dress forms. Pre: 215 or consent of instructor.
- 316 Advanced Pattern Designing (3) II (2-3 Hr-Lb)** Furer
Fashion designs made by flat pattern method. Muslin proofs constructed and patterns graded. Pre: 315.
- 324 Fashion Careers (1) II (1L)** 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. Minimum sophomore standing.
- 327 Fashion Buying and Merchandising (3) I, II (3L, 1Lb)** Troxell
Major considerations involved in buying and selling fashion merchandise. Types of retail merchandising organizations, analyzing consumer demand, selecting merchandise for resale, resident buying offices, fashion coordination, building a fashion image. Pre: 125, Mkt 300 or concurrent registration.
- 328 Merchandise Planning and Control (3) I, II (3L)** Troxell
Theories, problems and procedures relating to financial and assortment planning and control of retail inventories. Pre: 327, Acct 201-202.
- 329 Field Experience (3) SS only** Troxell
Minimum of eight weeks' full time supervised internship in the fashion industry; comprehensive terminal report required. Pre: 328 and consent of instructor.
- 330 Advanced Materials and Methods for Clothing Construction (3) I, II (2-3 Hr L-Lb)** Sankey
Principles of advanced techniques for garment construction with emphasis on new and difficult to handle fabrics. Pre: 113 or consent of instructor.
- 401 Man and Clothing (3) I, II (3L)** Walker
Seminar in sociological and psychological implications of clothing and adornment for the individual and society, as seen in historic and contemporary perspective. Pre: 6 cr. Soc or Psy and consent of instructor.
- 403 Case Studies in Fashion Merchandising (3) I (3L-Lb)** Troxell
Analysis of the decision making processes 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 and consent of instructor.
- 416 Costumes of East Asia (3) I (3L)** 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: 6 credits World Civilization. (FDM 216—F.D. majors only.)
- 417 Costumes of the Western World (3) I, II (3L)** Furer
Chronological study of costume as related to culture and customs in its historical and contemporary contexts. Pre: 6 credits World Civilization. (FDM 216—F.D. majors only.)
- 418 Costumes of South and Southeast Asia (3) II (3L)** Umbel
Historical development and characteristic features of traditional and folk costumes and fabrics of India, Pakistan, Burma, Thailand, Cambodia, Malaysia, Indonesia, the Philippines. Relation to customs and culture; impact of Western influence on contemporary dress. Pre: 6 credits World Civilization. (FDM 216—F.D. majors only.)
- 419 Apparel Design Studio (4) I (1-2 Hr L; 1-4 Hr Lb)** Furer
Creative design including sketching projects, draping, and blocking; construction of muslin proofs, and portfolio development. Pre: 316, 330, 416 or 418, and 417.
- 420 Apparel Design Studio (4) II (1-2 Hr L; 1-4 Hr Lb)** Furer
Construction of ready-to-wear, advanced pattern grading, and apparel engineering. Pre: 419.
- 425 Fashion Sales Promotion (3) I (3L)** Sankey
Principles and procedures in promoting the sale of fashion merchandising. Comprehensive analysis of fashion advertisements, displays, publicity and other sales presentations of retail and manufacturing firms. Pre: 125, 327.
- 499 Directed Reading and Research (v) I, II** Herrick
- 699 Directed Reading and Research (v) I, II** Herrick

Food and Nutritional Sciences (FN)

The curriculum in food and nutritional sciences is designed to prepare men and women for new and expanding career opportunities arising from national and international concern for the nutritional welfare of people.

The diversified options described are suggestions; all meet the University core requirements. A student may either accept one of the options or with the approval of the department and dean make up his own, provided he meets the University requirements for graduation. If membership in the American Dietetic Association is desired, its requirements must also be met. 125 credits are required for graduation.

The following options are offered:

1. *Nutrition Research*: This option combines study in a large number of related natural science courses in preparation for positions in research and graduate study. Departmental requirements are FN 485, 486, 490, 499, and their prerequisites.

2. *Community Nutrition*: This option covers natural and social sciences to develop communication skills for interpreting nutrition principles in informal instruction. Departmental requirements are FSA 387 or FN 375, FN 476, 477, 485, 486, 490, 499 and their prerequisites.

3. *Therapeutic Dietetics*: This option meets the academic requirements of the American Dietetic Association for hospital dietetics. Departmental requirements are FSA 387, 383, 384, 483, FN 275, 476, 485, 486, 490 and their prerequisites.

4. *Foods in Industry and Research*: This option is designed for training technicians and scientists in areas such as research, product development, evaluation, and quality control. Departmental requirements are FSA 387, FN 275, 285, 476, 477, 492, 499, Fd Sc 401, Ag Ec 434 and their prerequisites.

5. *Consumer Services in Foods*: This option prepares students for positions in commercial foods, in consumer relations, product promotion, and publicity. Persons

with knowledge of many aspects of the food industry and with skills in communication by various media are sought by magazines, newspapers, radio-TV, other food related businesses and government agencies. Departmental requirements are FN 285, FN 375 or FSA 387, 484, FN 376 or Fd Sc 401, FN 476, 477, 492, 499, Mkt 397.

6. *Food Service Management*: This option meets the academic requirements of the American Dietetic Association for administrative internships leading to managerial positions in restaurant, industry dining room, university or hospital food services. Departmental requirements are FSA 381, 383, 384, 387, 389, FN 285, FN 376 or Fd Sc 401, FN 476 and their prerequisites.

Under certain circumstances, the student may petition the curriculum committee to waive or to make substitutions for required courses.

Nutrition Research

First Year

First Semester	Credits	Second Semester	Credits
†*Chem 113	3	†*Chem 114	3
†*Chem 115	1	†*Chem 116	1
†*Quant. Reasoning	3	†*Math 206	3
*Communications	3	*World Civil	3
*World Civil	3	Communications	3
FSA 181 or FN 275	3	Phys 100	3
Total	16	Total	16

Second Year

†FN 285	3	†Chem 133	2
†*Biol 220	5	†Chem 134	2
†*Micro 130	3	†Chem 241	3
†Micro 140	1	†Chem 242	1
*Humanities	3	*Soc Sci	3
		*Soc Sci	3
Total	15	Total	14

Third Year

†Biomed 301	4	†Ag Bio 402 or Bioch 441	3
*Soc Sci	3	†Ag Bio 403 or Bioch 442	1
†Ag Ec 434	3	†Biomed 302	4
*Humanities	3	Fd Sc 401	3
*Humanities	3	Elective	6
Total	16	Total	17

Fourth Year

†FN 485	3	†FN 486	3
FN 477	3	†FN 490	3
FN 492	3	†FN 499	2
Elective	7	FN 476	3
		Elective	4
Total	16	Total	15

Community Nutrition

First Year

First Semester	Credits	Second Semester	Credits
††*Chem 113	3	††*Chem 114	3
††*Chem 115	1	††*Chem 116	1
*Quant. Reasoning	3 or 4	††FSA 181 or FN 275	3
*Communications	3	Communications	3
*World Civil	3	*World Civil	3
*Soc Sci	3	*Humanities	3
Total	16 or 17	Total	16

Second Year

†Chem 133	2	†Chem 241	3
†Chem 134	2	†Chem 242	1
††FN 285	3	††FSA 387 or FN 375	3 or 4
†*Biol 220	5	*Humanities	3
††*Micro 130	3	*Soc Sci	3
††*Micro 140	1	*Soc Sci	3
Total	16	Total	16 or 17

Third Year

††Ag Bio 402 or Bioch 441	3	†FN 476	3
††Ag Bio 403 or Bioch 442	1	Ed EC 314	2
††Biomed 301	4	†HD 232, Psy 320, or Psy 322	3
†Mgt 301	3	†Acct 201 or FSA 384	3
†FSA 383	3	*Humanities	3
		Elective	3
Total	14	Total	17

Fourth Year

††FN 485	3	††FN 486	3
††FN 477	3	†FN 490	3
HD 345	3	†FN 499	2
HD 300 or 400 levels	3	HD 343	3
Ag Ec 434 or Psy 113	3	Elective	4
Total	15	Total	15

*University core.

†Required for this option.

††Required for ADA membership if desired. Students making any changes or substitutions of the above should check the ADA requirements.

Communications and Quantitative Reasoning courses may be passed by examinations.

Electives: HE 251, 253, 357, 475, SS 291, Sp 221, Journ 325, Anthr 480, Nutr 681, GE 251, Soc Sci 201, and Ed EP 311.

Therapeutic Dietetics

First Year

First Semester	Credits	Second Semester	Credits
†††Chem 113	3	††*Chem 114	3
†††Chem 115	1	††*Chem 116	1
*Quant. Reasoning	3 or 4	Communications	3
*Communications	3	*Humanities	3
*Soc Sci	3	*Soc Sci	3
		*Soc Sci	3
Total	13 or 14	Total	16

*University core.

†Required for this option.

It is advisable for students contemplating graduate work (Ph.D.) to take physics and physical chemistry. Communications and Quantitative Reasoning courses may be passed by examinations.

Electives: GE 251, MT 471-472, MT 473-474, Eng 310, Phys 170, 171, 272, 273, Chem 351-352, FN 375, 376, FSA 281.

Second Year

†Acct 201	3	*Humanities	3
*Biol 220	5	††FSA 387	3
††FSA 181 or		*World Civil.	3
FN 275	3	††FN 285	3
††Micro 130	3	†Chem 241	3
††Micro 140	1	†Chem 242	1
Total	15	Total	16

Third Year

††FSA 383	3	††FSA 384	3
†Mgt 301	3	FN 376 or Fd Sc 401	3
FN 375 or Phys 100	3	††FSA 483	3
††Biomed 301	4	††Ag Bio 402 or	
*World Civil.	3	Bioch 441	3
		††Ag Bio 403 or	
		Bioch 442	1
		Elective	3
		††FN 490	3
Total	16	Total	19

Fourth Year

††FN 485	3	†FN 486	3
HD 345	3	FSA 482	3
†Mgt 341	3	†FN 476	3
*Humanities	3	†Ed Psy 311	3
Elective	3	Elective	3
Total	15	Total	15

*University core.
 †Required for this option.
 ††Required for ADA membership if desired. Students making any changes or substitutions of the above should check the ADA requirements.

Communications and Quantitative Reasoning courses may be passed by examinations.
 Electives: GE 251, HE 357, Sp 221, Nutr 681.

Foods in Industry and Research

First Year

First Semester		Second Semester	
	Credits		Credits
†*Chem 113	3	†*Chem 114	3
†*Chem 115	1	†*Chem 116	1
†*Quant. Reasoning	3	†*Quant. Reasoning	3
*Communications	3	*Humanities	3
*Humanities	3	*Soc Sci	3
†*Phys 100; Prereq.		†FSA 181 or	
to Fd Sc 401	3	FN 275	3
Total	16	Total	16

Second Year

†Chem 133	2	†Chem 241	3
†Chem 134	2	†Chem 242	1
*World Civil.	3	*Humanities	3
*Soc Sci	3	†FN 285	3
†*Micro 130	3	*World Civil.	3
†Micro 140	1	Communications	3
Total	14	Total	16

Third Year

†Ag Ec 434	3	*Soc Sci	3
†*Biol 220	5	Mkt 300	3
HE 357	3	†FSA 387	3
Elective	5	†Fd Sc 401	3
		Elective	4
Total	16	Total	16

Fourth Year

†FN 477	3	†FN 476	3
†FN 492	3	†FN 499	2
Elective	10	Elective	10
Total	16	Total	15

*University core.

†Required for this option.

It is advisable for students contemplating graduate work (Ph.D.) to take physics and physical chemistry.

Electives: Soc 201, Eng 310, Mkt 315, 331, 341, 381, Phys 170, 171, 272, 273, Chem 351, 352, GE 251, Micro 351.

Consumer Services in Foods

First Year

First Semester		Second Semester	
	Credits		Credits
†*Chem 113	3	*Chem 114	3
†*Chem 115	1	*Chem 116	1
*Quant. Reasoning	3	†FSA 181 or FN 275	3
*Communications	3	Communications	3
*World Civil.	3	*World Civil.	3
*Soc Sci	3	*Humanities	3
Total	16	Total	16

Second Year

†Chem 133	2	†FN 285 or 385	3
†Chem 134	2	HE 251	3
†FSA 387 or FN 375	3	*Humanities	3
Psy 113 or		*Soc Sci	3
Ag Ec 434	3	Art 107	3
*Soc Sci	3		
Phys 100	3		
Total	16	Total	15

Third Year

*Biol 220, Micro 130, 140,		†FN 376 or Fd Sc 401	3
or Zool 101	4 or 5	†Mkt 397	3
Mkt 300	3	Journ 325	3
Mkt 321	3	Art 266	3
*Soc Sci 100	3	Ed EC 314	2
Art 265	3	Sp 262	3
Total	16 or 17	Total	17

Fourth Year

†FN 492	3	*Humanities	3
†FSA 484	3	†FN 476	3
Psy 320 or 322	3	†FN 499	2
†FN 477	3	Elective	6
HE 357	3		
Total	15	Total	14

*University core.

†Required for this option.

Communications and Quantitative Reasoning courses may be passed by examinations.

Electives: Journ 260, Mkt 331, 341, 381, Ed EP 311.

Food Service Management

First Year

First Semester	Credits	Second Semester	Credits
††*Chem 113	3	††*Chem 114	3
††*Chem 115	1	††*Chem 116	1
*Quant. Reasoning	3 or 4	*Humanities	3
*Communications	3	Communications	3
Humanities	3	††*FSA 181	3
Soc Sci	3	Phys 100	3
Total	16 or 17	Total	16

Second Year

*World Civil	3	*World Civil	3
††FN 285	3	*Soc Sci	3
††*Micro 130	3	*Soc Sci	3
††*Micro 140	1	*FSA 389	3
†Acct 201	3	Elective	3
††FSA 387	3		
Total	16	Total	15

Third Year

*Humanities	3	††FN 376 or	
††FSA 383	3	Fd Sc 401	3
*Biol 220	5	††FSA 384	3
†Mgt 301	3	FSA 483	3
FN 375	3	Elective	6
Total	17	Total	15

Fourth Year

†Mgt 341	3	*FN 476	3
Ag Ec 434 or		Bus Law 300	3
Bus Stat 301	3	FSA 482	3
††FSA 381	2	Elective	5
†Biomed 301	4		
Elective	3		
Total	15	Total	14

*University core.

