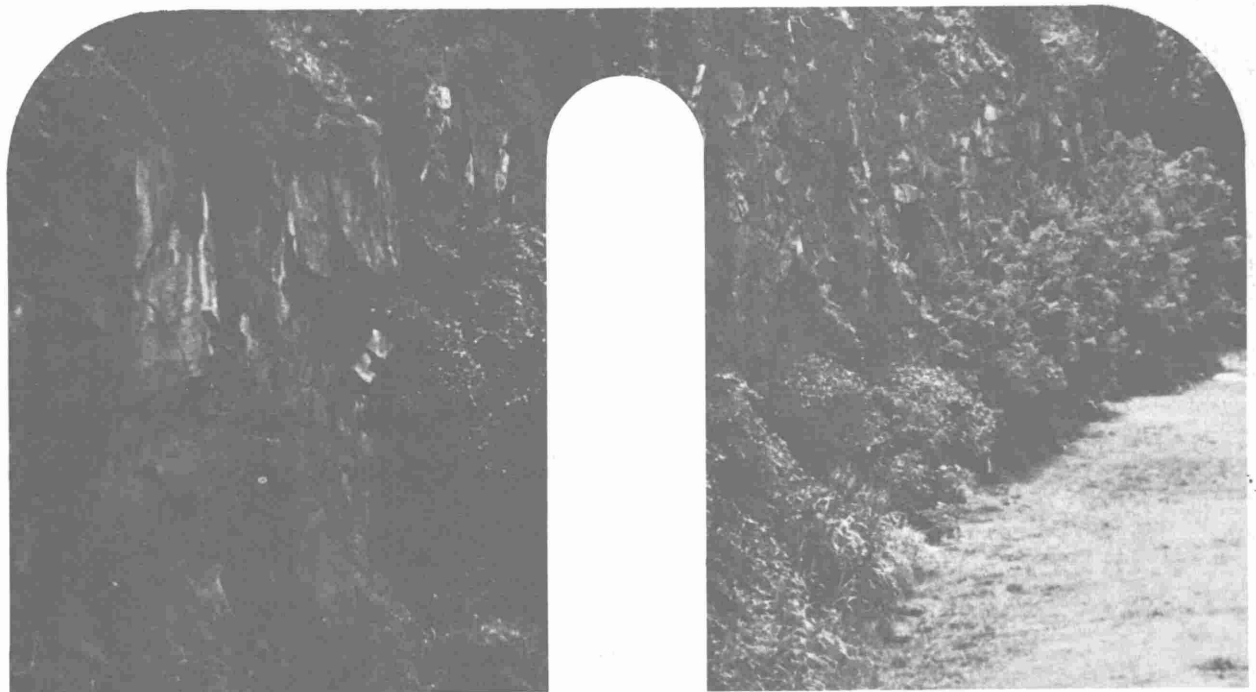
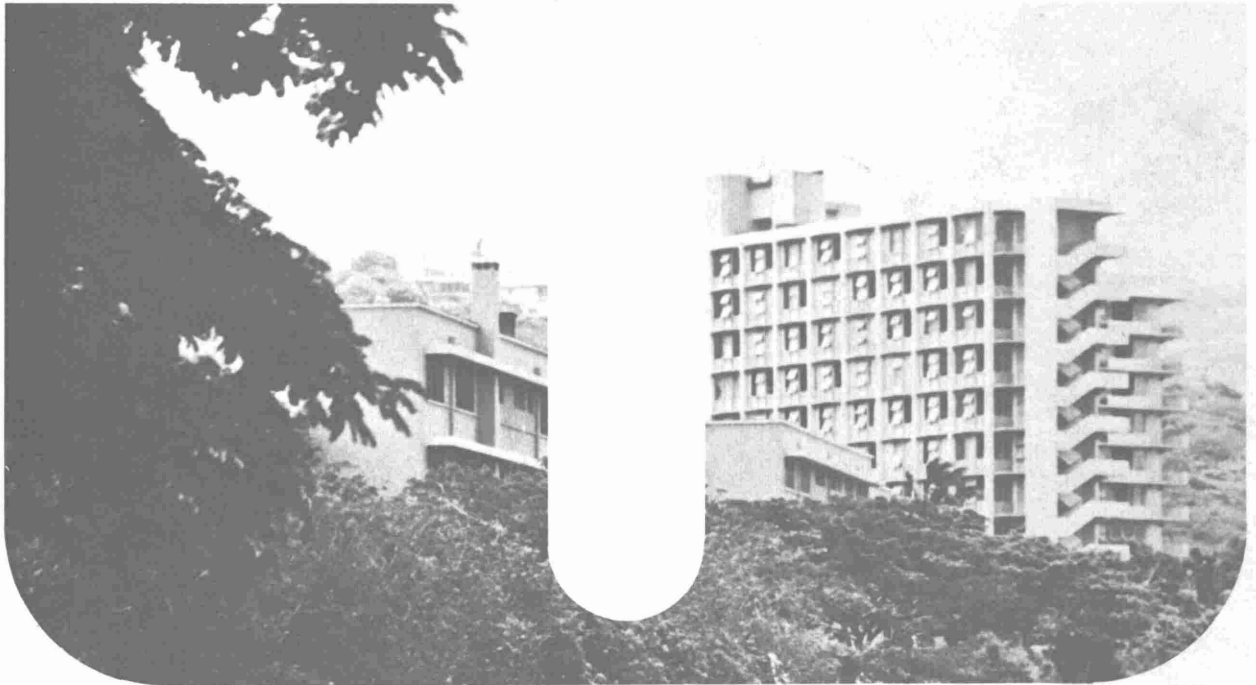


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University of Hawaii Bulletin
1971/1972 General Information and Catalog

1971
Manoa Campus



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**University of Hawaii Bulletin
1971/1972 General Information and Catalog**

Manoa Campus

**UNIVERSITY OF HAWAII BULLETIN
Volume L, Number 3, June 1971**

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MANOA CAMPUS CALENDAR 1971-1972

September 1971							October 1971						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3	4						1	2
5	6	7	8	9	10	11	3	4	5	6	7	8	9
12	13	14	15	16	17	18	10	11	12	13	14	15	16
19	20	21	22	23	24	25	17	18	19	20	21	22	23
26	27	28	29	30			24	25	26	27	28	29	30
							31						
November 1971							December 1971						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6				1	2	3	4
7	8	9	10	11	12	13	5	6	7	8	9	10	11
14	15	16	17	18	19	20	12	13	14	15	16	17	18
21	22	23	24	25	26	27	19	20	21	22	23	24	25
28	29	30					26	27	28	29	30	31	
January 1972							February 1972						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1			1	2	3	4	5
2	3	4	5	6	7	8	6	7	8	9	10	11	12
9	10	11	12	13	14	15	13	14	15	16	17	18	19
16	17	18	19	20	21	22	20	21	22	23	24	25	26
23	24	25	26	27	28	29	27	28	29				
30	31												
March 1972							April 1972						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
			1	2	3	4							1
5	6	7	8	9	10	11	2	3	4	5	6	7	8
12	13	14	15	16	17	18	9	10	11	12	13	14	15
19	20	21	22	23	24	25	16	17	18	19	20	21	22
26	27	28	29	30	31		23	24	25	26	27	28	29
							30						
May 1972							June 1972						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6				1	2	3	
7	8	9	10	11	12	13	4	5	6	7	8	9	10
14	15	16	17	18	19	20	11	12	13	14	15	16	17
21	22	23	24	25	26	27	18	19	20	21	22	23	24
28	29	30	31				25	26	27	28	29	30	
July 1972							August 1972						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1			1	2	3	4	5
2	3	4	5	6	7	8	6	7	8	9	10	11	12
9	10	11	12	13	14	15	13	14	15	16	17	18	19
16	17	18	19	20	21	22	20	21	22	23	24	25	26
23	24	25	26	27	28	29	27	28	29	30	31		
30	31												

1971 First Semester

August 30-September 3, Monday-Friday Academic advising, registration, orientation
 September 6, Monday Holiday: Labor Day
 September 7, Tuesday Instruction begins
 September 9, Thursday Last day for registration for credit
 October 11, Monday Holiday: Columbus Day
 October 22, Friday Academic deficiency reports due
 October 25, Monday Holiday: Veterans' Day
 November 15, Monday Deadline for undergraduates and returnee applications for 2nd semester
 November 17, Wednesday Last day for withdrawal from courses; Last day to process Credit-No Credit options
 November 24, Wednesday Last day for removal of Incompletes
 November 25, Thursday Holiday: Thanksgiving Day
 December 15, Wednesday Last day of instruction
 December 16, Thursday Final exams begin
 December 19, Sunday Commencement
 December 22, Wednesday First semester ends

1972 Interim Period

January 3-15, Monday-Saturday

1972 Second Semester

January 17-21, Monday-Friday Academic advising, registration
 January 24, Monday Instruction begins
 January 26, Wednesday Last day for registration for credit
 February 21, Monday Holiday: Presidents' Day
 March 10, Friday Academic deficiency reports due
 March 27, Monday Holiday: Kuhio Day
 March 31, Friday Holiday: Good Friday
 March 31-April 8, Friday-Saturday Spring recess
 April 12, Wednesday Last day for withdrawal from courses; Last day to process Credit-No Credit options
 April 14, Friday Last day for removal of Incompletes
 May 1, Monday Deadline for undergraduate and returnee applications for 1st semester 1972
 May 10, Wednesday Last day of instruction
 May 11, Thursday Final exams begin
 May 17, Wednesday Second semester ends
 May 21, Sunday Commencement

1972 Summer Session

June 12, Monday Holiday: Kamehameha Day
 June 13, Tuesday Registration for 1st term
 June 14, Wednesday Instruction begins
 July 4, Tuesday Holiday: Independence Day
 July 21, Friday 1st term ends
 July 24, Monday Registration for 2nd term
 July 25, Tuesday Instruction begins
 August 6, Sunday Commencement
 August 18, Friday Holiday: Admission Day
 September 1, Friday 2nd term ends

○ Academic dates of significance.
 □ Holidays and recesses.

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

After each department and major division is its abbreviated IBM code (e.g., Anth for Anthropology). This code is also used in the *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:

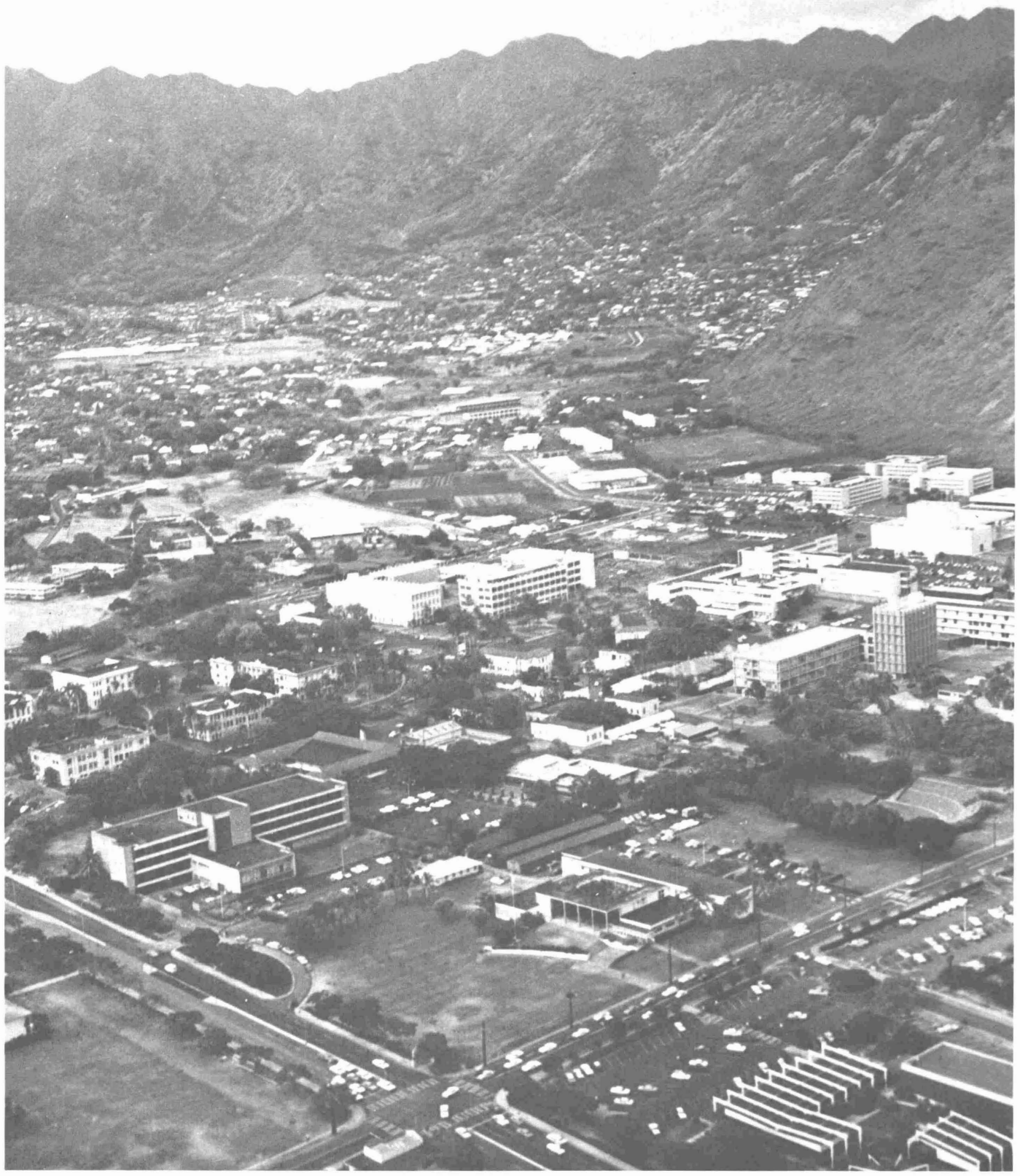
- a. (3) I = a 3-credit course offered the first semester
- b. (4) II = a 4-credit course offered the second semester
- c. (3) I, II = a 3-credit course repeated in the second semester
- d. (5-5) Yr. = a year's sequence carrying 5 credits each semester
- e. (v) = the number of credits may vary, arranged 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 1971. 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.

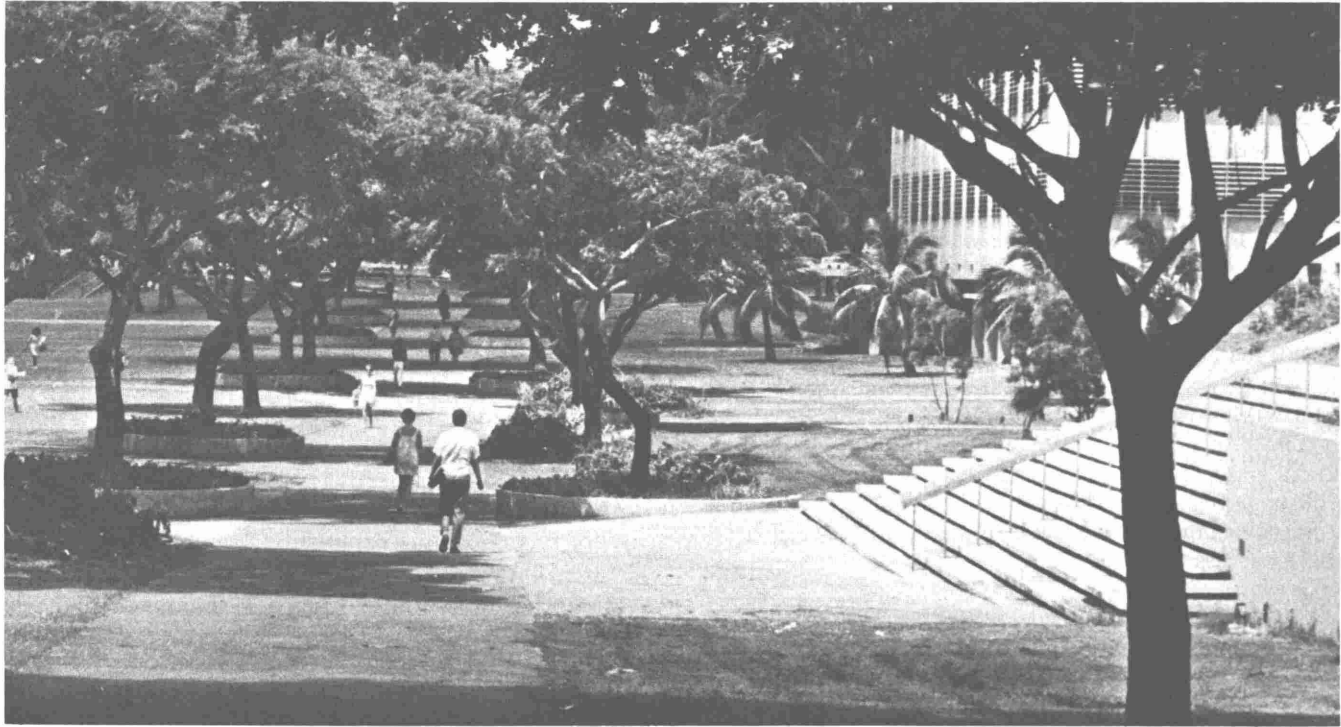


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General Information

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 66 fields. The Graduate Division offers work leading toward the master's degree in 64 fields and the doctorate in 33.

In addition to its instructional program, the University conducts organized research in several fields. Special units initiate and conduct research in economics, edu-

cation, biomedicine, Pacific and Asian linguistics, social sciences, water resources, marine biology, geosciences, astronomy, genetics and agriculture.

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

Space observatories and associated research facilities of the University are located on the islands of Maui and Hawaii. The Hawaii Institute of Marine Biology, operated by the University, is located on Coconut Island in Windward Oahu. The University conducts the Center for Cross-Cultural Training and Research (former Peace Corps) with facilities on the island of Hawaii. 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 12 faculty members on a temporary campus in downtown Honolulu. In 1912 the campus was moved to its present location in Manoa where an initial ninety acres were set aside for buildings. With the addition of a College of Arts and Sciences in 1920, the institution became the University of Hawaii.

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

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

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 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 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, assist-

ants to the president, an international relations advisory council, and the director of University relations and development.

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

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

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

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, and of means of optimizing the cognitive learning of school children. Research and development to facilitate educational planning and practice in Hawaii and the Pacific Basin is a primary concern.

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

The **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 oper-

ates under joint sponsorship of the University, the Hawaii Department of Land and Natural Resources—Division of Fish and Game, and the U.S. Bureau of Sport Fisheries and Wildlife, Division of Fishery Services.

The **Hawaii Institute of Geophysics** was organized to take advantage of the unique position of Hawaii as a national laboratory for conducting geophysical research in the broad field of the earth sciences. In cooperation with academic departments devoted to the physical sciences, the institute conducts research programs and provides advanced training in geodesy, aeronomy, oceanography, solid earth geophysics, geology, soils, geochemistry, underwater acoustics, and tsunami. The main laboratory of the institute is located at 2525 Correa Road on the campus. The institute also maintains 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, encourages research in the marine biological sciences, including fisheries, by providing facilities and services for faculty members, graduate students and visiting scientists. Its research programs include studies in the ecology, physiology, behavior and systematics of marine animals and plants, pollution studies, biology, chemistry and pharmacology of toxic marine organisms, fundamental research in the interrelationship of organisms and their environment, and an applied resource development and exploitation research under the Sea Grant Program.

The **Industrial Relations Center**, established in 1948, seeks to promote understanding of 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 community 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, an observatory for planetary and stellar studies, equipped with an 88-inch and two 24-inch telescopes, has recently been completed. A space astronomy program has obtained high resolu-

tion 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 which has three major sections. *Instructional Systems* operates the closed circuit television system, twelve multi-media auditoria and Varsity Theatre. *Graphics* prepares and develops a wide range of graphic materials including transparencies for projection and diagrams, by using various processes such as diazo and photography. The *Media Lab* is used for demonstrations, media workshops and videotaping for instructional self-analysis. The lab also includes self-service facilities where equipment and materials are provided for faculty who wish to make their own transparencies and other instructional materials.

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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.

The **Thomas Hale Hamilton Library**, located on the Mall, houses the main book and periodical collections of the University of Hawaii Library. Maximum utilization of the library's resources is the aim of the organizational plan which places humanities, social science, and science technology librarians near the reference materials and current periodicals of the respective broad subject area. Hamilton's openstacks contain approximately 650,000 volumes, including 13,000 currently received serial titles. Microform and the major research collections are located in Hamilton except those listed below which will remain in Sinclair Library until Phase II of Hamilton Library is completed. The four-story building which provides space for 955 readers has an open reading lanai on the top floor.

Gregg M. Sinclair Library, located at University Avenue and Campus Road, houses the Undergraduate Collection of 95,000 volumes as well as the Asia Collection, Government Documents, Rare Books, Archives, Hawaiian and Pacific Research Collections. As the undergraduate library, Sinclair has the Reserve Books (graduate and undergraduate), a browsing collection with lounge furniture, a reference collection, a collection of college catalogs, a collection of children's literature, a listening center and seats for 2,000 readers.

The **Listening Center** located on the first floor of Sinclair contains 70 audio-equipped carrels with dials and earphones, and 25 carrels equipped to be user operated. Over 100 assignments can be pre-programmed into the sophisticated dial-access retrieval system simultaneously. Additionally, students and faculty may utilize in the Listening Center all of the audio and visual materials in the University library's collection—films, filmstrips, transparencies, records, tapes, slides, etc.

Located 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 equipment for utilizing audio-visual resources in the classroom may be reserved. A-V Services also maintains pools of such equipment conveniently located in thirteen 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 upper Manoa Valley, about 2.5 miles from the Manoa campus. It was developed by the Hawaiian Sugar Planters' Association and presented to the University in 1953. Several hundred species of exotic trees and shrubs are established, inventoried and maintained, providing the University and scientific community with an unrivaled facility for research on tropical and subtropical plants.

The **Pacific and Asian Linguistics Institute** plans and conducts research 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 University efforts.

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

The **Social Science Research Institute** facilitates the initiation of faculty research and develops and conducts programs primarily of an interdisciplinary nature in the social sciences and related fields. Particular emphasis is given to 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 Graduate Student 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** provides programs for students discovered to need special attention to improvement of their communication skills. Persons whose skills are evaluated as below criterion are trained in the center until these skills are re-evaluated as at or above criterion (usually after fewer than twenty clock hours of training). Within the space available, the center accepts, on a fee basis, persons not enrolled in the University. The center also engages in basic and applied research and provides training of researchers in speech-communication.

The **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 of Hawaii Press** is the book publishing department of the University. It functions in much the same way as any other publishing house, although unlike commercial publishing firms, it operates on a non-profit basis and the emphasis is on scholarly publication.

The Press is a member of the Association of American University Presses and the Association of American Publishers. It publishes books of general interest as well as scholarly monographs, with particular emphasis on books dealing with Hawaii, the Pacific area, and the Orient. It also publishes four scholarly journals: *Asian Perspectives*, *Oceanic Linguistics*, *Pacific Science*, and *Philosophy East and West*.

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. In Hilo, the newly named Center for Cross-Cultural Training and Research is expanding on its prior function as a Peace Corps training center and now is available to train a variety of citizens for cross-cultural experiences, as well as conducting research in this field.

COOPERATING INSTITUTIONS

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

The **Bernice P. Bishop Museum**, a world-famous storehouse of information, contains an outstanding reference library as well as important biological and anthropological collections relating to Hawaii and other Pacific islands. In addition, this institution holds the combined herbaria of the University and the museum, the most complete collection of Hawaiian plants in existence. The museum's research facilities are available to University students on a reciprocal basis.

The **Hawaiian Fruit Flies Investigations** laboratory is maintained on the campus by the U.S. Department of Agriculture, Entomology Research Division. Its principal objectives are the development of basic information on, and methods for the control and eradication of fruit fly agricultural pests, and recommendations under which produce can be treated and passed through quarantine into mainland and other markets. A substation is located at the Waiakea Experiment Farm near Hilo. The laboratory cooperates with the department of entomology, and other University and state agencies.

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

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

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

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

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

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



Student 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 are available in cultural and social activities, public affairs, educational experimentation, community service, publications and radio, and recreation. The two major organizations which provide these programs and services are the Associated Students of the University of Hawaii (ASUH) and the Campus Center Board.

The ASUH through its elected officers serves as the administrative and legislative body for students in participating in the policy making councils of the University. Among the activities directly administered by ASUH are experimental courses, innovative, interdisciplinary programs, a series of major symposia on public affairs, and a wide variety of other programs and services. The Campus Center Board presents programs in the cultural, social, recreational, and public affairs areas. It operates as an all-University representative body comprising not only students, but faculty,

administration, and alumni as well. The scope of its present programs, administered by the Activities Council, will be greatly expanded upon the construction and completion of the new five million dollar Campus Center.

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

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

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

Rights and Freedoms of Foreign Students

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

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

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

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

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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, paddleball, and golf.

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

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

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

Intercollegiate Athletics

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

Liability for Injury

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

STUDENT SERVICES

Student Health Service

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

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

The University requires that all newly registering day-time students undergo a complete medical examination, and the results of this evaluation must be submitted to the Student Health Service on the University of Hawaii Health Form for approval before medical clearance can be granted and registration completed. Medical services will be denied all students who do not comply with this

requirement. Students who are returning to the University of Hawaii to continue their education after dropping out of the University for more than four years must re-submit 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 Student Health Service before they are permitted to reside in the residence halls. Students afflicted with any contagious illness must leave the residence hall for the duration of the contagious period of the illness.

Counseling and Testing Center

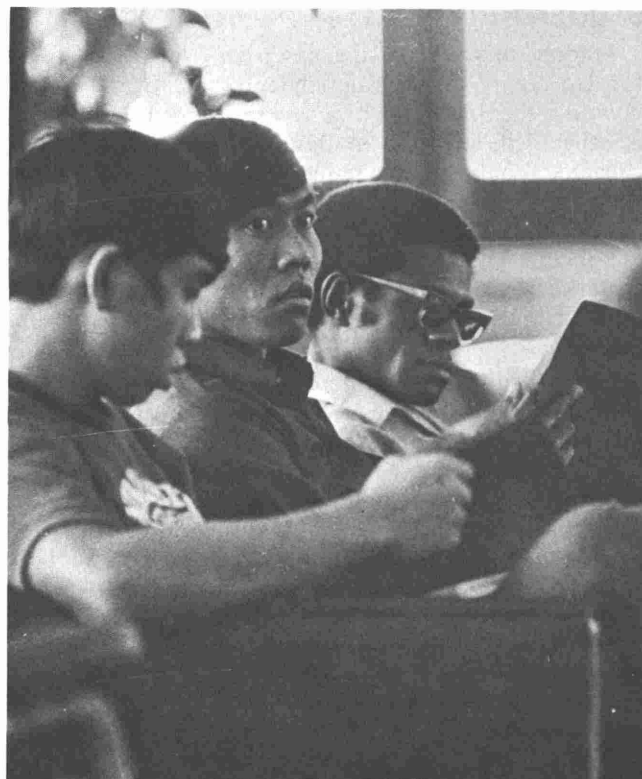
The Counseling and Testing Center's staff consists of professionally trained psychologists, psychiatrists, psychiatric social workers, psychometrists and interns, who, as a team, function on the campus in the areas of student service, graduate training and academic research. Educational, vocational and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

University Placement and Career Planning

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

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

Early registration is encouraged during the final year of study.