†Required for this option.

††Required for ADA membership if desired. Students making any changes or substitutions of the above should check the ADA requirements.

Communications and Quantitative Reasoning courses may be passed by examinations.

Elective: FSA 484.

Professors: Lichten, Orr, Van Reen.

Associate Professors: Hilker, Standal, Weddle, Young.

Assistant Professors: Ching, Maretzki, Wenkam.

Instructor: Helber.

275 Principles of Food Preparation (3) I, II (2L, 2Lb) **Weddle**
Scientific principles underlying preparation of foods to yield products of standard quality.

285 Introduction to Human Nutrition (3) I, II (3L, 1Lb) **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 (3) I (1L, 2Lb) **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 (2L, 2Lb) **Weddle**
Comparative food studies with emphasis on physical and chemical variables. Pre: 275, Chem 113-114, FN 375 or consent of instructor.

475 Principles and Practices of Human Nutrition (3) I, II (3L) **Young**
Basic principles and practices of nutrition. Fall semester course includes topics such as effects of new developments in food production and processing on nutrients. Specially designed for non-majors or students in related fields. Spring semester course specially designed for students in nursing and other allied health professions. Includes the application of nutritional principles in the selection of normal and therapeutic diets. Pre: Chem 113-114, Biol 220, Biomed 301, or consent of instructor.

476 Cultural Aspects of Food Habits (3) II (3L) **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 (1L, 2Lb) **Wenkam**
Proximate analyses of foods and their interpretation. Pre: Math 134 and Chem 133, 134, or equivalent; consent of instructor.

485-486 Advanced Human Nutrition (3-3) I, II (Yr.) **Lichten**
Biochemistry and physiology of nutrition; fundamental concepts of human nutrition. Pre: Ag Bio 402 or Bioch 441; FN 285 or 385; Biomed 301; or equivalents.

490 Diet and Disease (3) II (2L, 1Lb) **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 (2L, 1Lb) **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.

497 Community Nutrition (3) I (2L, 1Lb) **Staff**
Translation of nutrition research into informal education in the community. Consideration of community needs and politics, inter-agency coordination and training of para-professionals. Pre: 285.

499 Directed Reading and Research (v) I, II **Van Reen**

Graduate Courses in Nutrition (Nutr)

676 Nutritional and Metabolic Diseases (2) II (2L) **Lichten**
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. (Alt. yrs.; offered 1973-74.)

677 Nutrition in Reproduction, Growth, Development and Senescence (3) I (3L) **Standal**
Nutritional requirements as altered by physiological stresses of pregnancy, periods of growth and aging; emphasis on mechanisms. Pre: 485-486 or equivalent. (Alt. yrs.; offered 1972-73.)

679 Mineral Metabolism (2) I (2L) **Van Reen**
Nutritional requirements for minerals during life cycle; functioning of minerals in biological systems; relationship to disease states. Pre: 485-486 or consent of instructor. (Alt. yrs.; offered 1973-74.)

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 (1L, 2Lb)** Standal
Nutrition survey techniques including biochemical assessment of nutritional status in man. Pre: 485-486 or consent of instructor. (Alt. yrs.; offered 1973-74.)
- 684 **Lipids in Health and Disease (2) I (2L)** Young
Lipid metabolism and nutrition with particular emphasis on cardiovascular disease. Pre: 485-486 or consent of instructor. (Alt. yrs.; offered 1973-74.)
- 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.
- 688 **Vitamins in Health and Disease (2) I (2L)** Hilker
Vitamins; their properties, biochemical functions, interrelationships and disease conditions. Pre: consent of instructor. (Alt. yrs.; offered 1972-73.)
- 699 **Directed Reading and Research (v) I, II** Staff
- 800 **Thesis (v) I, II** Staff

Food Service Administration (FSA)

- 181 **Basic Principles of Quantity Food Service Management (3) I, II (1L, 2Lb)** Ching
Introduction to fundamentals of basic food preparation, stressing interrelationship of physical, biological, chemical changes in food caused by heat application.
- 381 **Food Cost Accounting (2) I** Staff
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** Staff
Principles of procurements: its relationship to purchasing ethics, policies, specifications. Quality standards for equipment and supplies. Field experience required. Pre: 387.
- 384 **Food Facilities System Planning (3) II** Staff
Analysis of work methods using time and motion study. Layout, design, procurement of furnishings for dining and kitchen facilities and auxiliary space. Pre: 383.
- 387 **Quantity Food Production (3) I, II (2L, 1Lb)** Staff
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.
- 389 **Classical Food and Beverage Management (3) I, II** Staff
Study of classical beverages; production characteristics in relation to food service planning and classical cuisine. Lab experience with gourmet and ethnic cookery. Pre: 387.
- 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 (v) 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 (2L, 1Lb)** 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: 387, or FN 375, or 376.
- 499 **Directed Reading and Research (v) I, II** Staff

Home Economics (HE)

Students who select options within the department of home economics may choose an approach in which a knowledge of family life in our society and a general home economics background prepares them to work in various people-serving capacities or teach persons of various age levels in different organizations and agencies.

OPTION I. Home Economics: Community Services. This option permits an individualized approach to preparation for positions in which family decision making and consumer competency are used to improve the quality of living for individuals and families in different socio-economic situations. A common core of home economics subject matter is supplemented with individually chosen additional courses in both human resources development and in areas giving understanding of various social conditions. This option is directed toward preparation for a variety of positions such as in Cooperative Extension Service, community service organizations and agencies, or those concerned with consumer services.

OPTION II. Home Economics Education: Secondary School Teaching. Students interested in home economics education apply for entrance to the College of Education at the end of their sophomore year. They complete the requirements for a Bachelor of Education degree and Professional Diploma (a five-year program) in the College of Education. The B.Ed. Home Economics Education program meets the home economics requirements for a vocational home economics teacher of Hawaii.

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OPTION I

HOME ECONOMICS COMMUNITY SERVICES

General Education Requirements	Credits	
Communications	3	
Quantitative and Logical Reasoning	3	
World Civilizations	6	
Humanities (Art 101 is required)	9	
Natural Sciences	9-12	
Social Sciences (Econ 120 is required)	9	39-42
Cultural Pursuit		
3 semester courses of coordinated or related subject matter which has on-going cultural significance for the student	9	9
Professional Preparation		
HE 231-232	6	
FN 285	3	
FDM 213	3	
HE 260	3	
HE 357	3	
HE 359	3	
HE 475	3	
Additional courses in HRD selected for individual emphasis	18-24	42-48
Social Conditions or Environment		
3 semester courses directed toward knowledge of social conditions	9	9
Electives		20-26
Total Credits		125

OPTION II

**HOME ECONOMICS EDUCATION
SECONDARY SCHOOL TEACHING**

I. General Education Core	56
(Follow College of Education's Pre-Education Program for acceptable course choices).	
Basic Requirements	15
(English; History; Speech; Quantitative or logical reasoning elective).	
Humanities	15
(5 semester courses, including two English courses from Group I; one course from Group II; one Art course from Group III; one Art course from Group IV).	
Natural Sciences	14-19
1 Chemistry-with-lab: Chem 113-115; 113-115 and 114-116; or 117-118 (4-8 credits)	
1 Physiological science: Zool 101 (4 credits)	
1 Biological science: Biol 220; Micro 130, 351; or Gen. Sci. 121 (3-4 credits)	
1 Natural science elective (3 credits)	
Social Sciences	12
(4 semester courses, including psychology, sociology, and economics).	
II. Professional Education Core	24
Ed EF 310 Foundations of American Educ.	3
Ed EP 311 Psychological Foundations	3
Ed CI 312 Foundations in Curr. and Instr.	3
Ed CI 371 Home Economics Education	3
Ed CI 390 Student Teaching	10
Ed CI 391 Seminar for Student Teachers	2
III. Academic Major and related courses in a teaching field	45
FDM 113 Basic Clothing Construction	3
FDM 213 Textiles	4
FDM — Elective	3
FN 275 Principles of Food Preparation	3
FN 285 Introduction to Human Nutrition	3
FN 375 Meal Management	3
HD 231 Intro. to Human Development	3
HD 341 Family Relationships	3
HE 153 Mgt. of Family Resources	3
HE 260 Fam. Mgt. and Decision Making	3
HE 267 Home Furnishings	3
HE 357 Consumer Economics	3
HE 363 Housing and Society	3
FDM, FN, HD, and. or HE electives	5
IV. Electives	3
Total Credits B.Ed. 128	

(Work to be completed in the fifth year)

I. Professional Education Core	16
Ed CI 471 Spec. Prob. in Home Ec. Ed.	2
Ed CI 540 Practicum in Curr. Dev.	3
Ed Ec — 314, 599, 614, OR 620	2-3
Ed EP 416 Tests and Measurements	3
Ed — — Electives in graduate education courses numbered at the 600 level or above	6
II. Academic Major and related courses	14
Electives from the Division of Human Resources Development	
Resources Development	11
Electives from a related field	3
Total Credits P.D. 30	
Credits for Program of Studies for Secondary Education Major in Home Economics	158

Professor: Dale. Lecturer: Kimura.

153 Management of Family Resources (3) I	Dale
Introduction to family management that includes identification and use of some family resources and the implications for family and societal welfare.	
260 Family Management and Decision Making (3) I, II	Dale
Integrated approach to management in the family, emphasizing values and goals of families and their relationships to family functioning and use of resources. Management and decision making concepts applied to family situations in different socio-economic settings.	
267 Home Furnishings (3) I, II	Kimura
Selection, arrangement, and coordination of the various aspects of home furnishings to meet family needs. Development, general features, and design.	
357 Consumer Economics (3) I, II	Staff
Role of family as consumer unit in the economy. Pre: Econ 120.	
359 Home Management Seminar (3) II	Dale
Readings, group discussion and application of managerial concepts, such as decision making, resource allocation and work simplification as they relate to the student's living situation and families in the community. Experiences in group decision making. Pre: 260.	
363 Housing and Society (3) I, II	Kimura
Characteristics, standards, legislation, financing and research relating to housing for families.	
461 Family Economics (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 (v) I, II	Dale
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 (v) I, II	Dale
699 Directed Reading and Research (v) I, II	Dale

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 develop individual programs in human development with emphasis on work with preschool children and their parents in group centers, 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 345.

The 16-hour junior seminar semester is made up of HD 397 (3), HD 398 (3), HD 449 (4), HD 499 (6) taken concurrently. Seniors must take HD 497 and a

minimum of 13 additional hours chosen from HD courses. For seniors electing HD 449 fieldwork placements are designed to meet individual needs and interests. Majors also elect 21 hours from psychology, sociology, anthropology and other related areas.

Those students planning to major in Human Development in combination with Early Childhood Education should complete the 9 hours of introductory human development work while in the lower division.

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: Allen, Chantiny, Kraemer, Lampard, Niyekawa-Howard, Weeks.

Associate Professors: Lenzer, Wittermans.

Assistant Professors: Fargo, Meredith, Schwitters.

Lecturer: Rauch.

Research Affiliate: Izutsu.

- 197 Introductory Seminar in Student Development (2) I, II** **Robb**
Exploration of issues in higher education, both practical and philosophical. Emphasis on student development and student roles within a setting of higher education. Self-assessment of growth and perception is encouraged. Special attention given to the problems of the disadvantaged and handicapped student.
- 207 Shifting Sex-Roles in Contemporary Societies (3) I, II** **Staff**
Biological and cultural bases of sex-role differentiation; political, economic, and professional implication; influence on self-concept.
- 231 Introduction to Human Development (3) I, II** **Schwitters, Meredith, Rauch**
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) I, II** **Schwitters, Meredith, Lenzer**
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. 231 and 232 need not be taken in sequence.
- 297 Development of Human Resources (3) I** **Wittermans**
Core course presenting basic concepts of man and his biopsychological and sociocultural needs as well as the various ways these needs are expressed and fulfilled.
- 332 Cultural Aspects of Child Rearing (3) II** **Wittermans**
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, Rauch**
Principles underlying group work with children. Understanding human growth and interpersonal relationship and maximizing use of environment. Major focus: analysis and program planning. Pre: 231-232; consent of instructor.
- 341-342 Family Relationships (3-3) I, II (Yr.)** **Lampard, Fargo**
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 prerequisite for 342.)
- 343 Human Needs and Community Resources (3) I, II** **Wittermans, Fargo**
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.
- 397 Seminar B: Documentary Research (3) I, II** **Schwitters**
Each student to write and present orally a paper on selected topic in human development. Paper will be based on research in the primary source literature of the social sciences. May be repeated for credit.
- 398 Seminar A: The Self and Process in Human Development (3) I, II** **Fargo**
Provides a practicum experience wherein the student can integrate knowledge of human development and behavior with an increased awareness of self, others and the dynamics of the interaction process, in relation to self and the helping role.
- 430 Work with Parents (3) II** **Chantiny, Fargo**
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.
- 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 The Adolescent in the Family and Community (3) I, II** **Kraemer**
Multidisciplinary study of adolescence and youth as stages of development within the 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, Wittermans**
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 (0-4) 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.
- 497 Problems and Issues in Human Development (2) I, II** **Chantiny**
Seminar members integrate their formal and practical knowledge of human development as an approach to defining and solving developmental problems of the individual in the family and community.
- 499 Directed Reading and Research (v) 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.
- 646 Interpersonal Relationships (3) Yr.** **Lampard**
Study of human relationships in transition to autonomy and the community. Emphasis on family and school.
- 699 Directed Reading and Research (v) I, II** **Chantiny**

COOPERATIVE EXTENSION SERVICE

In Agriculture and Human Resources Development

This off-campus noncredit educational 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: Oahu: Honolulu, Kaneohe, Wahiawa, Waianae; Kauai: Lihue; Hawaii: Hilo, Naalehu, Kealahou, Honokaa, Kamuela; Maui: Wailuku, Kula; Molokai: Kaunakakai.

Improved farm and home practices are taught by means of practical demonstrations before University extension clubs, commodity groups, special interest groups, and 4-H clubs of boys and girls. This group instruction is 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.

HAWAII AGRICULTURAL EXPERIMENT STATION

The facilities of the station, including the research staff and the field laboratories, are an important part of 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 research in culture, production, and marketing.

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, Waiakea, Volcano, Hamakua and Waimea; the Maui Branch Station with farms at Haleakala and Kula; the Kauai Branch Station. Modern research facilities for poultry and animals are available at the Animal Sciences Research Center at Waialea, Oahu.



Graduate Division

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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, agronomy and soil science, American studies, anthropology, Asian languages (Japanese), astronomy, biochemistry, biophysics, botanical sciences, chemistry, drama and theatre, economics, educational psychology, electrical engineering, entomology, genetics, geography, geology and geophysics, history, horticulture, linguistics, mathematics, meteorology, microbiology, ocean engineering, oceanography, pharmacology, philosophy (Western, Asian, and comparative), physics, physiology, political science, psychology, sociology, and zoology.
- (2) The master's degree in agricultural economics, agricultural engineering, agronomy and soil science, American studies, anatomy, animal sciences, anthropology, architecture, art, Asian languages (Japanese, Chinese), Asian studies, astronomy, biochemistry, biophysics, botanical sciences, business administration, chemistry, civil engineering, classics, drama and theatre, economics, educational administration, educational communications, educational foundations,

educational psychology, electrical engineering, elementary education, English, English as a second language, entomology, food science, French, genetics, geography, geology and geophysics, German, history, horticulture, information sciences, library studies, linguistics, mathematics, mechanical engineering, meteorology, microbiology, music, nursing, nutrition, ocean engineering, oceanography, Pacific islands studies, pharmacology, philosophy, physics, physiology, political science, psychology, public health,* Russian, secondary education, social work,* sociology, Spanish, speech-communication, speech pathology and audiology, and zoology.

- (3) The professional diploma 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 1972-73 issue of the *Graduate Catalog* send your order and payment in U.S. dollars or International Postal Money Order to the University of Hawaii Bookstore, 1760 Donaghho Road, Honolulu, Hawaii 96822. (U.S. and Canada—\$1.25 surface mail; \$2.00 airmail. Foreign countries within these areas: Africa and Asia—\$2.50; Europe and South America—\$2.50; Central America and Caribbean—\$1.75. Available July 1972.

*For these programs see the *Graduate Catalog* 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, shown by graduation with a *B* average, or by a Graduate Record Examination Aptitude Test score of 500 in both parts of the test.

3. 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.

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, 615, and 647 or 650. School librarians, in addition, will take 681, 682, and 683, or 684.

Academic Advisory Service. The office of the dean provides academic advice and placement counseling.

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Library Studies (LS)

Professors: Ayrault, DeAngelo, Schofield, Stevens, Suzuki, Vann.

Associate Professor: Harris.

Assistant Professors: Abreera, Haas, O'Halloran.

Lecturers: Adams, Fristoe, Hurd, Kamida, Kane, Nunn, Saito, Taylor, West, Wheelwright.

601 Bibliography and Reference Sources (3) I, II O'Halloran

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) I, II

Harris, O'Halloran, 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) I, II

Abreera, Ayrault, 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.

*For application forms or for more information write to: The Graduate School of Library Studies, University of Hawaii, Honolulu, Hawaii 96822.

- 606 Advanced Cataloging and Classification (3) I, II** **Abrera, 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.
- 607 Organization of Non-Book Materials (3) II** **Ayrault**
Study of the principles and practices currently evolving for the organization for use of films, filmstrips, recordings and related media in libraries. Pre: 605.
- 610 Social Functions of Libraries (3) I, II** **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) I, II** **Suzuki, Taylor**
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) I** **Stevens**
Sources, types, uses of government documents, both state and federal; their acquisition and organization for use.
- 642 Audio-Visual Services in Libraries (3) I, II** **Schofield**
Films, filmstrips, recordings, related media as applied to various types of educational programs in libraries. Sources, evaluations, organization, use of audio-visual materials. Materials viewed, audited, judged.
- 647 Management of Library Operations (3) I, II** **Abrera, Vann**
Philosophies and techniques of scientific management, their application to library operations such as circulation, acquisition, cataloging routines. Provides foundation in principal routines in libraries of all types and in theory and practice of scientific management to enable students to analyze routines and, where necessary, to design improved methods for library operations.
- 650 Administration of Libraries (3) I, II** **Fristoe, Suzuki**
Organization and human factors for effective library service. Covers governmental relations, policy making, structure of jobs and departments, communication and coordination, staffing, financing, housing. Case studies used.
- 660 Science and Technology Literature (3) II** **Kane**
Bibliographical structure and sources used in building and servicing collections and providing information in basic and applied sciences. Special attention to pure sciences such as physics, chemistry, biology and to applied fields such as medicine, agriculture, engineering. Pre: 601.
- 664 Abstracting and Indexing for Information Services (3) II** **Abrera, Vann**
Principles, practices, and development of abstracting and indexing services. Integrating these into the complex of special library operations, with emphasis upon current awareness and the retrospective searching needs of clientele. Analyze various types of abstracts, their organization and uses, and develops skill in preparation of abstracts and indexes.
- 665 Special Libraries (3) II** **Wheelwright**
- 670 Literature Searching and Documentation (3) I, II** **Abrera, Haas**
Special intellectual and mechanical tools for storage, searching, reproduction, transmission of information. Deals with audience and materials of documentation. Of particular value to service in special research, large public, university libraries. Pre: 605.
- 678 Reader Services (3) I, II** **Haas, Harris**
Introduction to major forms of library services to the reader as developed in libraries of all types. Emphasis on study of community served as basis for program of reader services. Wide reading, class lectures and discussion, student projects, opportunity to observe services provided in public, school, college, special libraries in the area.
- 681 Reading Materials for Children (3) I, II** **DeAngelo**
Historical background of children's literature; selection aids, criteria for evaluating, evaluation of contemporary children's books and recordings on basis of development needs of children through sixth grade. Opportunity to develop skills in storytelling.
- 682 Reading Materials for Youth (3) I, II** **DeAngelo, Hurd**
Evaluation of books and magazines for junior and senior high school age: book selection tools and criteria for judging. Developmental needs of young people with attention to materials for exceptional readers. Methods of stimulating reading such as book lists and book talks.
- 683 Service for Children and Young People (3) I, II** **Schofield**
Organization and provisions of services from preschool through young adult years, in school and public libraries. Special attention to preparation of lessons in use of books and libraries.
- 684 School Library-Media Center Problems (3) I** **Schofield**
Organization and administration of service to meet needs of the individual school media center program as well as larger units of service at district, county, 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. Pre: 642.
- 685 Traditional Literature and Oral Narration (3) I, II** **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) II** **Staff**
Course will reflect interests of visiting and permanent faculty and will concentrate on one major topic of current interest such as library service to disadvantaged, library and information networks or organization on non-book materials.
- 696 Field Seminar (3) Yr. I, II** **Staff**
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 interrelations of its services. Serves as practice teaching course for school librarians.
- 701 Administration of Libraries in Asia (3) I, II**
Governmental and fiscal policies and programs, personnel administration, policy making, buildings and equipment for libraries in Asian countries.
- 706 Technical Services for Far Eastern Collections (3) I** **Suzuki**
Principles and practices of acquiring and organizing Far Eastern Oriental collections. Special attention given to book trade and to special problems of cataloging and classifying Chinese, Japanese, Korean books and materials. Pre: 606, 615 or equivalent.
- 715 Seminar in Library Development (3) I** **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.

College of Continuing Education

The College of Continuing Education and Community Service, 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, formal and informal courses, lyceums, lectures, and educational experiences designed for particular purposes or groups. These continuing education programs are available to all interested adults.

The College also provides educational opportunities for students who cannot, because of time or distance, attend courses regularly scheduled on campuses 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 and to mature high school graduates.

In addition the College administers the academic affairs of students who have been admitted to the University, but who 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 course they choose.

The activities of the College are organized under five 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, including sufficient courses to complete all requirements for bachelor's degrees in accounting, management, history, mathe-

matics, psychology or sociology. 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 Hickam Air Force Base, Pearl Harbor, 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 at public schools on Oahu, Maui, Kauai, Molokai, and Lanai. With the cooperation of the State Department of Education, advanced education courses and in-service courses designed to upgrade the teachers' subject-area competence are offered. In addition, special institutes for teachers meet on several islands during the summer. 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 College operates overseas centers at Samoa, Kwajalein and Midway islands. Selected courses—credit and noncredit—are given in an effort to meet the needs of personnel, both military and civilian, stationed in these areas.

Noncredit 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. Noncredit 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.



The Hawaii English Language Program (HELP) offers intensive English language training for nonnative speakers, with basic, intermediate, and advanced classes in listening, speaking, reading and writing.

Under federal contracts the College schedules credit courses in the Navy's PACE program for shipboard personnel.

Individual course offerings at times and places suited to special groups of students can be arranged, either on a credit or noncredit basis.

Community Service Programs

A variety of informal presentations in different media respond to cultural interests throughout the state.

Lyceum Program provides informal ongoing education through cultural presentations, including a touring subscription series of dance, drama, literary and musical events presented annually throughout the state, and unique performing arts presentations on the Manoa Campus.

Speakers Bureau provides single speakers for organizations, upon request (a \$10 fee for each engagement is charged), and plans and presents appropriate lecture series, film-discussion series, and other cultural program series in cooperation with military services, community colleges, Hilo College, libraries and community centers, and in culturally-deprived areas of the Pacific (Kwajalein).

Civil Defense Training Program. Under contract with the Department of Defense, the College offers courses to train Shelter Management and Radiological Monitor instructors. Additional courses offered are Aerial Radiological Monitoring, 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 government, business and industry. Courses and conferences are offered on all islands.

Conference Programs serve community groups and University departments by providing planning and administrative services for conferences, institutes, and workshop programs. Services include assistance in planning; preparation and administration of budgets; procurement of resource persons, arrangements of travel, living accommodations and facilities; preparation of final financial and proceeding reports.

Head Start Regional Training Program, funded by the Office of Child Development, HEW, coordinates all training provided for Head Start staff and parents in the state of Hawaii and Micronesia.

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 develops television programs, films, slide presentations and all related media areas for broadcast or other educational distribution.

Kapaa Community Service Project is a pilot program for small communities which lack the advantage of having resources readily available from the University. This project tries to evaluate the needs and interests of the community and provides a comprehensive program. It also maintains a community center filled with a wide range of reference and resource materials.

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 clearinghouse for information and training in government-management practices, techniques and new technologies.

Center for Labor-Management Education

The center, instituted in 1965, provides 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 weekend institutes, conference and staff training programs.

Special Programs

These programs develop and facilitate continuing education opportunities directed to target groups in the community with unusual needs for advising or administrative services.

Continuing Education for Women offers academic and career planning services to women entering or re-entering the University. CEW works through the University system and seeks to facilitate a successful academic experience for mature women. Each semester, CEW conducts a twelve-week seminar, "You and the University," to assist women in their return to school. Individual counseling is also available at Suite 301, 931 University Avenue.

The **Study Abroad Office** is responsible for coordinating all study abroad opportunities in the University system as a service for the University Study Abroad Committee. It sponsors a variety of programs ranging from short-term study tours to academic-year programs at cooperating mainland and foreign institutions. While primary emphasis is placed on undergraduate and graduate needs, special programs may be designed to assist the training of various professional groups. While not overlooking other areas, primary planning has stressed Hawaii's long-term concerns with Asia and the Pacific.

Announcements and other information concerning these varied programs are available from the College upon request.



East-West Center



The East-West Center is an international educational institution established in Hawaii by the United States Congress in 1960. Formally known as the "Center for Cultural and Technical Interchange Between East and West," the institution brings men and women together from Asia, the Pacific area and the United States to exchange ideas in a variety of cooperative programs of study, training and research.

The federally-funded East-West Center is administered by the University of Hawaii Board of Regents to further the broad national goal of fostering better relations and mutual understanding among the peoples of the area. Each year nearly 2,000 degree students, mid-career professionals seeking further knowledge and skills in short-term projects, and research-oriented senior fellows and fellows study, work and confer together in East-West Center programs. They are supported by annual grant appropriations from the Congress, supplemented in some fields by cost-sharing contributions from Asian/Pacific governments, regional agencies and private foundations.

Academic instruction is provided for degree students, predominantly at the graduate level, by the University of Hawaii. Degrees are awarded by the University. Some East-West Center program staff members hold joint faculty appointments with the University. Professional study and training programs and research are directed by Center staff members. Fundamental to Center goals is the interchange of information, ideas and beliefs in an atmosphere of academic freedom. The Center's multi-national staff, in association with the University of Hawaii, provides the basis for growing cooperative arrangements with universities and other institutions in Asia, the Pacific area and the United States mainland. Center programs combine theory and practice in providing present and future leaders the opportunity for dealing with mutual problems. The Center offers other opportunities, including field education, which extend beyond formal course work. Academic degree study, research and professional study and training are integrated in problem-oriented institutes whose programs foster deeper intercultural understanding.

Problem-Oriented Programs

East-West Communication Institute provides graduate students, scholars and professionals in various fields of communication with the opportunity to work together in programs of education, research and training. Broadly seeking insights into the processes of sharing knowledge across cultural frontiers, the institute is directly concerned with helping build and strengthen mass media and other communication systems essential to social and economic change and development in the United States, Asia and the Pacific area. In addition to those with prime interest in communication studies, more generalized students and scholars in the social sciences and humanities can find appropriate areas for study and research emphasizing cross-cultural communication. Scholarships for M.A. and Ph.D. studies are awarded through the institute in such disciplines as Asian studies, American studies, anthropology, design, educational communications, educational psychology, library studies, Pacific islands studies, political science, psychology, sociology, speech communication and related fields. In addition to their degree work, students are expected to become knowledgeable in communication research and theory, and to develop media skills in the use of communication in development programs. Students also participate with senior scholars and professional practitioners in institute-directed research, seminars, workshops and training projects. Jefferson Fellowships are awarded annually to mid-career Asian/Pacific and American journalists in print and broadcast media for a semester of noncredit study at the University of Hawaii in fields relating to developmental communication. They also participate in a wide range of professionally-related activities, including an observation tour of the U.S. mainland. The institute, under a grant from the Agency for International Development, is carrying out a three-year inventory/analysis study of information, education and communication support for family and population planning programs, as well as training and research in these fields. Other communication resource material is collected for use of students and scholars, as well as for dissemination to other institutions through such means as a newsletter, microfiche, bibliographies, abstracts, summary translations, etc.