International Student Office

The International Student Office serves both foreign and American students. It helps those from other countries 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 arrive in time to attend them.

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

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

Lockers

Steel book lockers for students are available in Wist Hall. Use of a locker for the first and second semesters may be obtained by calling 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.

STUDENT HOUSING

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 is scheduled to open in January 1972—its 500-bed capacity should greatly reduce the problem for spring semester.

For the 1971 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 Student Housing Office keeps listings of available off-campus spaces but most of these are small units scattered throughout Honolulu. These units are limited and reserved usually a month or more in advance of a term. Remaining facilities are usually farther away from campus and 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 must 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.

Gateway House (for graduate and upper division undergraduate men and women) —\$436 room and board per semester.

Board includes 10 meals per week.

All halls have double rooms except for fourteen single rooms at Hale Laulima and one single room at Johnson Hall —\$461 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, sharing 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 the 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.

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 through Friday for students residing in dorms, with a multiple choice of salads, desserts and beverages. Gateway also serves an a la carte lunch which is open to anyone.

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 Cafeteria. A new cafeteria which will serve the new residence halls is scheduled for completion in January 1972. An a la carte lunch will be served there.

Expenses

Minimum expenses per academic year are estimated to be approximately \$2,790 for students living in off-campus housing; \$2,345 for students living at a University residence hall; \$1,725 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 REGULATIONS

Student Conduct

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

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

Financial Obligations to the University. Students who have not adjusted their financial obligations (traffic violations, library fines, locker fees, laboratory breakage charges, transcript fees, loans past due, etc.) to the satisfaction of the 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 Service (CSS) and utilizes the CSS form as a composite financial aid application for any or all 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.

Board of Regents Scholarships: A small number of scholarships (equivalent to tuition costs) are awarded annually to full-time undergraduates, including 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 which provides assistance to full-time undergraduates with exceptional financial need in both Technical and Professional Nursing. Awards may range from \$200 to \$1,500.

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

Endowed Scholarships Administered by the Financial Aids Office

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



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

Scholarships Based on Specific Majors:

For Engineering: American Society of Civil Engineers (Hawaii Section) Scholarship; Won Kiu Ahn Engineering Scholarship; Chi Epsilon Alumni Scholarship; General Motors Scholarship; Hawaiian Cement Corporation Scholarship; Francis Kanahele Scholarship (for Pre-Law also); T.Y. Lin Scholarship; Edward K.S. Park Memorial Scholarship; Shimazu, Shimabukuro & Fukuda, Inc. Scholarship.

For Business Administration: Kazuo & Akiyo Totoki Scholarship.

For Art: Anonymous Art Scholarship; Joseph Goldinger Memorial Scholarship; James G. Kelley Scholarship (for Architecture also); Rubie Ethel Kono Scholarship (for Music also); Gordon Mark Art Scholarship.

For Travel Industry Management: American Hotel & Motel Association Scholarship; Hawaii Club Managers Association of America Scholarship; Hawaiian Airlines Scholarship; Ilikai 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: Allstate Foundation Nursing Education Scholarship; Honolulu Japanese Junior Chamber of Commerce Nursing Scholarship; 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; Sears Roebuck & Co. Foundation Scholarship (for Human Resources & Development); Yasutaro Soga Memorial Scholarship (for journalism).

Other Scholarships: Leora Parmelee Dean (sponsored by the Women's Campus Club); Hawaii Government Employees' Association, University Chapter; Harold E. Hicks Memorial Scholarship Fund; Honolulu Chorale Society Scholarship; Hui Pookela, Chapter of Mortar Board Scholarship; International Association of Machinists Union 1245; Emma Mossman; Palolo Lions Club; William A. Patterson—United Air Lines (for freshmen & sophomores); Superior Tea & Coffee Company Scholarship; Dayton A. Turner Memorial Scholarship; Antone Vidinha Scholarship; Wahiawa Lions Club Scholarship; Wakaba Kai Sorority Scholarship; Yang Chung Hui 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 Bettilyon—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; Filipino Scholarship Foundation; First Trust Company of Hilo; Fort Shafter NCO Wives' Club; Fort Shafter Women's Club; Fukunaga Scholarship; General Henry Arnold Education Fund, U.S. Air Force Aid Society; Harold B. Turney—Dorothy K. Gillett Music Fund; Hawaii Society of Medical Technologists Scholarship; Hawaii Veterans Memorial Fund; Hawaiian Civic Club; Honolulu Community Chest; Honolulu Japanese Junior Chamber of Commerce (Nursing); Hui O'Wahine; IBEW, Unit I, Local Union 1186.

Independent Telephone Pioneer Association; Joseph F. Smith Memorial; Kailua High School; Kaiulani Trust; Kalia Lions Club; Kamehameha School; Leeward Oahu Lions Club; Leilehua F.T.A.; Leonard's Bakery; March of Dimes Health Careers; McKinley High School National Honor Society; Miles E. Cary Memorial; Pacific Fellowship (sponsored by the American Association of University Women); Pali Lions; Rama Watumull Fund; Ralston Purina; Ruth C. Scudder Memorial (sponsored by the Women's League of Central Union Church); Society of American Military Engineers; Standard Oil Co. FFA; Star Markets, Ltd.; United Okinawan Association of Hawaii; Wahiawa Hawaiian Civic Club; Waialua Hawaiian Civic Club; Waialua High School P.T.A.; Wallace Rider Farrington (for graduates of Farrington High School sponsored by the Honolulu Star-Bulletin); Wong Kong Har Tong Society; Hawaiian Telephone; NAACP Scholarship.

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.

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

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 the State Department of Budget and Finance.

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

The various 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 student employees.

In addition to the above, the financial aids office maintains a continuous liaison with the business community to maintain 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.

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PRIZES AND AWARDS

General Honors

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

Honorary Societies. Chapters of national honorary societies at the University include Phi Beta Kappa Alpha chapter (liberal arts and sciences); Phi Kappa Phi Hawaii chapter (general scholarship); Sigma Xi (sciences); Pi Gamma Mu (social sciences); Phi Delta Kappa (education); Sigma Pi Sigma (physics); Chi Epsilon (civil engineering); Eta Kappa Nu Association (electrical engineering); Omicron Delta Kappa (scholarship and leadership); Phi Eta Sigma (freshman men); Mortar Board Hui Pookela chapter (senior women); Alpha Lambda Delta (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 Hawaiian Section of the American Chemical Society**. A one-year membership and subscriptions to several journals to the outstanding senior in chemistry. The winner's name is engraved on a bronze plaque.

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

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

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

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

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

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.

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

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

Agriculture

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

Alonzo Gartley scholarships, awarded to undergraduate agriculture students.

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

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

Business Administration

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

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

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

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

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

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

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

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

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

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

Engineering

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

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

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

Chi Epsilon Freshman Award, to an outstanding engineering freshman.

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

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

Human Resources Development

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

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

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

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

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

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

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

Military Science and Aerospace Studies

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

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

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

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

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

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

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

Tuition and Fees

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
*Advanced Tuition Deposit (applied to full tuition at registration)	27.00	90.00
(all residents and continuing students)		(new non- residents only)
Course fees for applied music and institutes (see listings under appropriate colleges)		
Activities Fees† (for all undergraduate students)	13.25	13.25

Part-time students (less than 12 credit hours)

Resident tuition (maximum of \$85.00)—(per credit hour)	9.00
Nonresident Tuition (maximum of \$340.00)—(per credit hour)	30.00
No General Fee	
No Activities Fees	

*All continuing and returning students are required to make an advance tuition deposit of \$27.00. Resident new students are required to make an advance tuition deposit of \$27.00; nonresident new students, \$90.00. This advance tuition deposit is applied at registration time toward tuition for that semester. The deposit 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.

Summer Session Fees

Tuition (courses audited or taken for credit) (per credit hour)	\$20.00	\$30.00
Student Activity Fee (applies to 1st term)	2.50	2.50
Course fees for applied music, institutes, and other special programs as noted in <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)	

Graduation Fees and Rentals

Graduation Fee: (payable at time of application)	
Bachelor's degree (each)	5.00
Advanced degree (each)	5.00
Five-Year certificate	2.50
Associate of Science	2.50
Thesis Binding, 2 copies	4.00
Rental of Cap and Gown	4.00*
Rental of Master's Hood	4.50*
Rental of Doctoral Hood	5.00*

Special Fees

Evaluation Fee (all out-of-state applicants)†	10.00
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*The rental schedule set forth here is subject to change.

†Applications from outside Hawaii must be accompanied by a \$10.00 application (money order, cashier's check, or certified check). This fee is not refundable and does not carry credit toward tuition, even though the applicant may be admitted to the University.

Special Fees (continued)

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.

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 28, "Withdrawal from Courses."

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 counselor during registration week.

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

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 admissions office.

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. Marriage emancipates a minor.
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 engaged in navigation, or while a student at any institution of learning.

Academic Regulations

STUDENT CLASSIFICATION

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

Classified Students

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

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

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

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

Unclassified Students

Undergraduate and graduate students who are not candidates for a degree are termed unclassified students in their respective divisions and enroll in the

College of Continuing Education. Some unclassified graduate students work toward the professional certificate of the State Department of Education, and others later seek admission to the Graduate Division. The unclassified status may not be used to evade technical or scholastic requirements of the college, school or Graduate Division.

Full-time and Part-time Students

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

Auditors

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

ADMISSION INFORMATION FOR ENTERING STUDENTS

Admission of Undergraduates

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

Applications and correspondence should be directed to:

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

Because of changes in admissions and enrollment limitation policies, applications will be processed for the 1971 fall semester from *February 1 to May 1*, and for the 1972 spring semester from *August 15 to November 15*. During these periods only complete applications will be considered. 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. At that time, if the application has not been processed, it will be returned with the application fee.

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.

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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 1/2 nor more than 2 units in any one subject.	4
15 TOTAL	12

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

Freshman 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.

Admission of Transfer Students

Because of changes in admissions and enrollment limitation policies, application for candidates currently enrolled in other universities, colleges, or institutions of higher learning will be processed for the 1971 fall semester from *February 1 to May 1*, and for the 1972 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 director of admissions and records. Each transcript must include a listing of courses taken, the grade received in each and a note of good standing from the institution. These transcripts become a permanent part of University files and are not available for transference to another institution under any circumstance. 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. Upon the completion of a minimum of 30 semester hours with an average of *C* or better, credit may be given for 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 candidates who wish to apply for 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 changes in admissions and enrollment limitation policies, applications will be processed for the 1971 fall semester from *February 1 to May 1*, and for the 1972 spring semester from *August 15 to November 15*. During these periods only complete applications will be considered. 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 application is made. At that time, if the application has not been processed, it will be returned to the student.

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. These records become a permanent part of the University's files and are not available for transference to another institution under any circumstance.

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. If, however, a foreign candidate has had four years of high school and/or university education in the United States, Australia, Canada, England, New Zealand or any other country in which the principal language is English, he may request exemption from TOEFL. Requests for such examination, and specific admissions information and materials should be directed to:

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

Students should have received official notification of acceptance from the University of Hawaii before coming to Hawaii. Upon arrival, foreign students are subject to English testing and placement in ELI courses. See p. 41 for details.

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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 from admissions office early in the semester preceding the semester of desired re-entry) to the office of admissions and records. A student who has attended

another institution applies as a transfer student. A request to re-enroll, that is submitted late in the preceding semester, may be denied due to enrollment limitations.

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

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

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

Business Administration

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

Early Admission

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

Selected Studies and Honors Program

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

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

Admission of Graduate Students

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

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

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

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

Consult the *Graduate Bulletin* for advanced degree programs and requirements. The bulletin may be obtained by writing to: University of Hawaii Bookstore, 1760 Donaghho Road, Honolulu, Hawaii 96822. The price is \$1.00 surface mail and \$1.75 air mail to the U.S. and Canada; to Asia and Africa, \$2.25; to Europe and South America, \$2.00; to Central America and the Caribbean, \$1.50.

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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). Entering students receive circulars with instructions for registering. Courses are described in this catalog under the various college sections. A schedule stating the time and place of meetings for each course is issued by the admissions and records office prior to registration.

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

To help the University plan for all new and continuing students, an advance deposit on tuition will be collected. This nonrefundable and nontransferable deposit of \$27.00 for residents and \$90.00 for nonresidents will be applied to the full tuition at registration.

Undergraduates. Each undergraduate is 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. Instructions for auditors and unclassified students are issued at the beginning of each semester.

Late Registration

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

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

Other Provisions

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

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

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

Withdrawal from Courses

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

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

When a student ceases to attend class without officially withdrawing prior to the last four weeks of class, the instructor may award any one of the following final course grades: *A, B, C, D, F, CR* (Credit), *NC* (No Credit), *W* or *I*. An instructor will award an *I* or a *W* on the basis of the feasibility of the student's making up the work within the prescribed time limit. If an *I* (Incomplete) is awarded the instructor must also award an alternate grade to be recorded on the student's record if he does not undertake the work necessary to remove the *I*. This alternate grade may be any one of the following: *A, B, C, D, F, CR, NC, or W*.

Refunds for withdrawals are noted in this catalog under "Tuition and Fees—Refunds." Students seeking tuition refunds for withdrawals should go to the treasury office in Bachman Hall immediately after the withdrawal form has been completed and signed, bringing the form with them.

Transfers Within the University

A student may apply for transfer from one college to another during either semester. Application for transfer must be made on a form supplied by one of the deans concerned. The application must be approved by the deans of the two colleges and left with the dean of the college he wishes to enter. Changes of college, curriculum or major are not permitted during registration periods.

CREDITS, GRADES, AND EXAMINATIONS

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

Credits

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

Grades

Grades given in all courses are *A, B, C, D, F, 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. When the instructor records a grade of *I* on the final grade card, he must also record the grade to which the *I* will revert if the work is not made up by the deadline; that grade should be computed on the basis of what grades or other evidence the instructor does have, averaged together with *F*'s for all the incompleting work (including the final examination, if it is not taken). If the work is completed prior to the deadline, the instructor will report a change of grade, taking the completed work into consideration.

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

Credit-No Credit. Undergraduate students may with approval of their adviser, choose to take up to two courses a semester on a "credit" or "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 are exempt from the two credit-no credit course maximum the student is permitted to take in any one semester and are also exempt from the requirement that the student not be on probation in order to take them. No more than forty (40) credit hours taken on a credit-no credit basis 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).

A course taken on a *CR-NC* basis may not be retaken for a *A, B, C, D, F* grade nor may a course in which a student earns a grade on the *A, B, C, D, F* basis be retaken for a *CR-NC* grade.

Grade points are given for all courses in which grades of *A, B, C, D* or *F* are reported. They are computed as follows: For each credit received in a course, 4 grade points are granted if the grade is *A*, 3 if *B*, 2 if *C*, 1 if *D*, 0 if *F*.

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

Grade-point ratios are determined by dividing the total number of grade points by the total number of credits for which a student has been registered. Courses for which grades of *W, I* or *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 Asian and Pacific languages department.

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

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, up to 8 credits.

Students who do not wish to enroll in a foreign language course (e.g., because they have completed their requirement or because they are enrolled in a college which has no such requirement) may receive credit for 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.

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

For other courses the examinations have to be specially prepared by University faculty members, and so the requirements to take them are somewhat more

stringent. An enrolled student with a grade-point average of 2.4 or better who presents evidence to his college dean that he has had the equivalent of a course through experience or training but has not received college credit for the course, may apply for credit by examination. (See preceding section for foreign languages.) Graduate students may also obtain credit in this manner for certain undergraduate courses. A \$5.00 fee is charged for each examination.

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

Courses passed by examination do not carry grade points.

ACADEMIC PROBATION, SUSPENSION, DISMISSAL

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

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

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

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

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

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

Dismissal. A student is dismissed (1) when he has been previously suspended and has failed on 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 by May 1 for the fall semester, by November 15 for the spring semester, and by April 1 for the summer session. The same deadlines apply for applications to return after dismissal, except that these applications should be filed at the student services office of the appropriate college.

Other Provisions. Warnings of low scholarship may be given to the student approximately at mid-semester, but the student should not assume that his work is passing merely because he has not been warned. The University is not responsible if a warning mailed to a student fails to reach him.

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

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

Degree Programs

PROGRAMS LEADING TO ADVANCED DEGREES

At the graduate level, the 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 33 fields. Post-graduate studies have been established in some of the sciences and medical arts. For information on these programs, and the five-year diploma curriculum in education, see "College of Education," and the annual *Bulletin* of the Graduate Division.

PROGRAMS LEADING TO THE BACHELOR'S DEGREE

Purposes of Undergraduate Instruction

Students come to American universities with many interests and motivations, both cultural and vocational. The University of Hawaii attempts to respond to as many of these interests as seem appropriate to an institution of higher education. Thus, it currently provides six different undergraduate degrees (bachelors of arts, fine arts, science, business administration, education, music) in a total of 66 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.

University Requirements for Bachelor's Degrees

The liberal education objectives of undergraduate learning include an understanding of the fundamentals of major fields of knowledge which should be the common possession of educated men and women, whatever their specialized 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.

Communications: Each student must show competence in expository writing and oral communication appropriate for study at an institution of higher learning. The usual means of fulfilling this requirement is to pass any English course in the 100 series and also Speech-Communication 145. But any student who already has this competence may demonstrate it—and

receive credit for the equivalent courses—by passing and examination offered by these departments. (The English examinations are scheduled for August 28, 1971 and January 17, 1972.)†

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. 46, 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: American Studies 201,* 202;* Art 101, 270, 280; Asian Studies 310; Music 160, 170, 180, 265, 266; Special Studies 133.

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.

*These requirements change from time to time. Check with an academic adviser to see if any changes were made after this catalog was prepared in the first quarter of 1971. A description of the equivalent "core" requirements for the Survival-Plus Program is obtainable in the Honors Office.

*Satisfies either Humanities or Social Sciences distributional requirement, not both.

†The requirement in Speech-Communication was being reviewed as the Catalog went to press. Check to see if it has been continued.

Chemistry 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.

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

Biochemistry 441; Biology 220; Botany 101, 201, 450; Genetics 451; Microbiology 130, 351; Zoology 101, 450.

General Science 121, 122, 124; Information Sciences 301, 302.

Social Sciences: The purposes of this requirement are (1) to seek an understanding of the extent to which scientific method can be used in studying human behavior and institutions and (2) to assist students in assessing their own behavior in society. Students may fulfill this requirement by passing 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.

*Satisfies either Humanities or Social Sciences distributional requirement, not both.

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.

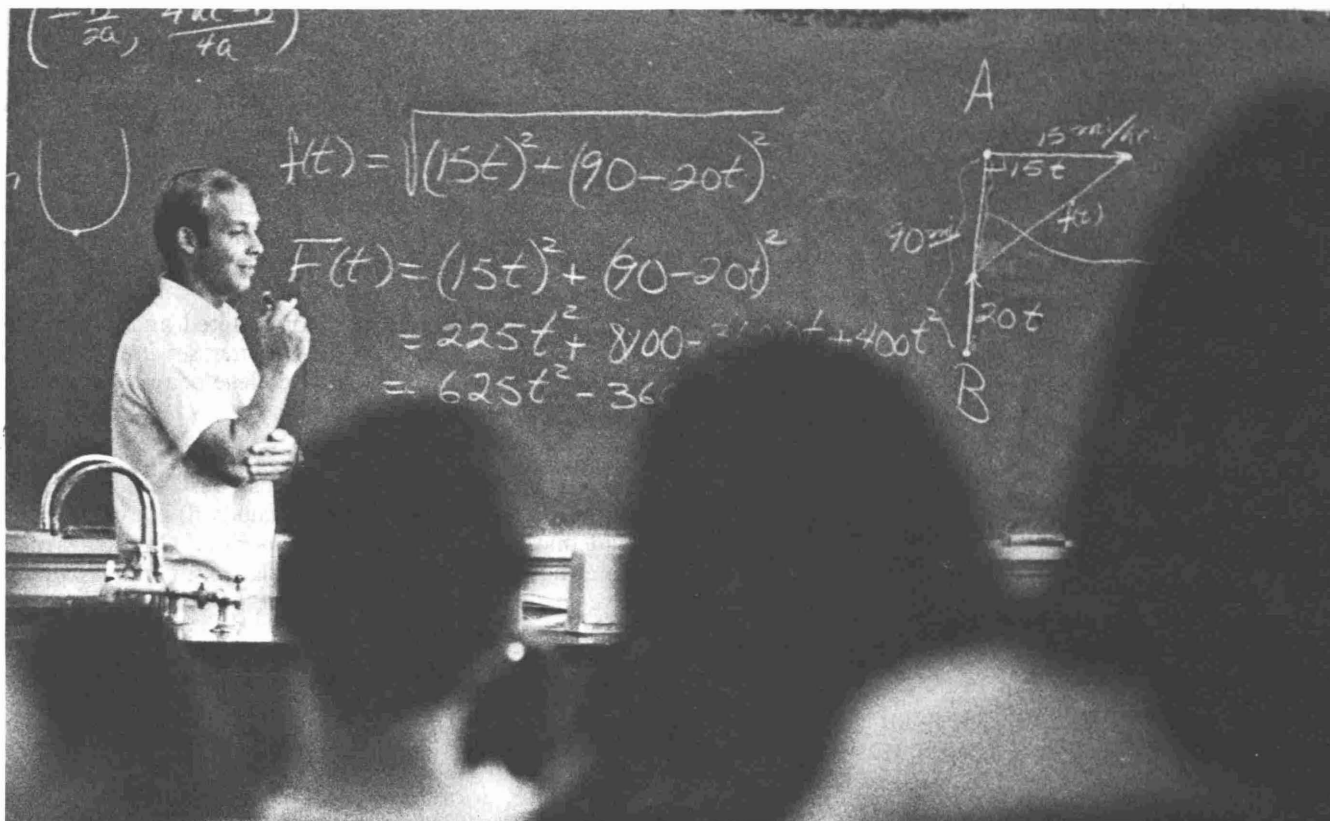
Residence Requirements. Baccalaureate degrees are granted only those students who earn a minimum of 30 semester hours in residence (that is, taking credit courses or their equivalent by examination) at the University of Hawaii.

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, languages, mathematics, philosophy, political science and other subjects. Students who take the majority of their lower division work in these special courses and sections may be eligible for the award of Sophomore Honors.

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

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

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

Full information about both programs may be obtained from the Director of Undergraduate Honors Programs 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 Honors courses and among the offerings of the departments of the several colleges in the following pages, there are a few such courses which do not fit within any department. Among the latter are the IS and SS courses below:

- IS 203 Technology and Society (3) I, II**
The nature of technology and its impact on society. Historical interactions, current aspects, projections for the future. Present problems and conflicts, and prospects of resolution. (Identical to GE 203).
- IS 300 Field Study (v) I, II**
Pre-arranged systematic investigation in the field of selected topics. Primarily for East-West grantees. Pre: permission of appropriate department chairman and dean.
- IS 324 U.S. in the Mid-East Conflict (3) I, II** Kuroda
U.S. role in the Arab-Israeli conflict since World War II; ideological, political, psychological, social and historical factors affecting policy choices of governments concerned.
- IS 491-492 University Services Practicum (3-3) I, II** Linn
Research for service in selected campus committees or agencies; readings on problems to which those committees are directed.
- IS 497 Seminar in Interdisciplinary Science Curriculum (3) II** R. Campbell
Fundamental science concepts from the viewpoints of physical, biological and earth sciences; integrative processes and conceptual schemes relevant for science curriculum development; significance of ideas and models for contemporary and futuristic problem solving. (Identical to Ed CI 497)
- IS 600 Theory of Administration (3) I, II** Bueche
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.
- ### Special Studies
- (Interdisciplinary courses sponsored by Honors Program but open to all students.)
- SS 101-102 The College Experience Seminars (2-2) 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 SS 101, student leaders in SS 401.
- SS 133 Man and His City (3) I, II** L. Jones
The 20th-century American city as an expression of attitude and value. Examination of Honolulu as example of various theories of function of the city. Fulfills Humanities Area Requirements.
- SS 221-222 International Agriculture (1-1) I, II** S. Goto
Colloquium on role of agriculture in community development, with special emphasis on Pacific and S.E. Asia. May be repeated.
- SS 251 Cultural Confrontations in Community Development (3) II** Forman
Specific problems in developing nations presented on an inter-personal level, with emphasis on reaching hypothetical solutions. Discussion of cases presented by former volunteers, members of international community and faculty.
- SS 291 Community Service Practicum (3) I, II** Blaylock
Supervised field of work in selected community agencies; seminar in corresponding social problems. Pre: consent of instructor after interview.
- SS 293 Pre-Education Practicum (3) I, II** Joseph
Tutoring the culturally disadvantaged; seminar compares the educational assumptions of subcultures in Hawaii.
- SS 311-312 Independent Study Tutorial (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 Coordinator and appropriate faculty adviser.
- SS 321-322 Seminar in International Agriculture (1-1) I, II** S. Goto
Continuation of 221-222 with emphasis upon leadership problems.
- SS 331 Legal Thought (3) I** Frierson
History, philosophy and nature of law as a humanistic discipline. Open to anyone curious about the role of law in Western culture.
- SS 332 Legal Reasoning (3) II** Gray
Principles of discerning and formulating reasoned agreement and disagreement. Problems of definition, classification, evidence and precedent in hypothetical legal cases.
- SS 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.
- SS 347 Introduction to Community Psychiatry: Problems (3) I** Pope
Survey of social problems—alcoholism, drug addiction, identity conflicts, family and geriatric problems, suicide, etc.—and of amelioration methods through community psychiatry. Pre: junior standing.
- SS 348 Introduction to Community Psychiatry: Agencies (3) II** Pope
Survey of community agencies and their roles in the treatment of mental illness. Pre: junior standing.

SS 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.

SS 380-390 The Hawaii 2000 Constellation

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

SS 380 Hawaii 2000: Colloquium (1) I, II

Small group discussions to correlate the issues raised in the seminars. May be repeated.

SS 381 Hawaii 2000: Planning Hawaii Now (3) I, II

Planning techniques and problems raised by those techniques. Particular attention to three transitional areas: Kalihi-Palama, West Hawaii and Waimanalo.

SS 382 Hawaii 2000: The Hawaiian Environment (3) I

Cox, Lamoureux, Newhouse

Problems of pollution, population and environmental quality today and in future. Possible solutions and relevant legislation.