East-West Culture Learning Institute seeks deeper insight into cultural interchange by systematic study and analysis of characteristic features shared by people in various societies. The institute's scholarly and practical training interests range from a society's humanistic and artistic achievements to material things such as styles of clothing; from patterns of behavior such as the way men talk and act to their religious and philosophical beliefs. Graduate students seeking the M.A. and Ph.D. degrees work with staff, senior fellows and professional study participants on research projects relevant to culture and language learning. In degree study, heaviest concentrations are in such areas as psychology, Asian studies, linguistics and English as a second language. Other disciplines represented include American studies, anthropology, art, drama and theater, East

Asian languages, educational administration, educational foundations, educational psychology, English, geography, history, music, Pacific islands studies, philosophy, political science, public health, social work, sociology and speech communications.

East-West Food Institute deals with an integrated interpretation of the human, technical and economic concerns with food. Research, education and training programs are related to the efficient and profitable production of commodities from land and sea resources; the evaluation and improvement of nutritional quality; techniques of processing, preservation and distribution; and preparation for effective utilization. Programs also deal with economic, social and political policies, cultural values, institutions, and population characteristics related to food from production to consumption. Scholarships for post-graduate study at the master's and doctoral degree levels are awarded through the institute for students in the field of agriculture, fisheries, nutrition, food technology and economic analysis, as well as the humanities and other natural and social sciences that touch on food-related problems. Institute students, in addition to their primary course requirements, are expected to take at least one course in the tropical application of a food-related discipline; take a course in "Agriculture and Rural Development Administration"; and participate in at least one semester of the institute's seminar "The Food Systems of Asia and the Pacific," a four-semester cycle focusing, in turn, on Southeast Asia, East Asia, South Asia and the Pacific. Students also have the opportunity to join with staff, fellows and professional study participants in "task force" groups dealing with specific problems, insofar as is appropriate to their degree program and career objectives. Research areas given priority include agricultural diversification and multiple cropping, systems of crop protection, food quality, planning and implementation of food-related programs and policies, and application of the "systems" concepts to modernization problems in fields related to food.

East-West Population Institute, in aiming to contribute to the understanding and solution of population problems, conducts a broad research program, promotes graduate study in its field, organizes a variety of professional study and training projects, and engages in technical cooperation with sister institutions in Asia, the Pacific area and the U.S. mainland. The institute awards East-West Center scholarships to students seeking advanced degrees from the University of Hawaii in various disciplines closely related to population studies. A Certificate in Population Studies is offered in the College of Arts and Sciences, which may be taken in conjunction with graduate degrees (M.A., M.S., M.P.H., Ph.D.) in population-related disciplines. The aim is to provide opportunities for graduate students to acquire an understanding of demographic structures and processes, and a competence in aspects of population related to their particular discipline and professional orientation. Course offerings include demographic anal-

ysis, ecological anthropology, communication, manpower economics, economics of population growth, population geography and rural and urban sociology. M.P.H. and M.S. degree study awards are offered in the School of Public Health involving population and family planning studies, biostatistics, maternal and child health, world population problems, fertility and reproduction, vital and health statistics, techniques of demographic analysis. The institute complements formal graduate training in three ways: by providing more intensive advisory and technical services to students, by involving them in research seminars, and guiding them in field education. For more advanced students, particularly at the Ph.D. level, field work outside Hawaii is arranged and supported by the institution on a team or individual basis. A close day-to-day contact is maintained between the institute and the teaching departments by faculty holding joint appointments. 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 library and research facilities in Asian and Pacific studies. Research directed by institute staff focuses on two main areas: analyses of the causes and consequences of population change, and on the field of demography proper, with emphasis on studies of population change and composition in Asia and the Pacific. The institute maintains a specialized collection of books and reference materials, and engages in certain service-related activities.

East-West Technology and Development Institute programs seek to increase understanding of development as a whole, with special emphasis on the interaction and respective roles of men, institutions and technology as economic growth and national development proceeds in both East and West. An added dimension to conventional university education and technical training is provided by involving graduate students, senior scholars, technologists and administrators in integrated development planning on a multi-national, multi-disciplinary level. Special interest is given to fostering the entrepreneurial role in development by working on problems of organization and management of private and public organizations. The institute is concerned not only with engineering research to adapt existing technologies and to create new technologies more appropriate to the requirements of both East and West, but also with economic, political, cultural and psychological factors which affect the adoption of new ideas, and with the impact of rapid technical change on the development process as a whole. Advanced degree scholarships are awarded not only in technically-oriented engineering studies, but also in such development-oriented fields as economics, business administration, sociology, political science, urban and rural planning, and the ocean and geo-sciences. Graduate students are offered the opportunity to become involved in various research and training programs. In an effort to increase the sensitivity of technologists to socio-cultural factors, engineering students are encouraged to enroll in at least one social science course in development or development planning. TDI sponsors a continuing seminar

which—because of the multi-disciplinary, multi-national composition of its staff, senior fellows and students—exposes all participants to a wide variety of approaches and perspectives relating to the problems of technology and development.

Open Grants

A limited number of grants are offered each year for degree study, as well as awards for senior fellows and fellows, in academic fields not directly related to the problem-oriented programs. The open grants provide the East-West Center with flexibility for accomplishing its goals and meeting requirements for equitable geographic distribution of participants. Students are selected in a wide range of disciplines, primarily at the graduate level. A few grants are made for undergraduates from countries in Asia and the Pacific to meet specific objectives. Open grants students meet the high standards required of all Center participants, including a demonstrated interest in cross-cultural study. While formal coursework and degrees are taken at the University of Hawaii, students are provided the opportunity for participation in various Center activities and informal seminars with senior fellows on open grants. Study themes are selected from year to year for these informal seminars designed to involve fellows and students more deeply in the search for mutual understanding than is normally afforded in formal course work. One theme for 1972-73 is "Alternative Futures," in which students and fellows may explore the perplexing problems brought about by rapidly changing societies and the alternatives which may be available to us.

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Scholarships and Grants

Degree scholarships for study at the University of Hawaii and participation in Center-sponsored programs generally includes round-trip air fare from the student's home, housing in Center residence halls, tuition and books, medical insurance and a modest stipend for food and incidental expenses. The Center is not able to provide transportation or support for dependents. If the student meets Center requirements, a grant may provide for field education in Asia, the Pacific area or the United States mainland for periods ranging up to eight months for M.A. students and fifteen months for Ph.D. students. Candidates for degrees must provide evidence of professional interest in the Center program of their choice, meet the high academic standards of the University of Hawaii, and at the same time demonstrate interest and potential for contributing to intercultural communication. The Center grantee assumes an obligation to help advance the broader cultural aims of the Center, not only in its academic aspects but also in its day-to-day programs of interchange, both formal and informal. Scholarships for study at the master's degree level are generally awarded for 17 months, if the student begins in September, and for 19 months for those beginning in June. A small number of doctoral study grants are made for 36 months to highly promising

individuals who normally must hold an M.A. degree. All degree programs for Americans are at the graduate level. Some undergraduate scholarships are awarded for students from some areas in Asia and the Pacific to meet specific objectives.

Senior Fellows and Fellows are scholars and authorities in fields relevant to institute programs and Center goals who are invited to the Center for participation in research and intercultural activities. Grants are usually awarded for periods ranging from four to twelve months. Senior fellows are scholars and officials who are distinguished and recognized for past professional contributions in their fields. Fellows are outstanding individuals still in early phases of their careers.

Professional Study and Training grants are made for nondegree participants in a wide variety of projects directed by the institutes, usually on a cost-sharing basis with cooperating institutions or agencies. Ordinarily participants are nominated by the co-sponsoring agency and selections made by the East-West Center. Project periods generally vary in length from one month to one year. Housing, living expenses and training costs are provided on the same general basis as provided for academic student grants. Transportation to and from Hawaii is usually provided by the co-sponsoring organization or the Center, depending upon the terms of the project.

Language Requirements. Competence in English is essential because Center program activities and University instruction are conducted in English. Applicants whose first language is not English must take the Test of English as a Foreign Language (TOEFL) as part of the selection requirement. On arrival, students may be assigned special course work at the University's English Language Institute. In some cases, foreign students may spend their entire first summer session or first semester exclusively on the study of English so that they may attain the proficiency needed to pursue their chosen fields of study. Foreign applicants who are exempt from the TOEFL examination are: (a) native speakers of English from Australia, Britain, Canada or New Zealand; (b) students who have received a bachelor's degree from an accredited American, Australian, British, Canadian or New Zealand university/college. All native speakers of English are required to take an Asian or Pacific language appropriate to their areas of interest and must maintain a 3.0 or "B" level of performance throughout the grant period.

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 em-

bracing all participants—students, senior fellows and fellows and technical trainees—are designed to develop intercultural understanding recognized as one of the basic goals of the Center.

Supporting Services. Supporting services fall into three categories: Administration, Public Affairs and Participant Services. The Office of Administration deals with all financial support for Center participants and programs, while the Office of Public Affairs disseminates information on Center programs and activities.

The Office of Participant Services administers international meetings of senior level experts, through the Conference and Seminars Office, dealing with problems of mutual concern to East and West, with emphasis on those involving Center programs.

It also coordinates intercultural activities and deals with admissions, counseling and liaison with former participants. It is responsible for Community Relations, primarily through the Friends of the East-West Center, a voluntary organization of Hawaii residents which helps Center participants join in community activities.

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, cafeteria, conference rooms and the exhibition gallery; Abraham Lincoln Hall, which houses the problem-oriented institutes; 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 College



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Hilo College is a liberal arts college within the University of Hawaii at Hilo. Although the College graduated its first seniors only in 1971 (having been a two-year campus for many years before that), it has developed a solid core of academic majors.

The basic curriculum of the College is a four-year Bachelor of Arts program with academic majors in anthropology, chemistry, economics/business administration, English, geography, history, liberal studies mathematics, philosophy, physics, political science, psychology, sociology, social science, speech, and speech-English. In addition, a basic teaching certificate is issued by the Department of Education (DOE) of the State of Hawaii to those students who have completed the education course sequence.

Two-year programs at Hilo College include engineering and tropical agriculture. Students pursuing these

programs may transfer to the Manoa Campus of the University of Hawaii at the end of their sophomore year.

In the near future the University of Hawaii at Hilo, of which Hilo College is now a part, will be reshaping itself into a College of Arts and Sciences (roughly equivalent to the present Hilo College) and a Vocational-Technical College (roughly equivalent to the present Hawaii Community College). The College of Arts and Sciences will prepare students for the Bachelor of Arts degree as well as for an Associate of Arts degree, which will be granted to students who have completed about half of the requirements for the B.A. As the College of Arts and Sciences grows, it is expected that new majors will be opened up in fields such as art and tropical agriculture.

Location

The Hilo College campus, which consists of 58 hillside acres, is green and semi-rural. The campus commands a view of Hilo Bay and the Pacific Ocean to the east, and of the majestic snow-capped peak of Mauna Kea (13,796 feet high) to the west. Nearby is the quiet city of Hilo. The magnificent and unspoiled environment of the Big Island of Hawaii beckons on every side.

Hilo is an ideal place for the study of many of the things that are special to Hawaii. Anthropology, biology, and geography classes, for instance, frequently do field studies at varied places on the Big Island. Archaeology students participate in investigations of ancient Hawaiian sites and artifacts, while the ethnic studies program focuses on the peoples of Hawaii. Several of the vigorous instrumental groups on campus emphasize ethnic as well as classical and modern music. In the sciences, tropical, geophysical and marine studies are gaining prominence. The research personnel of the Cloud Physics Observatory and the Beaumont Agricultural Research Center, both of which are located on the campus, teach college science courses. A newly launched environmental studies program concentrates on ecological issues on the island of Hawaii.

Although the University of Hawaii at Hilo is isolated from the tensions of the metropolitan environment, the College is not isolated from the world. Many courses at Hilo have a strong international accent. Both the Eastern and Western traditions are studied in courses in philosophy, religion, and history. Languages taught at Hilo College include Japanese, Hawaiian, French, Spanish, Portuguese, and German. Summer study programs in Japan, Sweden and Spain are conducted annually by faculty of the University of Hawaii at Hilo.

Facilities

Although much building remains to be done, the facilities of the University of Hawaii at Hilo have expanded steadily over the past few years. The most recent additions include dormitories, a theatre-auditorium, an addition to the library, and a life sciences building. In the planning stage are buildings for administration, fine arts, social science, a campus center, and more dormitories.

The Hale Kanilehua and Hale Kauanoë dormitories provide accommodations for 180 students. Additional apartment-style student housing on or near the campus will accommodate another 500 students. The dorm rate for a semi-private furnished room is \$185 per semester in Hale Kanilehua and \$205 in Hale Kauanoë and is payable at the beginning of each semester. Christmas and Easter recesses are not included in the rental fee. Meals, costing an average of \$2.50 per day, are provided five days per week in the cafetorium.

Activities

Several extracurricular activities at the College center on the enjoyment and preservation of the cultures of Hawaii. The Nichi-Bei Yuujoo Club sponsors Japanese cultural events, while the Ahahui O Na Pua O Hawaii perpetuates the songs, dances, and fellowship of old Hawaii.

On-campus cultural events are sponsored by the student government, the most important being a bi-weekly evening coffeehouse in the cafetorium and a free film series which brings classic motion pictures of all countries to the campus. Student journalists cover the local scene and voice their concerns through *Ka Leo O Hilo*, a student newspaper, which is linked via the PEACESAT satellite communications network to student newspapers on the Manoa Campus, the University of the South Pacific in Fiji, and Wellington Polytechnic Institute in New Zealand.

Athletically, the Vulcans basketball team, which plays throughout the islands and on the mainland, is the pride of the College. The martial arts, such as aikido, are stressed in the physical education programs.

Applications

For the year 1972-73, applications for Arts and Sciences programs at the University of Hawaii at Hilo should be addressed to Hilo College.

For an in-state student, the cost of one academic year at Hilo College is approximately \$1,660 for a commuter living at home, \$2,333 for a resident in one of the dormitories, and \$2,663 for an out-of-state student renting off-campus accommodations. Tuition and fees, which are included in the above figures, are \$228 per year for full time in-state students. The tuition and fees for out-of-state students amount to \$738.

Students requiring financial assistance may apply for aid through the Hilo College Office of Student Services, which makes every effort to meet the complete financial needs of each student. The major forms of student aid include student employment, National Defense Student Loans, Educational Opportunity Grants, State of Hawaii Education Loans, tuition waivers, and State of Hawaii Scholarships.

For further information about Hilo College, write to:

Office of Student Services
Hilo College
P.O. Box 1357
Hilo, Hawaii 96720

A copy of the college catalog can be ordered from the Hilo College Bookstore (same address) for one dollar.

Community Colleges

Hawaii's community colleges are administered by the University of Hawaii. Authorized by the state legislature in 1964 and commencing operation in 1965, the six public community colleges are as follows:

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 96-045 Ala Ike, Pearl City, Hawaii 96782.

Hawaii Community College, established in 1941 as Hawaii Technical School, located at 1175 Manono Street, Hilo, Hawaii 96720.

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 Kauai Vocational School, mailing address R.R. 1, Box 216, 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 1971, the colleges enrolled 13,010 credit and 2,890 apprenticeship and noncredit students.

The programs available at the various colleges are listed below. Inquiries should be directed to the registrars of the colleges.

Honolulu Community College: aircraft mechanics technology, applied arts, architectural drafting technology, auto body repair and painting, automotive mechanics technology, carpentry, commercial baking,

cosmetology, electronics technology, engineering technology, fashion arts, fire science, general education, heavy equipment maintenance and repair, industrial education, industrial electricity, metalworking technology, new careers, police science, refrigeration and air conditioning technology, sheet metal technology, transfer, welding technology.

Kapiolani Community College: accounting, commercial food service, data processing, dental assisting, food service management, general clerical, general education, inhalation therapy, medical assisting, hotel and merchandising mid-management, practical nursing, radiologic technician, secretarial science, transfer.

Leeward Community College: accounting, architectural drafting, automotive mechanics, computer science, general education, graphic arts, library technology, management, marine technology, maintenance technology, recreational instruction, secretarial science, transfer.

Hawaii Community College: accounting, agriculture, auto body repair and painting, automotive mechanics, carpentry, clerk-typist, data processing, diesel mechanics, drafting and engineering aid, electricity, electronics technology, fashion arts, fire science, front office hotel training, general education, machine technology, practical nursing, police science, restaurant and hotel trade, sales and mid-management, salesmanship, secretarial science, welding and sheet metal.

Maui Community College: accounting, apparel design, architectural drafting, automotive technology, building maintenance, carpentry technology, general education, general office training, hotel mid-management, human services, industrial maintenance, machine technology, police science, secretarial science, sheet metal, technical nursing, transfer, welding.

Kauai Community College: accounting, architectural drafting technology, auto body repair and painting, automotive mechanics, carpentry and cabinet making, clerical, general business, general education, police science, secretarial science, transfer, welding.



Faculty and Staff

(March 1, 1972)

BOARD OF REGENTS

	Term Expires
John Farias, Jr., <i>Chairman, Hawaii</i>	1973
Robert L. Cushing, <i>Vice Chairman, Oahu</i>	1972
Clarence F. Chang, <i>Oahu</i>	1972
Harold C Eichelberger, <i>Oahu</i>	1974
Stuart T.K. Ho, <i>Oahu</i>	1974
Charles S. Ota, <i>Maui</i>	1973
Herbert M. Richards, Jr., <i>Hawaii</i>	1974
Brian L. Sakamaki, <i>Oahu</i>	1972

Note: three vacancies to be filled.

Former Presidents

Willis T. Pope, 1907-1908 (Acting) (Deceased); B.S. 1898, Kansas State; M.S. 1916, California; D.Sc. 1926, Hawaii
 John W. Gilmore, 1908-1913 (Deceased); B.S.A. 1898, M.S.A. 1906, Cornell
 John S. Donaghho, 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 U. Law School; M.S. 1916, M.I.T.
 Gregg M. Sinclair, 1942-1955; B.A. 1912, LL.B. 1949, Minnesota; M.A. 1919, LL.D. 1954, 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 C.; M.A. 1930, Columbia; Ph.D. 1939, Southern California
 Laurence H. Snyder, 1958-1962; B.S. 1922, Sc.D. 1947, Rutgers; M.S. 1924, Sc.D. 1926, Harvard; Sc.D. 1960, Ohio State; H.H.D. 1962, N. Carolina
 Thomas H. Hamilton, 1963-1968; B.A. 1936, LL.D. 1961, DePauw; M.A. 1940, Ph.D. 1947, Chicago; L.H.D. 1960, Alfred U.; LL.D. 1961, Rollins C.; LL.D. 1961, Colgate; D.H. 1967, Oakland U. (Rochester, Michigan); LL.D. 1967, Southern California
 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

CENTRAL ADMINISTRATION

*Harlan Cleveland *President*
 A.B., LL.D., L.H.D., D.C.L., Litt. D.
 Douglas R. Price, *Special Assistant to the President*
 B.A., 1961, Valparaiso
 Alan F. White, *Special Assistant to the President*
 B.A. 1965, Miami; M.S. 1971, M.I.T.
 *Stuart M. Brown, Jr. *Vice-President for Academic Affairs*
 B.S. 1937, Ph.D. 1942, Cornell
 Dewey H. Kim, *Assistant Vice-President for Academic Affairs*; B.A. 1950, Hawaii; M.P.A. 1961, Syracuse
 William W. Parsons *Vice-President for Business Affairs*
 B.S. 1935, Southern California; M.S. 1938, Syracuse;
 LL.D. 1957, Southeastern
 William B. Chapman, *Assistant Vice-President for Business Affairs*; B.S. 1956, Swarthmore
 *H. Brett Melendy *Vice-President for Community Colleges*
 A.B. 1946, M.A. 1948, Ph.D. 1952, Stanford
 Walter P. S. Chun, *Director of Community College Services*;
 B.A. 1950, Michigan State; M.S.W. 1954, Michigan
 *Richard S. Takasaki *Chancellor, Manoa Campus*
 B.S. 1940, Hawaii; M.A. 1949 Columbia; M.P.A. 1960 Harvard
 Paul M. Miwa *Chancellor, University of Hawaii at Hilo*
 B.A. 1952, M.P.A. 1954, Ph.D. 1961, Syracuse
 *Richard H. Kosaki *Chancellor, New Campus*
 B.A. 1949, Hawaii; M.A. 1952, Ph.D. 1956, Minnesota
 *Kenneth K. Lau *Secretary of University*
 B.A. 1938, Hawaii; J.D. 1941, Michigan; LL.M. 1951, Harvard
 Roy Y. Takeyama *Secretary of Board of Regents*
 B.S. 1951, Bradley; M.S. 1952, Illinois; LL.B. 1962, Michigan

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MANOA CAMPUS ADMINISTRATION

Chancellor's Office

*Richard S. Takasaki *Chancellor*

Office of Academic Development

*Andrew E. Helmich, B.A., B.D., M.A., Ph.D., *Assistant Dean for Academic Development*

Graduate Division and Research Administration

*Wytze Gorter, A.A., A.B., Ph.D. *Dean of Graduate Division and Director of Research*
 *Howard P. McKaughan, B.A., M.Th., M.A., Ph.D., *Associate Dean, Programs and Personnel*
 *Sumi F. McCabe, B.Ed., M.A., *Assistant Dean, Student Services*

An asterisk (*) before a name indicates dates of degrees and granting institutions listed under "Faculty."

Academic Administration

Arts and Sciences

- *David E. Contois, B.A., M.S., Ph.D. *Dean*
 *Alfred J. Levy, B.A., M.A., Ph.D., *Associate Dean*
 Phillip B. Olsen, *Associate Dean*
 B.A. 1953, Wesleyan; M.S. 1959, UCLA
 *Roger L. Hadlich, B.A., M.A., Ph.D., *Associate Dean*
 *James R. Linn, B.A., M.A., Ph.D., *Associate Dean*

Business Administration

- *Ralph C. Hook, Jr., B.A., M.A., Ph.D. *Dean*
 *Howard D. Lowe, B.S., M.S., D.B.A., *Associate Dean*
 *Robert E. Baird, B.S., M.B.A., Ph.D., *Associate Dean & Fiscal Officer*
 *David Bess, B.S., M.B.A., Ph.D., *Assistant Dean*
 Kenneth West, *Executive Director, AMP, and Assistant to Dean*; B.S. 1935, U.S. Naval Academy
 *Edward M. Barnet, S.B., M.B.A., Ph.D. *Dean, TIM*
 *Chuck Gee, A.A., B.S., B.A., M.A., *Associate Dean*

Continuing Education and Community Service

- *Ralph M. Miwa, B.A., M.A., Ph.D. *Dean*
 Frederick R. Mayer, B.S.Ed., M.S.Ed., D.Ed., *Associate Dean*; see "Continuing Education"
 *Harold K. Kozuma, B.A., M.S., D.Ed., *Assistant Dean*

Education

- *Hubert V. Everly, B.Ed., M.Ed., Ph.D. *Dean*
 *Otto J. Beyers, B.A., M.A., Ed.D., *Assistant Dean*
 *Andrew W.S. In, B.Ed., M.A., Ph.D., *Assistant Dean*
 *Nina A. Westcott, B.A., M.A., Ph.D., *Assistant Dean*

Engineering

- *John W. Shupe, B.S., M.S., Ph.D. *Dean*
 *Paul C. Yuen, B.S., M.S., Ph.D., *Associate Dean*
 *Howard P. Harrenstien, B.S., M.S., Ph.D., *Associate Dean and Director, CER*
 *Nicholas B. Corba, B.S., M.Ed., *Assistant Dean*

Library Studies

- *Robert D. Stevens, A.B., B.S., M.A., Ph.D. *Dean*

Medicine

- *Terence A. Rogers, B.S., Ph.D. *Dean*
 *Kenneth D. Gardner, Jr., B.M.S., M.D., *Associate Dean*
 *John S. McNeil, B.S., *Assistant Dean*

Nursing

- *Edith Anderson, B.S., M.A., Ph.D. *Dean*
 *Cynthia Aiu, B.S., M.S., *Assistant Dean*

Public Health

- *Edward O'Rourke, A.B., M.D., M.P.H. *Dean*
 *Jerrold M. Michael, B.C.E., M.S., M.P.H., *Associate Dean*

Social Work

- *Herbert H. Aptekar, B.S., M.S.W., D.S.W. *Dean*
 *Marilyn W. Caulfield, B.A., M.S.W., *Assistant to Dean*
 *Oscar Kurren, B.A., M.S.W., Ph.D., *Assistant to Dean*
 *Fred C. Merritt, B.A., M.S.W., D.S.W., *Assistant to Dean*
 *David S. Shimomura, B.A., M.S.W., *Assistant to Dean*
 *Mildred Sikkema, B.S., M.S.S., Ph.D., *Assistant to Dean*

Marine Programs

- John P. Craven *Dean*
 B.S. 1946, Cornell; M.S. 1947, California Institute of Technology; Ph.D. 1951, Iowa; J.D. 1958, George Washington
 Jack R. Davidson, *Director of Sea Grant Programs*
 B.S. 1953, Wyoming; M.S. 1956, Montana State;
 Ph.D. 1960, California (Berkeley)

Summer Session

- *Douglas S. Yamamura, B.A., M.A., Ph.D. *Acting Dean*
 *Takeshi Moriwaki, B.A., M.A., Ph.D., *Assistant Dean*

Tropical Agriculture

- *C. Peairs Wilson, B.S., M.S., Ph.D. *Dean and Director, HAES and CES*
 *Leslie D. Swindale, B.S., M.S., Ph.D., *Associate Director, HAES*
 Dale Goodell, B.S., M.S., *Associate Director, CES*
 *Shosuke Goto, B.S., M.S., Ph.D., *Assistant Dean, Agriculture*
 *Hazel V. Kraemer, A.B., M.A., Ph.D., *Assistant Dean, Human Resources Development*

Student Affairs

- Ellingson, A. L., *Dean of Students*
 B.A. 1943, B.S. 1948, Oregon
 Fukuda, Donald, *Assoc. Dean of Students*
 B.Ed. 1956, M.A. 1963, Hawaii
 Amjadi, Hormoz, *Spec. (Psychiatrist), Counseling & Testing*; M.D. 1959, Tehran
 Barnes, Bruce E., Jr. *Spec., Int'l. Student Office*; B.Sc. 1966, Oregon State; M.Ed. 1970, Hawaii
 Blaser, Donald C., *Asst. Spec., Housing*
 B.A. 1954, Nebraska State; M.A. 1959, Nebraska
 Burgoyne, James M., *Director, Housing*
 B.S. 1948, M.B.A. 1949, Wisconsin
 Cade, Theo M., Jr. *Spec., Housing*
 B.A. 1965, Illinois; M.Ed. 1967, Hawaii
 Chambliss, Randolph L., *Spec. 2, Housing*
 B.A. 1965, Linfield C.
 *Char, Donald F.B., *Director, Student Health Service*
 Cross, John A., *Director, Student Activities*
 B.P.E. 1959, British Columbia; M.S. 1960, Ed.D. 1968, Oregon
 Cummins, Gary, *Head Resident, Gateway*
 B.A. 1964, M.A. 1968, Montana
 Denny, James M., *Assoc. Spec., Counseling & Testing*; A.B. 1951, Oberlin; Ph.D. 1958, Western Reserve
 Doi, Ruth N., *Asst. Spec., Admissions & Records*; B.A. 1949, Hawaii
 Dunne, Willis E., Jr. *Spec., Student Activities*; B.B.A. 1959, M.Ed. 1970, Hawaii
 Francoise, Gertrude, *Head Resident, Hale Kahawai*; B.A. 1969, Hawaii
 Fujita, George Y., *Assoc. Spec., Counseling & Testing*; B.Ed. 1958, Hawaii; Ph.D. 1961, Minnesota
 Fujitani, Shigeaki, *Assoc. Spec., Counseling & Testing*; B.A. 1955, Hawaii; M.A. 1957, New York; Ph.D. 1968, Utah
 Goodridge, Robert C., *Spec., Student Affairs*
 B.A. 1937, Denison; M.Ed. 1950, Ed.D. 1953, Buffalo
 Harada, Takeshi, *Asst. Spec., Student Activities*; B.S. 1951, Hawaii; M.S. 1955, Illinois
 Hawkins, Helen E., *Asst. Spec., Counseling & Testing*; B.A. 1960, Buffalo; Ph.D. 1968, Adelphi
 Hoshor, John P., *Director, Counseling & Testing*; B.A. 1938, M.A. 1940, Washington; Ph.D. 1947, Iowa
 Heu, Janice S., *Spec. 2, Admissions & Records*; B.Ed. 1969, Hawaii
 Higashi, Sylvia, Jr. *Spec., Admissions & Records*; B.A. 1967, M.Ed. 1968, Hawaii