SS 385 Hawaii 2000: Values and Utopias (3) I, II

D. Weaver

Relation between utopian thought and social or political action. Attempts in social sciences to plan alternative futures.

SS 386 Hawaii 2000: Tourism (3) II

Economic, political and sociological implications of the travel industry in Hawaii.

SS 387 Hawaii 2000: Action Now (v) I, II

Linn

Projects for governmental and community action to implement insights from Hawaii 2000 constellation. Pre: one semester of Hawaii 2000 and consent of instructor.

SS 388 Hawaii 2000: Political Futuristics (3) I, II

Dator

Study, forecasting and design of alternative socio-political values, environments and organisms for the immediate and distant future. (Identical to PolSc 305 sec. 1)

SS 389 Hawaii 2000: Natural Resources and Economic Development (3) II

Baker, Gopalakrishnan

Land and marine resources in Hawaii's future and economic principles to guide their use.

SS 390 Hawaii 2000: Design and the Physical Environment (3) II

Design in the urban and natural environment for optimum quality of human life.

SS 391 Hawaii 2000: Bargaining (3) I

Union-management contracts as seed-bed of tomorrow's legislation on environmental control, civil rights, housing, etc.

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

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

Arkoff

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



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

In this period of rapid growth at the University, some students have come to feel regimented by the standardized curricular requirements of the school, or neglected as individuals in a large student body. As a partial response, the University has instituted a Liberal Studies Major B. A. Program (often called "the Non-Major Major Program") which leads to a bachelor of arts degree in liberal studies from the College of Arts and Sciences.

Currently administered by the Honors Program, Liberal Studies permits a qualified undergraduate to construct his own multi-disciplinary major-equivalent with the advice and consent of the program coordinator and a faculty member of his choice. At present, a student in the program must satisfy the University degree requirements, the Arts and Sciences credit requirements, and the Arts and Sciences language requirement. Also, he must maintain a 2.5 grade-point ratio in those courses which form his major equivalent. Courses in the major equivalent may not be taken on a pass-fail basis.

Any student not on academic probation may apply for admission to the program by appointment with the program coordinator in the Honors Office in Sinclair Library. Although there is no necessary connection between Honors and Liberal Studies, a student who qualifies may elect to be in both. Essentially, the Liberal Studies Major Program has been designed for the student who: (1) wishes to study a particular problem

or theme, e.g., revolution or the urban crisis, through a multidisciplinary constellation of courses; (2) is unsure about his ultimate career goals and prefers to take a broadly based liberal arts program; or (3) wishes to create for himself an undergraduate major or program for which there are courses—e.g., linguistics, 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.

Survival-Plus Program

"Survival-Plus" allows a student to organize all his undergraduate training around the major socio-ecological crises that threaten extinction to the human race. Freshmen and sophomores follow a curriculum which provides an alternative to the University's general education requirements (see p. 32); juniors and seniors will complete a "major" in one of the traditional disciplines, but will focus those major studies insofar as possible upon the crisis they have selected for intensive investigation. Students from outside the Program may take SUR courses if space is available. For further information, inquire at the Honors Office in Sinclair Library.

SUR 101 Human Alienation (3) 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 133 Planning for Survival (3) I, II

Introduction to planning concepts and techniques; emphasis on planning for Hawaii now, on state and local 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

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

Experimental College in the Humanities

(New College)

Denney (*American Studies*); Yanoviak (*Architecture*); Davidson, Kowalke (*Art*); Viglielmo (on leave 71-72) (*Asian Languages and Literature*); Boesgaard (*Astronomy*); Mandel, Mower, Piette (on leave 71-72) (*Biophysics and Biochemistry*); Carol, Marsh (*Business Economics*); Kiefer (*Chemistry*); Langhans (on leave 71-72) (*Drama*); Pearce (*East-West Center*); Abramson, Baber, Edelstein, Solomon (on leave 71-72), Thompson, Woods (*English*); Rorke (*European Languages*); Bigelow, Haraway (*General Sciences*).

Ladd, McGlone, Miller, Rapson (Director), Stein (*History*); Denney, Jones (*Honors*); Bailey (*Linguistics*); Benedict, Siegel (*Microbiology*); Cole, Coraggio (on leave 71-72) (*Music*); Bridges, R. Feldman (Asst. Director), Goodfriend, Goodman, Gray, Lessin, Roszak (*New College*); Parvulescu (*Ocean Engineering*); Dobson (on leave 71-72), Feldman (*Physics*); Kariel (*Political Science*); Diamond, Watson, Weaver (*Psychology*); Weiner (*Public Health*); Seifert (*Religion*); Weinstein (*Sociology*).

New College began in 1970 as a group of experimental courses. With its own faculty and student body, it is expected to evolve into a liberal arts college within the University of Hawaii pursuing goals of general education while maximizing opportunities for creative achievement. Freshmen and sophomores are engaged in a core, multi-disciplinary curriculum; upper-division students are granted an unusual degree of freedom from course work and freedom to pursue intellectual and artistic enterprises of special significance to each individual. New College forms an intense sub-community within the larger University community.

Curriculum

For many Americans, the entire world is limited to here and now; they know and care about only their immediate culture, their own psyche, and this moment in time. The freshman-sophomore curriculum is designed to enlarge horizons beyond these narrow and perhaps self-limiting boundaries.

Freshman and Sophomore Years

Students in New College take two courses per semester (8 units apiece) for the first two years. The eight courses required are run by a committee of faculty of the college and broken into a number of seminars. Three of the courses deal with the Modes of Thought in: (a) the Humanities; (b) the Natural Sciences; (c) the Social Sciences. The emphasis in these courses, as the title indicates, is not coverage but on the methods of inquiry, the ways in which the disciplines function, other ways to think and solve problems.

A second track faintly resembles traditional World Civilization and Humanities courses, but rather than assembling Great Books, Great Ideas, or narrating centuries of political facts, an attempt is made to impart a sense of the life-style of some of the great cultures in man's past and present. All the disciplines are brought to bear in this process of recreation, synthesis, and evaluation. A time sequence, somewhat out of phase, is proposed: Modern World (the present) comes first; Gods and Men (the past) follows; the World's Future is

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

the last course required. One result of an entry into the past and of disciplined guessing about the future may be the development of perspective on the present so that it may not only be lived, but understood as well.

A third track offers the student an opportunity to get to know well a culture other than his own *via* two sophomore courses which integrate language with history and life-style, and *via* spending some time in that other culture (which may be in a Hawaiian rural community, or in a mainland black ghetto, as well as in Europe or Asia). The student chooses from perhaps a dozen possibilities.

Junior and Senior Years

Each student works with his faculty adviser and his faculty committee to set up a program leading to two goals: passing comprehensive examinations in a field relating to his creative project; and completion of that project, whether it be a thesis, a symphony, a scientific finding, or a collection of poems. To accomplish these two goals, the student may take courses at the University of Hawaii, embark upon an extensive reading program, participate in community activities, or travel for research purposes or to gain relevant experiences.

For more information on New College write to: Director, New College, 2001 Vancouver Drive, Honolulu, Hawaii 96822.

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NC 101 The Modern World (8) I Bailey, Bridges, Reuel Denney, Jones, McGlone, Pearce, Roszak, Seifert, Weaver
Multi-disciplinary examination of the meaning and consequences of mankind's experience in the 20th century. Presentations, lectures, seminars, and tutorials will be employed.

NC 102 Gods and Men (8) II Bailey, Bridges, Edelstein, Goodman, Jones, McGlone, Miller, Seifert
Multi-disciplinary examination of the philosophic and religious questions about existence, including a study of Judaeo-Christian, Greco-Roman, and various Eastern traditions. Presentations, lectures, seminars, and tutorials will be employed.

NC 202 The World's Future (8) II Bigelow, Carol, Reuel Denney, Pearce, Roszak, Weaver, Weiner, Weinstein, Yanoviak
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 paid 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 (8) I, II Ruth Denney, R. Feldman, Goodfriend, Ladd, Lessin, Mower, Rorke, Stein
Multi-disciplinary study of a second culture. Geography, history, literature, art and religion of the culture or sub-culture 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 sub-culture.

NC 220 Modes of Thought: Social Sciences (8) I, II Abramson, Carol, Diamond, Kariel, Watson, Weinstein, Yanoviak
Analysis of methods of inquiry used to pose questions and seek answers in the social sciences.

NC 230 Modes of Thought: Natural Sciences (8) I, II Benedict, Bigelow, A. Feldman, Haraway, Kiefer, Mandel, Parvulescu, Siegel, Weiner
Analysis of methods of inquiry used to pose questions and seek answers in the natural sciences.

NC 240 Modes of Thought: Humanities (8) I, II Baber, Davidson, Edelstein, Goodman, Kowalke, Thompson, Woods
Analysis of methods of inquiry used to pose questions and seek answers in the humanities.

NC 399 Directed Work (15) I, II Staff
Varied activities to launch each student on his creative project and on preparations for his comprehensive examinations.

NC 499 Directed Work (15) I, II Staff
Continuation of NC 399 for seniors.

Ethnic Studies

The Ethnic Studies Program serves those students who have expressed a growing need to develop a sense of ethnic background and identity, neglected by traditional public education and university curricula. By exposing students to their historical background, cultural heritage, and current social problems, education is made more relevant in terms of their community and themselves. Interethnic relations are also enhanced in the Ethnic Studies Program. Students are provided an opportunity to become aware of not only their own ethnic backgrounds, but the backgrounds of other ethnic groups. Such awareness is the fundamental means towards achieving greater interethnic "aloha."

In a larger sense, the Ethnic Studies Program provides background and knowledge essential for those students desiring to serve and work in ethnic communities as teachers, lawyers, doctors, counselors, social workers, psychologists or government officials.

Community Study

The Ethnic Studies Program attempts to be responsive to the needs of the community. It emphasizes pressing and relevant issues. Problems regarding old as well as newly arrived immigrants, employment, crime and delinquency, school drop out, physical and mental health are investigated with the aim of identifying sources of trouble and offering viable solutions. Research undertaken in the program is not considered as an end in itself. Rather, it is used as the basis of knowledge needed to initiate programs outside of the University.

Basic to the program is the concept that the entire community surrounding the University be used as a classroom for students, bringing in the influence of the home, the neighborhood, the religious and ethnic groups, and the wider world of politics. Moreover, the Ethnic Studies Program is concerned not only with sending students into various communities, but seeking out members of minorities under-represented at the University, and attempting to recruit them into higher education.



Curriculum

Through its curriculum, Ethnic Studies provides students with the opportunity to become aware of the many and varied ethnic groups in Hawaii and the mainland, bringing greater insight into the nature of American society. More specifically, it attempts to enrich the student's educational experience in four areas: (1) History, cultural heritage and contemporary position of Hawaii's multi-ethnic population. (2) Individual and comparative studies dealing with ethnic groups on the mainland. (3) Worldwide and domestic issues bearing directly on the race problem and the role of ethnic groups in the United States. (4) Interethnic relationships.

At present, students who want to major in this field may be accommodated on an interim basis in the Liberal Studies Program (see above).

- ES 101 Ethnic Groups in Hawaii (3-3) I, II** **Beechart**
History and sociology of immigration; adaptation process of major immigrant groups; labor problems; urbanization; political and economic strategies.
- ES 121 Introduction to Hawaiian Studies (3-3) I, II** **Kelly**
Polynesian migrations; Hawaiian institutions, social stratification in historical perspective and attitudes towards authority; present problems of the Hawaiian people.

- ES 200 Japanese Americans (3-3) I, II** **Ogawa**
History of Japanese in the U.S. Psychological characteristics, i.e., ethnic identity, personality, values. Current status and problems. Relationship to other ethnic groups.
- ES 201 Chinese Americans (3-3) I, II** **Young**
Study of the social and psychological aspects of the Chinese-American sub-culture. Overview of history and contemporary problems.
- ES 221 Hawaiian Americans (3-3) I, II** **Kamakawiwoole**
A critical examination of the values of the Hawaiian culture and how these values relate to modern Hawaii's economic, educational and legal social systems.
- ES 301 Ethnic Identity (3-3) I, II** **Ogawa**
Analysis of contemporary social themes with which the student can better interrelate his life with reference to his culture.
- ES 390 Comparative Study of Movements for Social Change in America (3-3) I, II** **Takahashi**
Social and political survey aimed at a critical analysis of social movements within America with particular focus on problems faced by groups in ethnic communities, i.e., Asian, Hawaiian, Black, etc.

Courses under development and projected for 1971-72 are "Filipino-Americans," "Afro-Americans," "Samoan-Americans," "Korean-Americans," "Community Field Study Courses," and others. Details of these courses and general information concerning the program may be obtained from: Director of Ethnic Studies, Wist Hall 208.

Freshmen Seminar Program at Johnson Hall

This innovative program provides a limited number of freshmen with an opportunity to take the majority of their courses in small seminars at Johnson Hall led by well-qualified seniors under the tutelage of faculty members. The seminar model has proved an effective method of teaching content. Since all classes are limited to eight students, closer ties and identification exist between students and faculty, creating an environment where faculty members can help and advise each student more effectively.

Senior seminar leaders, who receive 6 credits for participating, are selected from their respective departments, using such criteria as their academic record in their majors, faculty recommendations, group experience, and interest in teaching. Freshmen are selected on a first-come first-served basis. They are required to enroll in two or three of the six courses offered in the seminar program—English, Psychology, Anthropology, Religion, Sociology, and Special Studies 101—rounding out their course of studies in the subjects taught outside the program. This mixture should insure an adequate identification with the seminar program while maintaining contact with the diversity of the Manoa Campus at large.