Holt, Clifford, *Spec. 3, Student Activities*
B.S. 1964, Oregon; M.P.A. 1966, Arizona
Iams, Ruth W., *Assoc. Spec., Counseling & Testing*; Ph.B. 1933, Chicago; M.A. 1952, Hawaii
Igawa, Fay, *Head Resident, Johnson Hall*
B.Ed. 1968, Hawaii
Jones, Jane H., *Assoc. Spec., Counseling & Testing*; B.A. 1947, Colorado; M.Ed. 1965, Ed.D. 1967, Auburn
Kaneshige, Edward S., *Assoc. Spec., Counseling & Testing*; B.A. 1950, Hawaii; M.A. 1954, Ed.D. 1959, Columbia
King, LeRoy J., *Director, Financial Aids*
B.A. 1963, Nebraska; M.A. 1968, Hawaii
Koch, Noni, *Spec., Student Health Service*
M.D. 1952, Panjab
Kojima, Ellen E., *Asst. Spec., Counseling & Testing*; B.A. 1963, M.A. 1965, Hawaii
Len, Eleanor, *Asst. Spec., Placement & Career Plng.*; B.Ed. 1957, Hawaii; M.A. 1958, Columbia
Lundsgaard, David, *Spec. 4, Admissions & Records*; M.A. 1967, Minnesota
Matsuo, Dorothy, *Assoc. Spec., Student Health*; B.S. 1950, M.P.H. 1970, Hawaii
McArdle, H. Roy, *Director, Placement & Career Plng.*; B.S. 1941, Columbia; M.B.A. 1962, Ed.D. 1972, New Mexico
McPherson, Mary Lou, *Assoc. Spec., Student Affairs*; B.S. 1933, Kansas State; M.A. 1955, Missouri; M.P.H. 1970, Hawaii

Michel, John, *Spec., CTC and Ed. Psych.*
B.A. 1950, Lehigh; M.A. 1951, Georgia; Ph.D. 1958, Texas
Miyahira, Dixie, *Spec. (Psychiatrist), Counseling & Testing*; B.S. 1954, Wisconsin; M.D. 1958, Pennsylvania
Miyamoto, Milton, *Spec. 1, Housing*
B.A. 1970, Hawaii
Morisato, Diane, *Jr. Spec., Student Activities*; B.A. 1968, Hawaii
Nakamura, Dorothy, *Asst. Spec., Housing*
B.Ed. 1956, Hawaii
Naughton, June, *Asst. Spec., Int'l. Student Office*; B.A. 1959, San Jose; M.A. 1960, Columbia
Ohara, Ralph N., *Asst. Spec., Admissions & Records*; B.Ed. 1959, M.Ed. 1967, Hawaii
Okihara, Burt, *Spec. 3, Student Affairs*
B.B.A. 1962, Hawaii
Omori, Patrick, *Spec. 3, Admissions & Records*; B.B.A. 1968, M.B.A. 1970, Hawaii
Piianaia, Nancy, *Head Resident, Hale Laulima*; B.A. 1965, Skidmore; M.A. 1967, Hawaii
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Business Affairs

Parsons, William W., *Vice-President for Business Affairs*
Chapman, William B., *Asst. Vice-President for Business Affairs*

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INSTRUCTION

Academic Chairs

The Citizens' Chair in English Literature, funded by the Hawaii State Legislature—Leon Edel.*

The Captain James Cook Chair in Oceanography, funded by the Honolulu Advertiser—Robert M. Garrels.*

The Hawaiian Telephone Company Chair in Science—Georg von Bekey.*

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).

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Industrial Relations Center

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Ph.D. 1954, Wisconsin
- *Lin, Yu-Chong, *Asst. Prof. of Physl.*
- *Norton, Ted R., *Prof. of Pharmacology*
- *Palumbo, Nicholas, *Assoc. Veterinarian*
- Perri, Sam, *Research Associate*
B.A. 1951, New York
- Rand, David, *Research Associate*
B.B.A. 1958, Hawaii
- Roth, Alexander, M.D., *Research Affiliate*
Chief Pediatrician, Kaiser Foundation
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- Setliff, James A., Jr. *Researcher in Physl.
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- Szekerczes, Joseph, *Research Associate*
- Ueno, Marilyn, Jr. *Microbiologist*
B.A. 1967, Hawaii
- *Whittow, G. Causey, *Prof. of Physl.*

Social Science Research Institute

- *Riggs, Frederick W. *Director*
- *Affendras, Evangelos A., *Asst. Linguist*
- *Babbie, Earl R., *Assoc. Director*
- Barber, Richard J., *Asst. Director*
B.A. 1965, M.A. 1969, Hawaii
- *Barringer, Herbert A., *Assoc. Sociologist*
- Bayard, Donn, *Affiliate Anthropologist*
- Bhattacharya, Bhabani, *Research Affiliate*
- *Cho, Lee-Jay, *Assoc. Sociologist &
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- *Dator, James A., *Assoc. Pol. Scientist*
- *Earickson, Robert J., *Assoc. Geogr.*
- Essene, Karen A., *Data Systems Analyst*
B.A. 1962, Cornell
- *Freeman, Linton C., *Sociologist*
- Gorman, Chester F., *Anthropologist*
University of Otago
- Hellinger, Freda R., *Manuscript Editor*
- Henthorn, William E., *Assoc. Prof. &
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M.A. 1962, Ph.D. 1963, Lieden
- Jacob, Betty M., *Assoc. Researcher*
- *Kassebaum, Gene G., *Sociologist*
- *Lebra, Takie S., *Assoc. Anthropologist*
- *Lebra, William P., *Anthropologist*
- *Lim, Young-il, *Assoc. Economist*
- *Lind, Andrew, *Research Affiliate*
- *Meller, Norman, *Pol. Scientist*
- Musolf, Adolf, *Pol. Scientist*
University of California, Davis
- *Oshima, Harry T., *Economist*
- *Paige, Glenn D., *Pol. Scientist*
- *Pitts, Forrest R., *Geographer*
- Rubano, Judith, *Fiscal Mgmt. Officer*
B.A. 1970, Hawaii
- Sakai, Sady, *Admin. Officer*
B.A. 1945, Minnesota
- Sisson, James, *Research Affiliate*
University of California, Los Angeles
- *Solheim, Wilhelm G. II, *Anthropologist*
- Suh, Dae-Sook, *Visiting Prof.*, Korean
Studies

School of Nursing

- Beckstrom, Wilhelmina, *Specialist*
B.S. 1941, Washington
- Benson, Bonnie C.E., Jr. *Researcher*
B.S. 1966, M.S. 1969, Utah
- Budy, Ann M., *Associate Researcher*
B.S. 1946, Ph.D. 1954, Chicago
- Gross, Michael C., *Assistant Researcher*
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- Iwata, Ruth Y., *Assistant Researcher*
B.S. 1959, Hawaii; M.S. 1962, St. John's
- Judd, Eleanor A., *Admin. Officer*
B.A. 1966, Hawaii
- Kaya, Robert I., *Specialist*
B.S. 1970, Dayton
- Kim, Maxine J., Jr. *Researcher*
B.S. 1962, M.S. 1967, Wayne

Institute for Astronomy

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Bandermann, Lothar, *Asst. Astronomer*
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Bishop, Robert L., *Technician*
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B.E. 1952, Copenhagen Higher Inst.
- *Bonsack, Walter K., *Assoc. Professor*
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Bradshaw, Colby, *Technician*
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Brady, Barbara A., *Spec. (Sec. to Dir.)*
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Cruikshank, Dale P., *Asst. Astronomer*
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Lu, Wayne M.T., *Technician*
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School of Public Health

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Tatsuta, Winifred, *Specialist 1*
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Terauchi, Mildred M., *Asst. to Dean, Student Affairs*; B.A. 1960, Hawaii; M.P.A. 1961, Syracuse
Tilton, Floyd H., *Specialist 5*
A.B., M.A. 1950, UCLA; M.D.C.M. 1954, McGill; M.P.H. 1963, California (Berkeley)
Wakashige, Frances K., *Research Associate 1*; B.A. 1966, Hawaii
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Harold L. Lyon Arboretum

- *Sagawa, Yoneo *Director*
Anderson, Donald, *Technician*
- *Aragaki, Minoru, *Assoc. Plant Pathologist*
- *Bergquist, Richard R., *Asst. Plant Pathologist*
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A.B. 1960, A.N. 1962, Ph.D. 1965, Harvard
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- *Cutting, Windsor C., *Pharmacologist*
- *Doty, Maxwell S., *Botanist*
- *Friend, Douglas J.C., *Botanist*
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- *Hamilton, Richard A., *Horticulturist*
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- *Krauss, Beatrice, *Plant Physiologist*
- *Lamoureux, C. H., *Botanist*
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Survey Research Office

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- Meredith, Gerald M., *Acad. Evaluation Officer*; B.A. 1955, M.A. 1956, California (Berkeley); Ph.D. 1969, Hawaii
- LeDoux, Janice M., *Data Archivist*
B.A. 1970, Hawaii
- Quinn, Diane K., *Survey Consultant*
B.A. 1966, Hawaii
- Rutherford, Françoise C., *Field Coordinator*
B.A. 1965, Paris, France
- Hall, Dennis R., *Survey Analyst*
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- Wood, Reginald D., *Asst. in Academic Evaluation*; B.A. 1970, Toronto

- *Mueller-Dumbois, D., *Assoc. Botanist*
Nagata, Kenneth, *Research Associate*
B.S. 1968, Hawaii
- *Nakasone, Henry Y., *Horticulturist*
- *St. John, Harold, *Botanist*
- *Scheuer, Paul J., *Chemist*
- *Siegel, Barbara Z., *Assoc. Microbiologist*
- *Siegel, Sanford M., *Botanist*
Smith, Albert C., *Research Affiliate*
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- *Smith, C.W., *Assoc. Botanist*
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- *Theobald, William L., *Assoc. Botanist*
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- van Royen, P., Ph.D., *Research Affiliate*
Chairman, Dept. of Botany, Bishop Museum
- Wagner, Warren H., Ph.D., *Research Affiliate*; Professor of Botany and Director of Botanical Gardens, Michigan
- Yen, Douglas E., Ph.D., *Research Affiliate*
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Population Genetics Laboratory

- Morton, Newton E. *Director*
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- Harris, Donald, *Research Mathematician and Computer Supv.*; B.A. 1961, Hawaii
- Lew, Ruth, *Specialist*
- Stevenson, Craig C., *Asst. Researcher*
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- Yee, Shirley, *Specialist*
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Visiting Investigators:

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Faculte de Medecine, Chaire de Genetique, Fondamentale, France
- Dr. Charles MacLean, *Mathematical Statistician*; Human Genetics Branch, National Institute of Dental Research, National Institutes of Health, Bethesda, Maryland
- Dr. Peter Workman, Department of Anthropology, University of Massachusetts at Amherst
- Dr. Aldur W. Eriksson, Samfundet Folkhalsans Genetiska Institut
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- Dr. Henry Harpending, Department of Anthropology, Yale University

Social Welfare Development and Research Center

- *Nagoshi, Jack T. *Director*
Harada, Janet L., *Program Spec.*
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- O'Donnell, Clifford R., *Research Asst.*
B.A. 1964, Fairleigh Dickinson; M.S. 1966, Oklahoma; Ph.D. 1970, Kentucky
- Omura, Robert T., *Asst. Director*
B.S. 1954, Springfield
- Stanley, Kathleen G., *Program Spec.*
M.S.S. 1967, Syracuse

Water Resources Research Center

- *Lau, L. Stephen *Director*
- *Adams, William M., *Seismologist*
- *Buddemeier, Robert W.
- *Burbank, Nathan C., Jr., *Sanitary Engineer*
- *Chang, Jen-Hu, *Climatologist*
- *Chave, Keith E.
- *Cheng, Edmund
- *Chou, James C.S.
- *Chun, Michael J.
- *Cox, Doak C.
- *Davidson, Jack R., *Agric. Economist*
Davis, Dan, *Research Affiliate*
U.S. Geological Survey; B.S. 1935, Texas Tech C.; M.S. 1940, Iowa
- *Dugan, Gordon L.
- *Ekern, Paul C., *Hydrologist*
- *El-Ramly, Nabil
- *Fan, Pow Foong
- *Fok, Yu-Si
- *Green, Richard E.
- *Gundersen, Kaare R.
Helfrich, Philip
Degrees listed under "Hawaii Institute of Marine Biology"
- Hufen, Theodor H., *Research Associate*
B.S. 1967, M.S. 1968, Hawaii
- Mink, John, *Research Affiliate*
Board of Water Supply, C & C; B.S. 1949, Pennsylvania; M.S. 1951, Chicago
- *Moncur, James E.T.
- *Peterson, Frank L., *Assoc. Geologist*
Price, Saul, *Research Affiliate*
National Weather Service, National Oceanographic & Atmospheric Administration; B.S. 1940, CCNY; M.S. 1955, New York
- *Williams, John A.
- *Yamauchi, Hiroshi, *Assoc. Ag. Econ.*
- *Young, Reginald, *Assoc. San. Engr.*

ALLIED ACADEMIC FACILITIES

College of Arts and Sciences Student Services Office

- *Levy, Alfred J. Associate Dean
- *Bilsborrow, Eleanor J., Academic Adviser
- *Collier, Roy, Academic Adviser for Foreign Students
- *Gordon, Paul, Academic Adviser
- Hirai, Karen, Specialist, Services to Handicapped; B.A. 1969, Hawaii
- Ito, Ann, Specialist, Services to Handicapped; B.A. 1966, Hawaii; M.S.W. 1969, Hawaii
- *Koehler, Dorothy, Academic Adviser
- *Livingston, Mary, Academic Adviser
- *Lynch, Mary Ann, Academic Adviser

Environmental Center

- *Cox, Doak C. Director
 - *Johnson, Jerry M. Asst. Director
- The Center is comprised of members of the University community actively concerned with ecological and environmental problems.

- Merritt, Grace, Academic Adviser, Director of Kokua; B.A. 1941, Montana; M.A. 1949, Denver
- Omori, Rachel T., Academic Adviser B.Ed. 1944, 5 Yr. Cert. 1945, Hawaii
- *Ozaki, Flora, Pre-Nursing Adviser
- *Putman, Ed, Academic Adviser
- Settle, Joyce, Academic Adviser B.Ed. 1959, M.A. 1962, Hawaii
- Toyota, Winifred K., Academic Adviser B.Ed. 1946, 5 Yr. Cert. 1947, Hawaii; M.A. 1950, New York
- Wulff, Louise, Pre-Medical Adviser B.S. 1932, Wisconsin; M.S. 1966, Hawaii

Drama and Theatre

- Caldeira, Arthur B., Asst. Spec. in Drama and Theatre; B.A. 1951, Hawaii
- Miji, Takeo, Jr. Spec. in Drama and Theatre B.A. 1955, Hawaii

Computing Center

- Yee, Walter S. Director B.S. 1960, Hawaii
- Arashiro, Daniel Y., Supv. of Remote Operations; B.S. 1965, Hawaii
- Carey, Helen, Computer Spec. M.A. 1969, Western Michigan
- Higashi, Albert M., Asst. Director B.S. 1963, Hawaii
- Tsuyhama, Frances F., Supv. of Machine Operation; B.A. 1963, Hawaii
- Hu, Julie, Computer Spec. M.A. 1968, California (Berkeley)
- Kotaka, James, Computer Spec. B.A. 1970, Hawaii
- Leong, Diantha L., Systems Programmer B.A. 1965, Vassar
- McGinnes, Sandra K., Systems Programmer B.A. 1966, Washington
- Nagamine, Sheila S., Supv. of User Svc. M.A. 1969, Hawaii
- Soong, William Y., Jr., Supv. of Systems & Operations; B.A. 1964, Hawaii
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College of Continuing Education and Community Service

- *Miwa, Ralph M. Dean
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Courses and Curricula

- Sakata, Betsy Y., Director B.Ed. 1953, M.Ed. 1968, Hawaii
- Grado, Fausto, Program Specialist B.A. 1964, Hawaii
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Center for Governmental Development

- Nagoshi, Kunio, Director (Acting) B.A. 1953, M.A. 1954, Hawaii
- Medeiros, Lionel, Program Specialist B.A. 1959, M.A. 1962, Hawaii
- Miura, Robert K., Program Specialist B.B.A. 1968, Hawaii
- Tuttle, Daniel W., Asst. Director A.B. 1945, Illinois; M.A. 1947, Ph.D. 1964, Minnesota

Center for Labor-Management Education

- Nunn, Guy T., Director B.A. 1936, Occidental C.; B.A. 1938, M.A. 1939, Oxford
- Busch, Gary K., Program Spec. B.A. 1961, Cornell; Cert. in Inter. Studies 1963, London School of Economics; Ph.D. 1969, American
- Tinning, Paul P., Program Spec. B.A. 1957, Rutgers

Community Services Program

- Lawrence, James W., Director B.A. 1953, M.A. 1959, Whittier
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- Carpenter, Thomas F., Program Spec., Speakers Bureau; B.A. 1957, Kansas State; M.A. 1960, Northwestern
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- Hardin, Herb H., Training Coord., Civil Defense
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- Lloyd, Happy, Asst. Regional Training Officer, Head Start
- Matsuda, Kimiko C., Regional Training Officer, Head Start; B.A. 1946, Hawaii; M.A. 1947, Columbia
- Miller, William R., Program Spec., Mass Media; B.A. 1954, Kenyon

Special Programs

- Gray, Mary F., Program Spec., Study Abroad; A.B. 1947, Stanford; B.D. 1950, Pacific School of Religion; Ph.D. 1956, Hebrew Union
- Pagliari, Penny, Program Spec., Continuing Education for Women; B.A. 1964, Earlham C.
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Student Services

- Fleece, Jeffrey A., Director B.A. 1941, Central C. (Missouri); M.A. 1942, Vanderbilt; Ph.D. 1952, Iowa

Cooperative Extension Service

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- Blalock, John R., *County Extension Agent, Kauai*; B.S. 1946, M.S. 1949, Massachusetts
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- Bradshaw, Blaine, *Assoc. Spec.-Community Resource Development*; B.S. 1939, M.S. 1962, Wyoming
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- Donahue, Eugenia, *Extension Home Economist, Kauai*; B.S. 1947, M.S. 1957, Kentucky
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- Takeguchi, Elsie F., *Asst. Extension Home Economist, East Oahu*; B.S. 1964, Iowa State
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Foreign Language Laboratories

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Educational Television Broadcasting Services

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Legislative Reference Bureau

- Kitamura, Henry N. *Director and Researcher*; B.B.A. 1952, Hawaii; J.D. 1959, George Washington
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Office of Foreign Contracts

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Office of University Relations and Development

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Ombudsman's Office

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Library Activities

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- Bieber, Patricia S., *Jr. Lib. Spec., Govt. Documents Coll.*; B.A. 1948, Vassar; M.S.L.S. 1969, Hawaii
- Brecknock, Jolyn, *Jr. Lib. Spec., Social Science Ref.*; B.A. 1969, M.L.S. 1970, Hawaii
- Chang, Diana M.D., *Asst. Lib. Spec. & Head, Social Science Ref.*; B.A. 1955, California (Berkeley); M.L.S. 1966, Hawaii
- Chapman, Ellen L., *Jr. Lib. Spec., Interlibrary Loan*; B.A. 1964, New Mexico; M.L.S. 1968, Hawaii
- Chapman, Ronald F., *Asst. Lib. Spec. & Head, Reprography*; A.A. 1960, Glendale; B.A. 1963, Los Angeles State C.; M.L.S. 1968, Hawaii
- Char, Lan Hiang, *Asst. Lib. Spec., Asia Collection*; B.A. 1951, M.A. 1956, Indonesia; M.Sc. 1959, Columbia
- Chong, Eleanor F.Y., *Asst. Lib. Spec. & Head, Govt. Documents Coll.*; B.A. 1950, Hawaii; M.S.L.S. 1952, Illinois
- Conklin, Nancy A., *Jr. Lib. Spec. & Head, Audio-Visual Serv.*; B.A., M.L.S. 1970, Hawaii
- Correa, Genevieve B., *Asst. Lib. Spec. & Humanities Bibliographer*; B.A. 1940, Hawaii; B.S.L.S. 1946, North Carolina
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- Engelberg, Linda K., *Jr. Lib. Spec., Sinclair*; B.S. 1966, Memphis; M.L.S. 1968, Hawaii
- Eszes, Martha, *Jr. Lib. Spec., Humanities Ref.*; B.A. 1964, UCLA; M.S.L.S. 1966, S. California
- Franklin, Alma I., *Asst. Lib. Spec., Cataloging*; B.A. 1954, Hawaii; M.L.S. 1955, California
- Frissell, Barbara, *Jr. Lib. Spec., Selection & Search*; A.A. 1946, B.A. 1948, California (Berkeley)
- Furumoto, Viola G., *Asst. Lib. Spec., Medical Lib.*; B.S. 1943, Minnesota; M.L.S. 1969, Hawaii
- Guerra, Linda, *Jr. Lib. Spec., Selection & Search*; B.A. 1962, M.L.S. 1967, Hawaii
- Gugeler, Utako K., *Jr. Lib. Spec., Asia Collection*; B.A. 1959, Keio; M.A.L.S. 1963, Rosary C.
- Harvie, Nan A., *Jr. Lib. Spec., Cataloging*; B.F.A. 1946, Ohio State; M.L.S. 1967, Hawaii
- Heyum, Ruth R., *Asst. Lib. Spec. & Pacific Curator, Hawaiian & Pacific*; Diploma 1956, Ecole de Bib. de l'Inst. Cath.; Eleve titulaire 1968, Ecole prat. des Hautes Et.: Meth. doc. des Sci. Soc.
- Hori, Joan M., *Jr. Lib. Spec., Sinclair* B.A. 1967, M.L.S. 1968, Hawaii
- Idler, Basil, *Asst. Lib. Spec., Science Tech. Ref.*; B.B.A. 1969, Texas C. of Arts & Industries; M.L.S. 1967, Hawaii
- Jackson, Frances O., *Asst. Lib. Spec. & Archivist, Archives & Rare Books*; B.A. 1954, Stanford; M.A. 1958, Hawaii; M.L.S. 1966, California (Berkeley)
- Kaihara, Yasuto, *Asst. Lib. Spec., Hawn. & Pacific*; B.A. 1954, Hawaii; M.S. 1958, Illinois
- Kamida, Alan K., *Assoc. Lib. Spec., Asia Collection*; B.A. 1954, Michigan State; M.L.S. 1959, Rutgers
- *Kane, Rita, *Asst. Lib. Spec. & Head, Science Tech. Reference*
- Kittelson, David, *Assoc. Lib. Spec., & Hawaiian Curator, Hawn. & Pacific*; B.A. 1957, Hawaii; M.A. 1960, Minnesota; M.A. 1966, Hawaii
- Lau, Chau Mun, *Jr. Lib. Spec., Asia Collection*; B.A. 1966, Hawaii
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- Lindstrom, William, *Jr. Lib. Spec., & Head, Gifts & Exchange*; B.A. 1966, Maryland; M.L.S. 1969, Rutgers
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- McAlister, Dorothy C., *Asst. Lib. Spec. & Catalog Ed.*; B.Ed. 1936, Illinois State Normal; B.S.L.S. 1942, Illinois
- Medearis, Elma A., *Asst. Lib. Spec. & Head, Circulation, Sinclair*; B.A. 1931, Missouri; B.S.L.S. 1935, Illinois
- Moore, Christine F., *Jr. Lib. Spec., Social Sci. Ref.*; B.A. 1967, Hawaii; M.S. 1969, Wisconsin
- Morris, Nancy Jane, *Jr. Lib. Spec., Cataloging*; B.A. 1954, George Washington; M.A. 1964, Denver
- Myers, Rose E., *Asst. Lib. Spec. & Spec. in Automated Biblio., Hamilton*; B.A. 1965, Washington; M.L.S. 1967, Hawaii
- Newmeyer, Fritzie, *Asst. Lib. Spec. & Head, Cataloging*; B.A. 1941, Pennsylvania; M.S. 1965, Palmer Lib. School of Long Island U.
- Okada, Gilbert S., *Jr. Lib. Spec., Cataloging*; B.Ed. 1961, M.L.S. 1967, Hawaii
- Polansky, Patricia, *Jr. Lib. Spec., Selection & Search*; B.A. 1967, M.L.S. 1969, Hawaii
- Powell, Janice, *Asst. Lib. Spec. & Head, Humanities Ref.*; B.A. 1964, Colorado State; M.A.L.S. 1966, Denver
- Richardson, Virginia H., *Jr. Lib. Spec., Cataloging*; B.A. 1963, Dominican C.; M.L.S. 1968, Hawaii
- *Saito, Shiro, *Assoc. Lib. Spec. & Soc. Sci. Bibliographer*
- Schaafsma, Carol A., *Jr. Lib. Spec. & Head, Selection & Search*; B.S.Ed. 1958, Indiana; M.L.S. 1968, Hawaii
- Smith, Margaret H., *Jr. Lib. Spec., Social Sci. Ref.*; Ed.D. 1936, Hawaii; M.A. 1937, Columbia; B.L.S. 1938, Pratt Institute
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- Springer, Hisami K., *Jr. Lib. Spec., Humanities Ref.*; B.A. 1964, International Christian, Tokyo; M.A. 1967, M.L.S. 1968, Hawaii
- Suzuki, May T., *Asst. Lib. Spec. & Head, Serials*; B.A. 1952, Hawaii; M.A. 1962, M.A.L.S. 1963, Michigan
- Szilard, Paula, *Asst. Lib. Spec., Science Tech. Ref.*; B.A. 1963, Colorado; M.A.L.S. 1965, Denver
- Tachihata, Chieko, *Asst. Lib. Spec. & Head, Reference Serv., Sinclair*; B.A. 1958, Hawaii; M.S.L.S. 1964, Illinois
- Tillett, Barbara B., *Jr. Lib. Spec., Science Tech. Ref.*; B.A. 1968, Old Dominion C.; M.L.S. 1970, Hawaii
- Truitt, Deborah H., *Jr. Lib. Spec., Sinclair* B.S.Ed. 1966, New York State U.C. at Geneseo; M.S.L.S. 1968, Hawaii
- Tsui, Millie J., *Asst. Lib. Spec., Cataloging* A.A. 1947, Bakersfield C.; B.A. 1954, M.L.S. 1955, California (Berkeley)
- Van Zwalenberg, Joyce, *Jr. Lib. Spec., & Head, Circulation, Hamilton*; B.A. 1950, Mills; M.L.S. 1968, Hawaii
- Wageman, Lynette M., *Jr. Lib. Spec., Asia Collection*; B.A. 1959, Park; M.L.S. 1966, Hawaii
- Williams, Ann, *Jr. Lib. Spec., Humanities Ref.*; B.A. 1956, Oregon; M.L.S. 1957, Washington
- Wright, Joyce M., *Lib. Spec. & Head, Asia Collection*; B.S. 1938, B.A.L.S. 1939, Washington
- Yee, Wai-Chee, *Asst. Lib. Spec., Cataloging* B.A. 1938, Hawaii; B.S.L.S. 1939, Columbia
- Yoshimura, Katherine E., *Jr. Lib. Spec., Asia Collection*; B.A. 1967, M.L.S. 1968, Hawaii
- Young, Verna H.F., *Asst. Lib. Spec., Cataloging*; B.A. 1962, Chaminade; M.L.S. 1963, California