Prospective freshmen and senior leaders should contact the program director or the course instructor as far in advance of the beginning of the semester as possible. More information and pre-registration forms are available at Johnson Hall B-7, phone 944-7141.

Mainland Semester Program

The Mainland Semester Program provides undergraduates with professionally supervised and academically credited opportunities to work with minority groups and disadvantaged and handicapped persons in the mainland United States. Central purposes of the program are to offer students broadening cultural experiences, along with preprofessional work experience dealing with important human problems.

At present, placements are concentrated in Santa Fe and northcentral New Mexico. This area, relatively near Hawaii, offers considerable opportunity for service and cross-cultural experience. The region is rich in history, Indian and Spanish-American culture, including many archeological sites, museums, galleries, music and drama presentations, and also a large art colony.

Current placements include work with teachers, counselors, psychologists, psychiatrists, correction and rehabilitation workers, administrators, and other professionals. Settings are both urban and rural and include institutions concerned with preschool, elementary, intermediate, secondary, and post high school education as well as some specifically devoted to slow learners, delinquents, the deaf, culturally disadvantaged, the maladjusted and mentally ill. The persons served by the institutions include Indians, Chicanos, Blacks, and Anglos.

Students participating in the program may elect one of several registration plans. A student may enroll in Special Studies 311 (Independent Study Tutorial) and earn up to 15 elective credits for his semester's activity. If he wishes, he may continue for a second semester in Special Studies 312, making in effect a "Mainland Year." Mainland Semesters may also be used for student teaching (and observation-participation), to fulfill the second-year language and culture requirement, and to acquire credit in anthropology, art, psychology, sociology, and other areas.

Students in the program pay regular tuition and fees. Other costs generally include room and board, transportation, and incidental expenses, and it is estimated that the minimum total cost of a Mainland Semester would be about \$1,000. However, most agencies provide room and board for students placed with them, thus cutting the total cost to about half. In addition, some travel or fellowship funds may be available to help students of very modest means.

The program is open to all students who are of sophomore status or above and are not on academic probation; however, students who have not lived on the mainland are given priority. Applications for a particular semester should be completed as early as possible the previous semester, but not later than April 15 for the fall semester or October 31 for the spring semester. Application forms and further information can be obtained in Gartley 215-B.

Community Semester Program

The Community Semester Program provides professionally supervised and academically credited apprenticeships or internships in various community settings in Hawaii. These placements carry up to 15 credits and constitute a full-time activity for a semester. Central purposes of the program are to offer students opportunities for dedication to important human problems through preprofessional work experience, as well as broadening cultural experiences.

The Community Semester Program is a sister activity to the Mainland Semester Program (which places students in mainland United States). Current placement opportunities in the Community Semester Program are largely on Oahu. However, there will be an increasing number of opportunities on the neighbor islands and perhaps in other areas of the Pacific. Current opportunities include positions as counselor aides, education aides, recreation aides, mental health trainees, and research assistants. Some of the existing placements can be redefined while others may be found and tailored to accommodate the needs, interests, and talents of individual students.

Students may elect one of several registration plans. A student may enroll in Special Studies 311 (Independent Study Tutorial) and earn up to 15 elective credits for his semester's activity. If he wishes, he may continue for a second semester in Special Studies 312, making in effect a "Community Year." Students inter-

ested in using their Community Semester to fulfill the second-year language culture requirement; to acquire credit in anthropology, psychology, sociology, or other areas; or to gather materials for an Honor's thesis should discuss their needs with the director of the program who will try to work out a special registration plan with the student and office concerned.

Students enrolling in the program pay regular tuition and fees; those placed on a neighbor island also pay transportation costs. Some of the agencies will provide room and board without charge or for a nominal fee. The program is seeking fellowship funds to assist students of very modest means.

The program is open to all students who are of sophomore status or above and not on academic probation. Application procedures and deadlines are the same as for the Mainland Semester Program, above.

Domestic Student Exchange Program

The National Domestic Student Exchange 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 DSEP institution, with credit and transfer of grades received. Students must plan to return to the Manoa Campus to graduate.

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. Exchanges are on a one to one ratio.

Institutions in the DSEP are Illinois State University, Montana State University, William Patterson College (N.J.), Portland State University, Grambling College, Idaho State University, University of Wisconsin at Green Bay, and the universities of Alabama, Hawaii, Montana, Oregon, and Massachusetts.

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

English Language Institute

For ELI course descriptions see "College of Arts & 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 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 purpose, ELI courses take precedence over all other course work. They may not be postponed to a subsequent semester, nor may they be dropped or taken with auditor status. Students who fail to comply with ELI assignments may be denied further registration at the University.

Relationship of ELI Assignments to Other 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.

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 \$50 per month is paid to students enrolled in the advanced course. Pay while at summer camp is \$225 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 \$134 per month.

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

Financial assistance scholarships are available for each year of the program. The scholarships provide payment for tuition, fees, books, laboratory expenses and \$50 per month subsistence pay for the period of the scholarship. Applicants for the four-year scholarship normally apply during their senior year in high school. Applicants for the three, two and one-year

scholarships apply during the second semester at the University. Completion of the basic course is a prerequisite for the receipt of the one and two-year scholarship. For further information, inquire at the office of the director of military science program.

Director: Silver. *Associate Director:* Pollard. *Assistant Directors:* Sasaki, Brennan, Davis, Jacks, Koga. *Instructors:* Laul, Letoto, Imasaka, DuBrosky, Kinne.

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 establishment 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 operations and tactics. 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. Small unit offensive and defensive tactics. 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)

The Aerospace Studies (AS) Program is an integral part of the Air Force ROTC program designed to prepare college students for leadership and managerial positions as professional air force officers.

Students who meet selection criteria, voluntarily make a commitment, and successfully complete the prescribed courses are commissioned as second lieutenants in the United States Air Force. Prior to receiving his commission, the student must have received his undergraduate degree. Graduates of the program will then enter active duty, or pursue an advanced degree on an "educational delay" status, should they so qualify. A student does not have to be an AFROTC cadet to enroll in the courses. Women students are also encouraged to enroll in the courses and to pursue a course of study leading to a commission as a second lieutenant in the Air Force.

The AFROTC program at the University of Hawaii, referred to as the Professional Officer's Course (POC), is a voluntary two-year program. Applicants receive general military training during a six-week course at an Air Force base prior to their junior year. Once enrolled, students study aviation history, space operations and Air Force leadership and management in an

interesting academically free student-centered atmosphere. Senior cadets, who qualify as pilot candidates, will receive up to 36 hours of flying time which can be applied toward a private pilot's license.

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

Director: Somners. *Assistant Directors:* Dagampat, Nakaguma.

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

- 301, 302 Third-year Aerospace Studies (3,3) I, II** **Dagampat**
Survey course about development of U.S. airpower and its concepts, doctrine, employment; astronauts and space operations; future development of aerospace power.
- 451, 452 Fourth-year Aerospace Studies (3,3) I, II** **Nakaguma**
Study of professionalism, leadership, management. Includes leadership theory, functions and practices as they apply to Air Force.

Population Studies Certificate

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

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

Students successfully completing an approved sequence of at least five courses in population—two of which may be selected from a list of courses in that field offered by various departments—obtain 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 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 400 Contemporary Russian Literature in Translation (3)
European Languages 402 19th-C. Russian Literature in Translation (3)
Russian Literature 411-412 Literature of the 19th-C. (3-3)
Russian Literature 413-414 Literature of the 20th-C. (3-3)
Russian Literature 415 Russian Poetry (3)
Russian Literature 417 Russian Drama (3)
Russian Literature 418 Advanced Composition and Stylistics (3)
Russian Literature 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)

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

Tutoring and Services to Handicapped

A tutoring service 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.

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Admission and Degree Requirements

Admission requirements for the College are the same as those for the University (page 24). 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 grad-

- uation, 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 30.)

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. 32) 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.

46 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: 18 semester hours, including at least two English courses from Group I, at least one course from Group II, and at least one course from Group III.

- I. Courses identical with those in University Group I.
- II. Courses identical with those in University Group II.
- III. Courses identical with those in University Group III.
- IV. American Studies 485, 486; Art 105, 106, 108, 496; Asian Studies 241, 242; Drama 240, 260; English 312 to 499 (not including 397, 398, 497, 498); History 241, 242, 281, 383; Journalism 150; Linguistics 102; Speech-Communication 145, 211, 231, 304, 305, 406.

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 emphasis in ceramics, drawing, painting, printmaking, sculpture, textile design, weaving, or visual design.

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

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

Botany. There are alternative pathways in obtaining a degree in botany.

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

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

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

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

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

Chinese. Major requirements: (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. 32) 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 in each of five of the following areas: Medieval, Renaissance, Restoration and Eighteenth Century, Romantic and Victorian Periods, Modern Literature, American Literature; 3 additional hours in one of these five chosen areas; 6 additional hours in courses numbered 300-499. *Special major programs:* Students with special interests in the study of language or in imaginative writing may substitute appropriate course work in these subjects for courses in one of the required "areas" listed above. Students with other special interests may, with the concurrence of their adviser and of the director of undergraduate advising, plan a major program of their own; this program may include related upper-division work outside the department of English, but must include a total of 27 hours of upper-division work.

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

Geography. Major requirements: 25 semester hours. *Required courses:* 101, 151, 300, 370 or 375, 390, a 300 level regional course and 3 additional courses in sys-

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

Geology. *Major requirements:* 24 semester hours beyond 101-102, and including 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 3 of the following: 431, 451, 461, 463, 475, 480, 490. Additional work to consist of an integrated group of courses selected from appropriate offerings in biochemistry, biology, botany, chemistry, genetics, microbiology, and zoology. As related courses, Chemistry 133-134 or 351; Mathematics 206; and Physics 151-154 or 170-273.

Music. 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. 36.

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, 402, or 403, 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, 425, 426, 491. Group B: 215, 317, 318. Group C: 214, 320, 401, 430, 431. Group D: 112, 113, 216, 319. Group E: 321, 322, 428. It is strongly recommended 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.

*Approval pending.

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

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 161, 361, 352, Bot 450 (cross-listed as Zool 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, general 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; Math 205, Physics 151-152.

**Architectural Engineering and Technology:* Offered at graduate level only.

General 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; Geog 310; Hort 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. 46). 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; advanced theory: 481 for piano only, 483, 485-486; methods and pedagogy: 358-359 for piano, and 357 and 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.

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

Bachelor of Science Degree Programs**Basic Requirements**

Completion of College basic requirements in written communication, in quantitative or logical reasoning, and in world civilizations (see p. 46). 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 Biol 220; Biol 250; and approved courses in genetics, physiology, ecology, biochemistry and statistics. Chemistry 243-246 and Physics 151-154 or Physics 170-275 and Math 205-206 are also required. Additional advanced courses may be selected from biochemistry, botany, genetics, microbiology or zoology. Appropriate additional advanced courses in chemistry, physics or mathematics are recommended. An intermediate year of German, French, Russian or Japanese is also required. Students tentatively planning to major in Biology should consult with the curriculum director, immediately on entering the University of Hawaii.

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, 621, 631, 641, 642, 651, 652, 655 and Biochemistry 601-602.

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

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

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, including 101 and GG 101 or the equivalents, from among appropriate offerings in meteorology 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 or 403, 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

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

First Semester	Units	Second Semester	Units
English 100 (or option)	3	English 100 (or option)	3
Mathematics 205	4	Mathematics 206	4
Chemistry 117-118	5	Physics 170-171	5
Speech-Communication 145 (or option)	3	Option (or Speech- Communication 145)	3

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

Preprofessional Programs

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

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

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 Program

A non-major program, in which the student designs a related constellation of courses in consultation with a faculty adviser, is offered by the College of Arts and Sciences. Please see page 36 for further details.



ARTS AND SCIENCES COURSES

See p. 3 for a discussion of course descriptions.

American Studies (AmSt)

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

- 201-202 Introduction to American Civilization (3-3) Yr.** Neil
Central themes of American life and experience studied in the perspectives of history, literature and the social sciences.
- 295 Culture of the American Indian (3) I or II** Gurian
Examination of the American Indian from a historical and anthropological view.
- 301-302 Man in Society (3-3) Yr.** Denney, Lutzky
Some basic problems and processes of contemporary society, jointly examined by several social sciences. Pre: sophomore standing or consent of instructor. (May be repeated for credit.)
- 370 Music in Modern America (3) I, II** Trimillos
Varieties of music, including jazz and popular forms, in contemporary American life, with relevant antecedents. (Cross-listed as Music 370.) Pre: consent of instructor.
- 381-382 Junior Seminar (3) Yr.**
The 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.
- 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.
- 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)** Neil
Study of popular attitudes towards arts, travel, fashions, craft and industrial productions, and recreation. Past used to explain present. (May be repeated for credit.)
- 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.** Gurian
Study of contemporary American theatre as reflection of current social problems.
- 490 Special Topics (3) I, II**
Problems of contemporary relevance presented by visiting faculty.
- 495 Black Americans and American National Character (3) I, II** Helbling
Examination of the nature of American national character and of the role Black Americans have played in the making of that character. Pre: U.S. history and a survey course in either sociology or anthropology.

- 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, Neil**
Examination in depth of two or three significant personalities in American history and culture and the movements which originated from their ideas. Different personalities considered each semester. (May be repeated for credit.)
- 621 The West in the American Consciousness (3) I, II** **Gurian**
In-depth exploration of the impact of Western myth and actuality on the American consciousness, with particular emphasis on politics and national character.
- 631 The Mass Media in American Society (3) I** **Matson**
Examination of the relationship between mass communication media and patterns of culture, society and politics in America.
- 635 Perspectives in Comparative Literature (3) II** **Denney**
To explore, in Asian and Western literary works, literary questions that are cross-cultural and comparative.
- 641 Asian Influences in American Civilization (3) I, II** **McCutcheon**
To examine the influence of Asia in American history, literature, politics, thought, architecture, and fine arts.
- 650 American Civilization and the Overseas American (3) II** **Brown**
Examination of American civilization with special reference to those issues, principles, and problems most significant to Americans preparing for work and study in other areas of the world.
- 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.
- 670 Seminar: Sociability in the United States (3) II** **Denney**
Applications of concepts, definitions, classifications, and discriminations developed in the social sciences to materials dealing with institutions of sociability and hospitality in U.S.
- 672 Environmental Design in Hawaii (3) II** **Neil**
Seminar on architectural aspects of American life, generally with contemporary relevance. (Cross-listed as Arch 672.)
- 695 Image of Man in Contemporary Social Sciences (3) II** **Matson**
Examination of American social science theory and research in terms of humanistic goals and commitments. Critical analyses of competing paradigms and basic assumptions regarding human nature and conflict. (Not offered 1971-72.)
- 701-702 Proseminar (3) I, II** **Helbling**
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 the American industrial and technological complex and its effect upon both the individual and the culture. Pre: consent of instructor.
- 714 American Arts and Society (3) II** **Lutzky**
Intensive readings in the elite, popular and folk arts and their relevance to American contemporary life. Pre: consent of instructor.
- 750 Seminar in the Interaction of Asia and America (3) II**
Effect of inter-cultural exchange of ideas, values, and techniques between peoples of Asia and U.S. Pre: consent of instructor.
- 799 Directed Research (v.) I, II**
Pre: graduate standing; consent of instructor.
- 800 Thesis Research**

Anthropology (Anth)

Professors: Howard, Lebra, Lieban, Luomala, Maretzki, Oliver, Solheim. *Associate Professors:* Boggs, Dewey, Finney, Gould, Mahony. *Assistant Professors:* Agar, Griffin, Nelson, Pietruszewski, Tuggle.

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

150 Introduction to Anthropology (3) I, II

Major principles and theoretical orientations of physical anthropology, 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.

385 Undergraduate Proseminar (3) I, II

Reporting and discussion of selected problems in current research. (1) Archaeology, (2) linguistics, (3) ethnography, (4) social anthropology, (5) applied anthropology, (6) psychological anthropology, (7) biological anthropology. Pre: written consent of instructor. May be repeated.

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.

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 (Alt. yrs.; offered 1971-72.)

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.; not offered 1971-72.)

417 Political Anthropology (3) I

Character of political institutions and their development in non-Western and non-industrial societies. Pre: 200. (Alt. yrs.; offered 1971-72.)

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.

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. (Alt. yrs.; offered 1971-72.)

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.; offered 1971-72)

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.

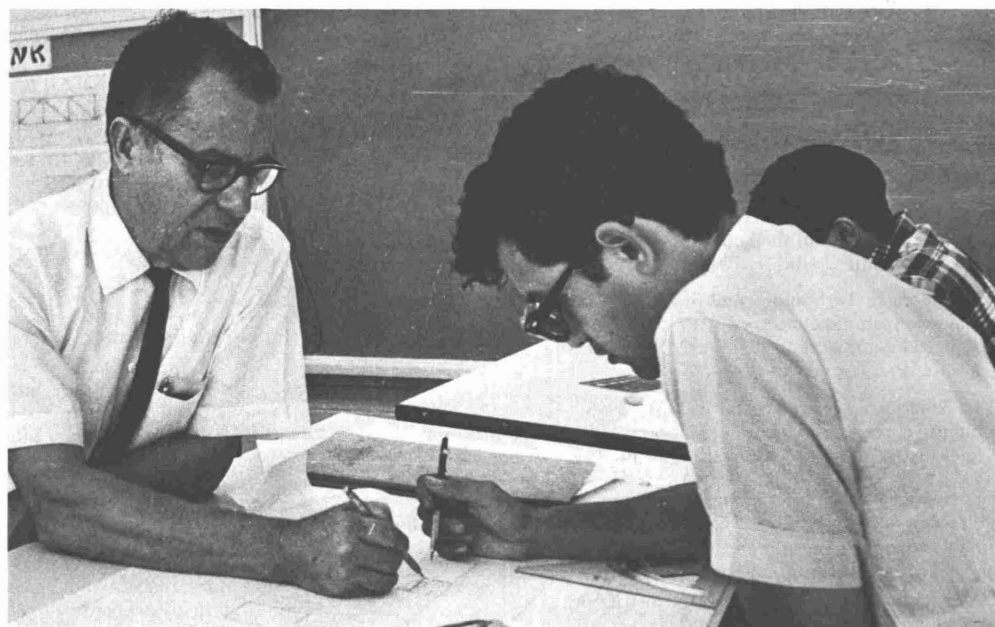
Intensive study of ancient and modern Hawaii from anthropological viewpoint. All ethnic and social groups of modern Hawaii considered. Pre: 200. 485 is prerequisite for 486.

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**

- 116 Introductory Studio "D" (3) I, II** **Staff**
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** **Yanoviak**
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)** **Staff**
Introduction to environmental design, theory, methodology, and programming including use of the computer. Taken with 274 and 276.
- 274 Communication and Presentation (3) I, II (2L, 1Lb)** **Morrison**
Basic graphic and written techniques for environmental design communication. Models, structural systems and photography. Taken with 273 and 276.
- 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)** **Boone**
Studio problems with graduated stages involving the scope of environmental design and its component fields, i.e. world, national, regional, urban design and planning; architecture; landscape architecture; interior and industrial design. Studio lab and lectures. Pre: taken with 273 and 274.

Architectural Studies

Hugh Burgess, A.I.A., Director

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***ARCHITECTURE**

Adviser, Hugh Burgess, GrgAnnex B-4

Architecture (Arch)

Professors: Etherington, Terazaki. *Assistant Professors:* Burgess, Minerbi, Toth. *Lecturers:* Boone, Connors, Fong, Haines, Hara, Hughes, Kapololu, Lee, Merrill, Morrison, Palmer, Preuss, Rummell, Sullam, Yanoviak. *Colleagues:* Kobayashi, Mascarenes, Wiederholt. *Professor:* Utzon. *Assistant Professor:* Denny. *Lecturers:* Creighton, Mark.

The department may retain any student work for departmental use.

BASIC DESIGN STUDIES

A. Bruce Etherington, Director

Basic Visual Design Courses

- 101 Introduction to the Visual Arts (3) I, II** **Preble**
Nature of visual art and its expressions in various forms. Lectures, demonstrations. (Cross-listed as Art 101)
- 113 Introductory Studio "A" (3) I, II** **Staff**
Emphasis on perception: visual responses to nature; materials, techniques, modes of representation. Problems in two and three dimensions involving photography, 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** **Staff**
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** **Staff**
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)

- 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.
- 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 equiv.
- 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.
- 431 Architectural Design "D" (4) I, II (3Lb)** **Utzon**
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 equiv.
- 432 Architectural Design "E" (4) II (3Lb)** **Utzon**
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 equiv.
- 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 1972 and alt. yrs.) Pre: consent of instructor.

*Professional degree emphasis area—see Graduate Catalog.

- 477 **Research Seminar (v.) I, II** Staff
Research methodology for the qualitative development of an optimum environment for man. May be repeated.
- 616 **Professional Practice (3) I** Haines
Ethical and economic problems of professional practice. Pre: consent of instructor.
- 699 **Directed Work (v.) I, II** Staff
Pre: consent of instructor and program chairman.
- 800 **Thesis Research (v.) I, II**

PRE-ARCHITECTURE

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

- 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** Terazaki
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. Math 205.
- 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. Must be taken with design studio.
- 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.
- 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.
- 331 **Architectural Design "A" (3) I, II (3Lb)** Hara, Sullam
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: architecture major and C or better in 274-276 and recommendation of the design faculty and program chairman.
- 332 **Architectural Design "B" (3) I, II (3Lb)** Fong
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: architecture major and C or better in 331 and recommendation of the design faculty and program chairman.
- 333 **Architectural Design "C" (3) I, II (3Lb)** Lee
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: architecture

major and C or better in 332 and recommendation of the design faculty and program chairman.

- 371 **Principles of Architectural History and Theory (3) I (3L)** Yanoviak
Emphasizes knowledge of the theory of architecture in light of architectural history through lectures, slides, and individual projects. Pre: 271 or equiv.
- 372 **Principles of Planning and Land Use (3) II (3L)** Creighton
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 equiv.
- 394-395 **Senior Honors Thesis (3-3) Yr.** Staff
Preparation of architectural design under individual faculty supervision. Required for graduation with honors. Pre: consent of instructor.
- 399 **Directed Work (2-4 v.) I, II** Staff
Pre: 333 and consent of instructor and program chairman.

*ARCHITECTURAL ENGINEERING & TECHNOLOGY

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

Structural and Environmental Systems

- 401 **Architectural Structures "D" (4) I** Terazaki
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** Toth
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. Skyscrapers and urban mega-structures. Pre: 402.

INTERIOR DESIGN

Adviser. Hugh Burgess, A.I.A., Grg. Annex B-1

- 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.

*Professional degree emphasis area—see Graduate Catalog.

362 Interior Design "B" (3) I, II **Staff**
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, II **Staff**
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.

Environmental Design Studies
Luciano Minerbi, A.A.I.P., Director

GENERAL ENVIRONMENTAL DESIGN
Adviser, Bruce Etherington, A.I.A., GrgA B-1

Electives

374 Introductory Computer Applications (3) I or II (2 3-hr L-Lb) **Toth**
Basic knowledge on 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.)

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.

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.)

672 Environmental Design in Hawaii (3) II (3L) **Denny, Neil, Yanoviak**
Seminar on architectural aspects of American life, generally with contemporary emphasis. (Cross-listed as Am St 672.)

LANDSCAPE ARCHITECTURE

Adviser, Richard Kapololu, Grg. Annex B-1

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

352 Landscape Architecture "B" (3) I or II **Kapololu**
Landscape design solutions for public and semi-public institutions. Pre: 351.

353 Landscape Architecture "C" (3) I or II **Staff**
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-1

621 Seminar on Tropical Architecture (3) II **Etherington, Mascarenas**
Problems, philosophies and systems of tropical architecture from various areas of tropics and sub-tropics. Pre: consent of instructor.

*Professional emphasis area—see Graduate Catalog.

640 Architecture and Planning in Tropical Areas (4) I **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

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

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

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

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

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

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.

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

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Art (Art)

Visiting Professor: Weber. *Professors:* Anderson, Cox, Horan, Kimura, Kingrey, Neogy, Norris, Robinson, Stasack, Turnbull. *Associate Professors:* Ecke, Kowalke, McVay, Preble. *Assistant Professors:* Bushnell, Creekmore, Havaas, Sato, Waite, Wisnosky. *Instructors:* Davidson, Gilbert, Roster, Salmo, 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 toward major requirements in Art.
- 113 Introductory Studio "A" (3) I, II**
Emphasis on perception: visual responses to nature; materials, techniques, modes of representation. Problems in two and three dimensions involving photography, drawing, painting, sculpture and construction. Pre: 101 (may be taken concurrently). Offered only as 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.)
- 394-395 Senior Honors Theses (3-3) Yr.**
Projects under individual faculty supervision. Required for graduation with honors. Pre: junior standing.
- 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., offered 1971) 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** Weber
Major developments in arts of Japan and Korea. Pre: 280.
- 385 Art of China (3) I** Ecke
Major developments in arts of China. Pre: 280.
- 391 Art of South Asia (3) I** Neogy
Major developments in arts of South Asia, West Asian context and growth of Southeast Asian art. 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**
Arts of North America with emphasis on 18th and 19th centuries. Pre: 270.
- 473 Contemporary Art (3) II**
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** Cox
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** Weber
Architecture, gardens, lacquer, ceramics, textile, metal work. Pre: 280.
- 485 Applied Arts of China (3) II** Ecke
Architecture, furniture, landscaping, ceramics, metal work, lacquer, textiles. Pre: 280.
- 491 Art of Islam (3) II** Neogy
Major developments in arts and architecture of Islam. Pre: 280.
- 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** Cox
Stylistic and aesthetic characteristics of arts of ancient Hawaii, their relationship to arts of Polynesia. Pre: consent of chairman and instructor.
- 685 Early Chinese Painting (3) I** Ecke
From earliest times through Sung dynasty. Pre: consent of chairman and instructor.
- 686 Later Chinese Painting (3) II** Ecke
From end of Sung dynasty to present. Pre: consent of chairman and instructor.
- 691 Art of Central Asia (3) I** Neogy
Interacting modalities of art along caravan routes of Central Asia. Pre: consent of chairman and instructor.
- 780 Japanese Sculpture (3) I** Weber
From earliest times through Kamakura period. Pre: consent of chairman and instructor.
- 781 Japanese Painting (3) II** Weber
From earliest times through Edo period. Pre: consent of chairman and instructor.
- 791 Buddhist and Hindu Art (3) II** Neogy
Development of Buddhist and Hindu art in South and Southeast Asia. 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**
Wheel throwing or hand building. Individual development. Seminars. Pre: 244. May be repeated.
- 342 Glaze Calculations (3) I, II**
Molecular formulae of glazes; temperature effects. Analysis of quality of glazes clay bodies. Seminars. Pre: 244. May be repeated.
- 646 Ceramics (3) I**
Individual problems in advanced ceramics using hand building techniques. Seminars. Pre: consent of chairman and instructor. May be repeated.
- 647 Ceramics (v.) II**
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**
Individual problems in glazes and firing techniques. Seminars. Pre: consent of chairman. May be repeated.
- 649 Ceramics (3) II**
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 314. May be repeated.