The University Press of Hawaii

- Sparks, Robert W. *Director*
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- Bushnell, Elizabeth, *Sr. Editor*
B.A. 1935, M.A. 1936, Ph.D. 1939,
Wisconsin
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- Fujioka, Wake A., *Sr. Editor*
B.A. 1959, M.A. 1967, Hawaii
- Garrett, Georgia Kay, *Editor*
B.A. 1967, Bowling Green
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A.B. 1950, Michigan
- Howe, John S., *Journals Manager*
B.A. 1961, Haverford C.; M.A. 1967,
Chicago
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B.A. 1959, Brandeis
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SUMMARY OF ENROLLMENT, MANOA CAMPUS

1971-72

REGULAR CREDIT ENROLLMENT

	1st Sem.	2nd Sem.			
Degree and Diploma Candidates			School of Nursing		
Graduate Division			Seniors	83	91
Doctor's Candidates	750	757	Juniors	78	92
Master's Candidates	<u>2,632</u>	<u>2,740</u>	Sophomores	93	96
	3,382	3,497	Freshmen	<u>80</u>	<u>85</u>
				334	364
College of Arts and Sciences			College of Tropical Agriculture		
Seniors	1,623	1,351	Seniors	179	132
Juniors	2,515	2,411	Juniors	167	199
Sophomores	3,165	3,138	Sophomores	123	156
Freshmen	<u>2,876</u>	<u>2,894</u>	Freshmen	<u>88</u>	<u>99</u>
	10,179	9,794		557	586
College of Business Administration			Total Degree and Diploma Candidates		
Seniors	559	474		20,502	20,200
Juniors	607	645	Not a Degree or Diploma Candidate		
Sophomores	467	587	Special Graduate Students	49	32
Freshmen	<u>346</u>	<u>379</u>	Unclassified Undergraduate Students	307	282
	1,979	2,085	Unclassified Graduate Students	1,162	1,276
School of Travel Industry Management			No Data	<u>41</u>	<u>4</u>
Seniors	140	114	Total Non-Degree and Diploma Candidates		
Juniors	129	112		1,559	1,594
Sophomores	157	150	TOTAL REGULAR CREDIT ENROLLMENT		
Freshmen	<u>110</u>	<u>121</u>		22,061	21,794
	536	497	EAST-WEST CENTER STUDENTS ON FIELD EDUCATION		
College of Education			Asians	49	16
Professional Diploma Candidates	417	453	Americans	<u>32</u>	<u>29</u>
Seniors	990	787		81	45
Juniors	722	784	CONTINUING EDUCATION PROGRAM		
Sophomores	<u>23</u>	<u>84</u>	Accelerated Terms:		
	2,152	2,108	First		1,727
College of Engineering			Second		1,754
Seniors	306	222	Third		1,878
Juniors	286	274	Fourth		2,155*
Sophomores	286	268	Semester Programs:		
Freshmen	<u>283</u>	<u>269</u>	Fall		1,684
	1,161	1,033	Spring		2,460*
School of Medicine			*Estimated 3/24/72		
Medical Students	114	116	SUMMER SESSION 1971		
Seniors	63	55	First Term		11,672
Juniors	<u>45</u>	<u>65</u>	Second Term		5,314
	222	236			

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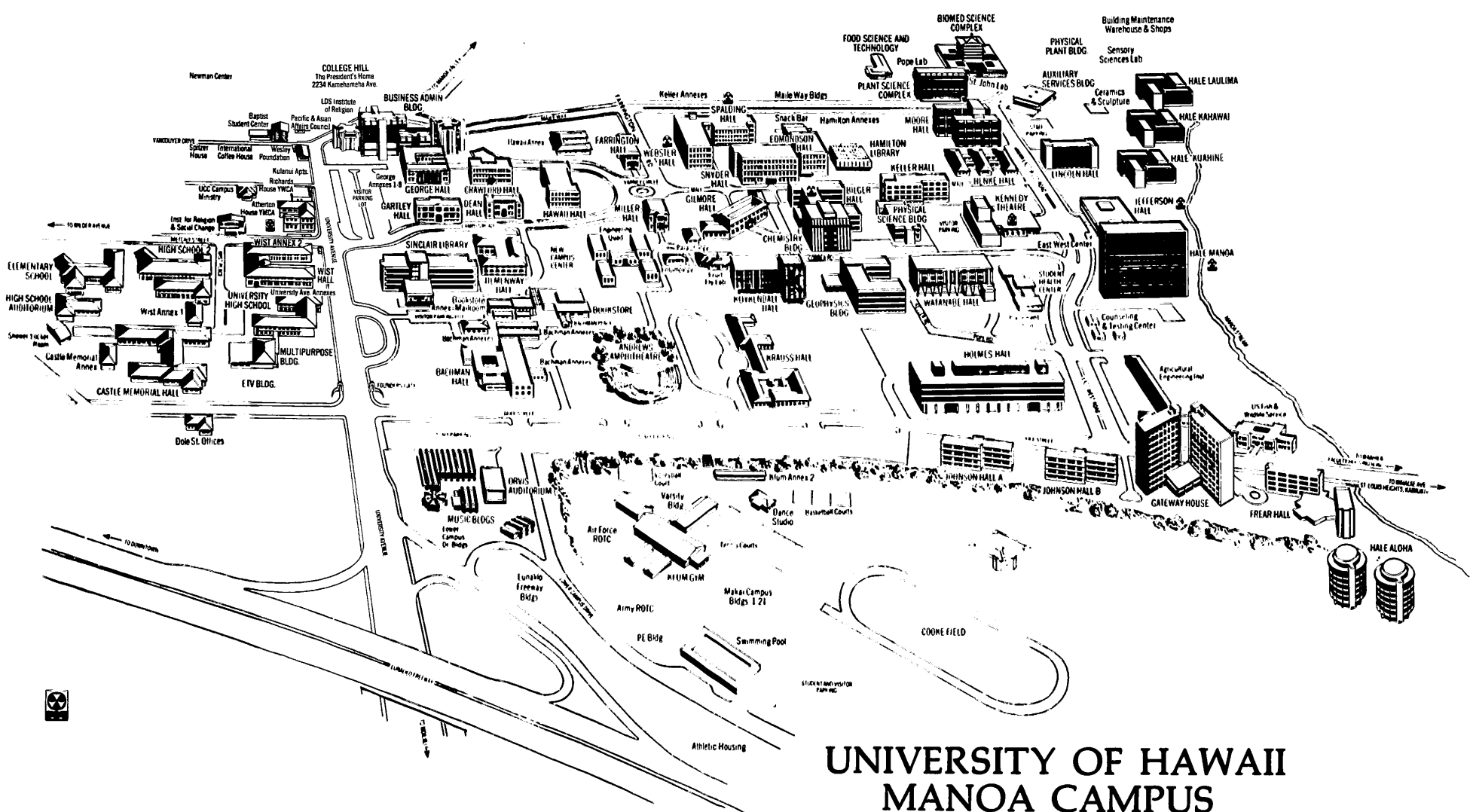
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UNIVERSITY OF HAWAII MANOA CAMPUS

MILITARY STUDIES PROGRAM: ROTC

Military Science (MS)

The Army Reserve Officer Training Program (ROTC) is designed to give both male and female students on campus training and experience in the art of organizing, motivating and leading others. Successful completion of the prescribed training program qualifies the participant for a commission as a second lieutenant in the U.S. Army. Once commissioned, graduates enter active duty, or if selected, may elect to pursue an advanced degree on an educational delay status. Two program options are available to the students at the University of Hawaii, the four-year and the two-year programs.

The four-year program is a voluntary program consisting of training conducted during the freshman through senior years. The first phase of training, the basic course, is administered during the freshman and sophomore years. All physically fit students are eligible for enrollment. Students who have participated in the Junior Division ROTC program 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 second phase of training, the advanced course, is administered during the junior and senior years and includes a six-week summer camp between the junior and senior years at a mainland military installation. Subsistence pay of \$100 per month is paid to students enrolled in the advanced course. Pay while at summer camp is \$265 (approx.) per month. 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 director of military science program; (3) successfully complete the first two years (basic) course of a Senior ROTC course or the equivalent, as explained above.

The two-year program (male students only) 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 \$288 (approx.) per month.

The Army Flight Training Program is offered to qualified students in their senior year of the ROTC program and can lead to a private pilot's rating.

Financial assistance scholarships are available for each year of the program. The scholarships provide payment for tuition, fees, books, laboratory expenses and \$100

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 or equivalent is a prerequisite for the receipt of the one and two-year scholarship. For further information, inquire at the office of the director of military science program.

Director: Silver. Associate Director: Fukumoto. Assistant Directors: Sasaki, Brennan, Davis, Joseph, Farrell.

Staff Members: Laul, Lopez, Freeman, Imasaka, Kinne, Rubio, Hirayama.

Leadership Laboratory required 1 hour per week.

101-102 First-year Military Science (2-2) I, II

Introduction to basic leadership, the art of leading and motivating. Study and application of principles of military instruction. Role of the defense organizations in national security. Role, mission and capability of each armed service.

201-202 Second-year Military Science (2-2) I, II

Survey of American military history from the origins of the American Army to present. Introduction to small unit management and use of available resources. Progressive application of duties and responsibilities of junior leaders towards development of leadership potential. Pre: 101, 102, or consent of program director.

301-302 Third-year Military Science (3-3) I, II

Study of advanced leadership and management techniques; analysis and solution of typical problems faced by the junior leader and manager. Progressive application to continued development of leadership potential. Pre: 101, 102, 201, 202, or equivalent; and consent of program director.

401-402 Fourth-year Military Science (3-3) I, II

Theory and dynamics of the military team. Study of administrative, operational and logistical techniques necessary for mission accomplishment. The military staff and its contribution to decision making. Progressive application to continued development of leadership potential. Pre: 301, 302; and consent of program director.

Aerospace Studies (AS)

Aerospace Studies (AS) is part of the Air Force Reserve Officer Training Corps (AFROTC) program. Its purpose is to prepare college students for managerial and leadership positions as Air Force officers.

Students who volunteer, meet selection criteria, obtain an undergraduate degree, and successfully complete the prescribed courses are commissioned as second lieutenants in the United States Air Force. They will then serve on active duty, or may, in some cases, obtain an educational delay designed to allow advanced university study. Women are eligible for the program and commissions and the academic courses are open to any student.

The University of Hawaii AFROTC program consists of two academic years. Normally, juniors and seniors are enrolled; however sophomores and graduate students may qualify in certain instances. Applicants receive six weeks' training at a mainland Air Force base before entering the program. Once enrolled, students study the development of the Air Force, space operations, and Air Force leadership and management in an academically free student-centered atmosphere. Seniors, who qualify medically, will receive flight instruction which can qualify them for a private pilot flying certificate.

All cadets accepted in the AFROTC program receive \$100.00 monthly and are paid while attending the six week mainland training session. Scholarships covering tuition, fees, and a book allowance are also available on a competitive national basis.

Interested students should contact the Director of Aerospace Studies early in their freshman year for information.

Director: Greenley. Assistant Directors: Dagampat, Nakaguma.

Leadership Laboratory required 1 hour per week for each course listed for Air Force commission candidates.

301 Growth and Development of Aerospace
Power (3) I Dagampat

Study of the development of U.S. Airpower; concepts, doctrines and functions of the Air Force in national security.

302 Introduction to Astronautics and Space
Operations (3) II Dagampat

Man's efforts to explore space; the significance of the major characteristics of the solar system, and the basic laws and principles which govern space operations.

451 Air Force Leadership (3) I Nakaguma

A study of leadership as it applies to the Air Force. Includes leadership theory, styles, behavioral science, the concept of professionalism for Air Force officers, and the military justice system.

452 Air Force Management (3) II Nakaguma

Analysis of the managerial functions as they apply to the Air Force.

CORRESPONDENCE DIRECTORY

Detailed information on specific items may be obtained by writing to the offices listed below.

Add: **University of Hawaii**
Honolulu, Hawaii 96822

Undergraduate Admissions

Director, Admissions and Records
Bachman Hall 125
2444 Dole Street

Graduate Student Admissions

Admissions, Graduate Division
Spalding Hall 354
2540 Maile Way

Dormitories

Student Housing Office
Johnson Hall A
2555 Dole Street

Scholarships and Loans

Financial Aids Office
1627-A Bachman Place

Curriculum Information

Dean of Student Services
(College or School)

Graduate Assistantships

Chairman of (Department)

Summer Session

Dean of Summer Sessions
Krauss Hall 101
2500 Dole Street

Foreign Students

International Student Office
Webster Hall 101
2528 The Mall

Student Services

Dean of Student Affairs
Bachman Hall 124-B
2444 Dole Street

Student Activities

Bureau of Student Activities
Hemenway Hall 204
2445 Campus Road

UNIVERSITY OF HAWAII Office Locations

Admissions and Records Office, Bachman 125
Athletics Office, Varsity Building
Business Office, Bachman 110
Campus Police, Physical Plant Bldg.
College of Arts and Sciences, Webster 204
Student Services, Bachman Annex 10
College of Business Administration, BusAd-C 204
Travel Industry Management, BusAd-B 203
College of Education, Wist Annex-2 128
Student Services, Wist Annex-2 224
College of Engineering, Keller 119
College of Health Sciences and Social Welfare
Medicine, Biomed-T 101
Nursing, Webster 416
Public Health, Biomed-D 208
Social Work, Hawaii 117
College of Tropical Agriculture, Gilmore 209
Community College Office, 2327 Dole St.
Continuing Education, 2500 Dole St.
Student Services, Rm. 105
Counseling and Testing Center, 1615 East-West Rd.
Financial Aids, Bachman Annex 2

Foreign Student Adviser (International Student Office),
Webster 101
Graduate Division, Spalding 359
Student Services, Spalding 354
Honors & Selected Studies Program,
Sinclair Library 504-B
Ka Leo Office, Hemenway 140
KHET Educational TV, Wist 205
KTUH Radio, Hawaii 206
Lost and Found, Hemenway 204
New College, 2001 Vancouver Dr.
Parking and Traffic, Auxiliary Services Building
Placement and Career Planning, 1631 Correa Rd.
Selective Service Adviser, Bachman 124
Student Activities Bureau, Hemenway 204
Student Employment, Bachman Annex 2
Student Health Service, 1710 East-West Rd.
Student Housing, Johnson A
Summer Session, 2500 Dole St., Rm. 101
Tutoring and Services to Handicapped (*Kokua*),
Bachman Annex 12
U.S. Post Office, Bookstore Annex

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