GLASS BLOWING

- 401 Glass Blowing (3) I** 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) 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.
- 323 Advanced Painting (3) I, II** Norris
Development of independent expression with considerable freedom of choice. Seminars. Pre: 224 or 225. May be repeated.
- 624 Painting (3) I, II** Norris
Individual problems in advanced painting. Seminars. Pre: consent of chairman and instructor. May be repeated.

PHOTOGRAPHY

- 207 Photography A (3) I, II** Salmo, Shapiro
Camera as tool of expression and photography as basic art form. Student required to have own camera.
- 208 Photography B (3) I, II** Salmo, 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** Salmo, 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**
Individual problems in intaglio, relief and planographic processes. Seminars. Pre: consent of chairman and instructor. May be repeated.

SCULPTURE

- 253 Sculpture (3) I, II**
Study of form and structure, using variety of materials and techniques. Seminars. 59
- 254 Intermediate Sculpture A (3) I, II**
Developing concepts of form and form relationships using a variety of materials with an emphasis on carving and casting. Seminars. Pre: 253.
- 255 Intermediate Sculpture B (3) I, II**
Developing concepts of form and form relationships using a variety of materials with an emphasis on the additive process. Seminars. Pre: 253.
- 353 Advanced Sculpture (3) I, II** 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** Havaas
Design problems for production of printed fabric utilizing silk screen techniques. Seminars.
- 330 Advanced Textile Design (3) I, II** Havaas
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** Havaas
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

Design and communication. The letter as visual symbol and element in design organization.

362 Typography (3) II

Development of letter form in calligraphy and typography. Pre: 361.

463-464 Visual Communication (3-3) Yr.

Experimental problems of visual design which communicate creation of new images and symbols. Pre: consent of chairman and instructor.

665 Advanced Typography (3) I

Individual problems in typography. Seminars. Pre: consent of chairman and instructor. May be repeated.

773-774 Visual Design Research (v.) Yr.

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.

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Asian Studies (Asian)

Professors: Hung, Kornhauser, Kwok, Nunn, Stein, Vella. *Associate Professors:* Moscotti, Sharma.

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 the 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 the modern and contemporary experiences of Asian societies. A multidisciplinary approach encompassing the social sciences. Pre: 241-242 or equivalent.

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.

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. *Assistant Professors:* B.Z. Siegel, C.W. Smith.

220 Biology (S) 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.

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.

Botany (Bot)

Professors: Baker, Cooil, Doty, Friend, Kefford, S. Siegel. *Associate Professors:* Lamoureux, Mueller-Dombois, Putman, Theobald, *Assistant Professor:* C. Smith. *Instructor:* Gay. *Lecturer:* Krauss.

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

Friend, Gay, Kefford

Growth, functions and evolution of plants; their relations to the environment and particularly to man and his activities. Designed for non-science majors; with permission of instructor, students with previous biological training may proceed to higher level course.

105 Ethnobotany (3) I

Krauss

Plants and their influence upon culture of Hawaii and Pacific; uses of cultivated and wild plants.

160 Identification of Tropical Plants (2) II

Theobald

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)

C. Smith

Comparative studies of structure and physiology of plants with reference to distribution and classification. Pre: 101 or Biol 220.

297 The Nature of Botany (1) I (1L)

Friend

Seminar discussion of topics of broad botanical interest. May be repeated. Pre: 201 or equivalent.

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) Staff**
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.
- 435 Experimental Mycology (3) II (2L, 2Lb) Baker**
Growth, development and reproduction of fungi as influenced by nutritional and environmental factors, with emphasis on experimental methods. Pre: 430 or Biol 250 or consent of instructor.
- 436 Medical Mycology (3) II (2L, 2Lb) Baker**
Diagnostic morphology and physiology of fungi pathogenic to man. Pre: 430 or Micro 351, or consent of instructor.
- 450 Natural History of the Hawaiian Islands (2) II (2L-1Lb) Lamoureux, Gosline**
Geography, geology, climatology, biotic environment of Pacific Basin and Hawaiian Islands; evolution of terrestrial biota of oceanic islands. Pre: one semester of biological science at college level. Identical with Zool 450.
- 453 Physiological Ecology (4) I (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**
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) I (2L, 1Lb) Sagawa**
Structure and function of cell components. Pre: Biol 250 or equivalent or consent of instructor.
- 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.
- 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 Environmental Phytogeography (2) II Mueller-Dombois**
Plant geography and general ecology with emphasis on tropical areas. Pre: 101 or Biol 220 or equivalent or consent of instructor.
- 651 Dynamics of Marine Productivity (3) II (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.; offered 1971-72.)
- 665 Nomenclature Seminar (2) II Doty**
Code of botanical nomenclature and its application, determination of correct scientific names. Pre: 461. (Alt. yrs.; offered 1971-72.)
- 670 Plant Nutrition and Water Relations (3) I (3L) Coolil**
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.; offered 1971-72.)
- 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 Staff**
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 1971-72.)
- 682 Phycology—Phytoplankton (2) II (2Lb) Doty**
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; not offered 1971-72.)
- 683 Phycology—Myxophyta and Phaeophyta (2) I (2Lb) Doty**
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; offered 1971-72.)
- 684 Phycology—Rhodophyta (2) II (2Lb) Doty**
Systematics, functions and utilization considered at advanced level. Pre: consent of instructor. (Alt. yrs.; offered 1971-72.)
- 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. *Assistant Professors:* Adams, Baumann, Siegel.

Biology 220 and Biology 250 are required of all students majoring in Microbiology. Microbiology 351 is prerequisite for most advanced courses.

- 130 General Bacteriology (3) I, II Berger**
Fundamentals of bacteriology with emphasis on microorganisms as they affect people and their possessions. Discussion groups are optional. Not open to those who have credit in 351.
- 140 Microbiology Laboratory (1) I (1Lb) Loh, 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) Baumann, Adams**
Study of bacteria: their anatomy, chemistry, physiology and development; their roles in natural processes. Pre: Biol 250; Chem 241-242 or 244; or consent of instructor; Math 205 desirable.

- 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.
- 431 Microbial Biochemistry and Function (4) I (3L, 2Lb)** Hall
Fundamental physiological and metabolic processes of microorganisms with emphasis on growth, synthesis of cellular constituents, energy-yielding processes. Pre: 351; credit or registration in Math 206; general biochemistry; or consent of instructor.
- 451 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 is desirable.
- 461 Immunology (4) I (3L, 2Lb)** Benedict
Structure and biological actions of antigens and antibodies; fundamentals of antibody production. Pre: 351; Math 205; or consent of instructor; Bioch 441 or Ag Bioch 402 desirable.
- 463 Microbiology of the Pathogens (4) II (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.
- 475 Microbial Genetics (4) I (2L, 2Lb)** Folsome
Genetic analysis and molecular basis of transmission, replication, mutation, segregation, expression of heritable characteristics in prokaryotes and unicellular eucaryotes. Pre: 351 or Biol 250 and 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(399) 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 1971-72.)
- 632 Advanced Microbial Physiology (3) II (3L)** Berger
Selected topics. Pre: 431 or consent of instructor. (Alt. yrs.; offered 1972-73.)
- 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 1971-72.)
- 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 1972-73.)
- 661 Ultrastructure of Microorganisms (3) I (3L)** Allen
Structural and molecular architecture of cell organelles; concepts of cellular integration. Pre: consent of instructor.
- 665 Electron Microscopy (2) II (2Lb)** Allen
Introduction to use of electron microscope and preparative techniques. Pre: 661 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 1971-72.)
- 675 Exobiology (3) II (3L)** Folsome
Advanced introduction to literature dealing with detection of extra-terrestrial 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 1972-73.)

- 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 1971-72.)
- 690 Seminar (1) I, II** Adams, Benedict
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, Berger, Gosline, Kamemoto, Reese, Townsley, van Weel. *Associate Professor:* Reed. *Assistant Professors:* Bailey-Brock, Branham, Haley, 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.
- 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) 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** Reese
Distribution and abundance of organisms discussed in relation to physical, physiological, population and community parameters. Pre: none. Recommended: introductory course in biology, botany, or zoology.
- 340 Parasitology (3) II (2L, 2Lb)**
Parasitology with reference to man and domestic animals; classification, comparative morphology, life history, control.
- 416 Histology (3) I (2L, 2Lb)**
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)** Branham, Haley
Analysis of developmental phenomena in animals. Pre: Biol 220.
- 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: I course in biological sciences.
- 441 History of Zoology (2) II** Banner
Development of zoological science as specialized field of human knowledge. Pre: 101, Biol 220, or consent of instructor.
- 450 Natural History of Hawaiian Islands (2) II (2L-Lb)** Gosline, Lamoureux
Geography, geology, climatology, biotic environment of Pacific Basin and Hawaiian Islands; evolution of terrestrial biota of oceanic islands. Pre: one semester of biological science at college level.
- 460 Avian Biology (3) II (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** Gosline
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.; offered 1971-72.)
- 480 Animal Evolution (2) II** Popper and Stevens
Processes of evolution; interaction between population genetics and natural selection in animals. Desirable preparation: Genetics 451.
- 490 General Zoology Seminar (1) I, II** Staff
Reports on research or reviews of literature. Required of students majoring in zoology or entomology.
- 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.
- 605 Comparative Endocrinology (4) II (3L, 1Lb)** Kamemoto
Biology of hormonal mechanisms, with emphasis on invertebrates and lower vertebrates. Lecture only may be taken for 3 credits. Pre: 435 or consent of instructor.
- 606 Animal Behavior (3) I, II (2L, 2Lb)** Losey, Reese, Popper
Orientation and ethological approach stressed; behavioral physiology, genetics and learning theory discussed. Pre: undergraduate major, with permission of instructor, or graduate standing in zoology or psychology.
- 608 Growth and Form (4) II (2L, 2Lb)** Haley
Analysis of normal growth patterns. Regulating mechanisms of normal growth, differentiation and influence of environmental factors.
- 609 Biology of Symbiosis (3) I (2L, 2Lb)** Losey
Behavioral, physiological, and ecological relationships between species, including mimicry, commensalism, mutualism, parasitism and predation discussed, with emphasis on adaptive value and behavioral interactions. Pre: undergraduate major, with permission of instructor, or graduate standing in zoology or psychology.
- 610 Topics in Developmental Biology (v.) I, II** Staff
Discussion and survey of literature pertaining to specific topics in developmental biology.
- 620 Marine Ecology (3) II (2L, 2Lb)** Bailey
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** Gosline
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: Inskeep, Naughton, Pecsok, Scheuer, Zeitlin. *Associate Professors:* Andermann, Gilje, Hubbard, Ihrig, Kiefer, Larson, Liu, Mann, McDonald, Moore, Schaleger, Waugh. *Assistant Professors:* Bopp, Buddemeier, Cramer, Muenow, Seff.

- 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)**
Principle, 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.
- 141 Elements of Organic Chemistry (3) II (3L)**
Primarily for students in dental hygiene program. Pre: 113-115. Note: those who have credit in 114 or 117 must enroll in 241.
- 142 Elements of Organic Chemistry Laboratory (1) II (1Lb)**
Laboratory techniques. Pre: 115 and credit or registration in 141.
- 241 Survey of Organic Chemistry (3) II (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) II (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 (2Lb)**
Modern laboratory techniques. Pre: 333, GE 251. 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.
- 621 Introductory Quantum Chemistry (3) I**
Principles of quantum mechanics with application to atoms and molecules. Molecular quantum mechanical descriptions of the chemical bond. Pre: 352.
- 622 Advanced Inorganic Chemistry I, Theoretical (3) II**
Principles of modern inorganic chemistry. Pre: 621.
- 623 Advanced Inorganic Chemistry II, Structure and Mechanisms (3) I**
Principles of modern inorganic chemistry. Pre: 422.
- 631 Instrumental Methods of Analysis (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: 621, 631.
- 64 641-642 Advanced Organic Chemistry (3-3) Yr.**
Structure, stereochemistry, reaction mechanisms. Pre: 244, 352.
- 651 Intermediate Physical Chemistry I (3) I**
Chemical thermodynamics. Pre: 352.
- 652 Intermediate Physical Chemistry II (3) II**
Chemical reaction kinetics. Pre: 651.
- 655 Radiochemistry and Nuclear Reactions (3) I**
Radioactive decay processes, radiation effects and detection, nuclear phenomena, applications of radioactivity. Pre: 352 or consent of instructor.
- 656 Radiochemical Techniques (1) I (Lb)**
Radiation measurement, modern radiochemical practice, use of isotopes as tracers and in analysis. Pre: credit or registration in 655.
- 691-692 Seminar (1-1) Yr.**
Current topics in chemistry. May be repeated.
- 721-722 Special Topics of Inorganic Chemistry (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 bond. Pre: 621.
- 756 Statistical Mechanics (3) II**
Principles of statistical mechanics and statistical thermodynamics, with applications to chemical systems. Pre: 621, 651, suggested Math 232.
- 758 Crystallography (3) II (3L)**
Crystal symmetry. Elementary x-ray physics. Diffraction theory and its applications to crystal and molecular structure determination. Pre: Math 232 or equivalent.
- 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.

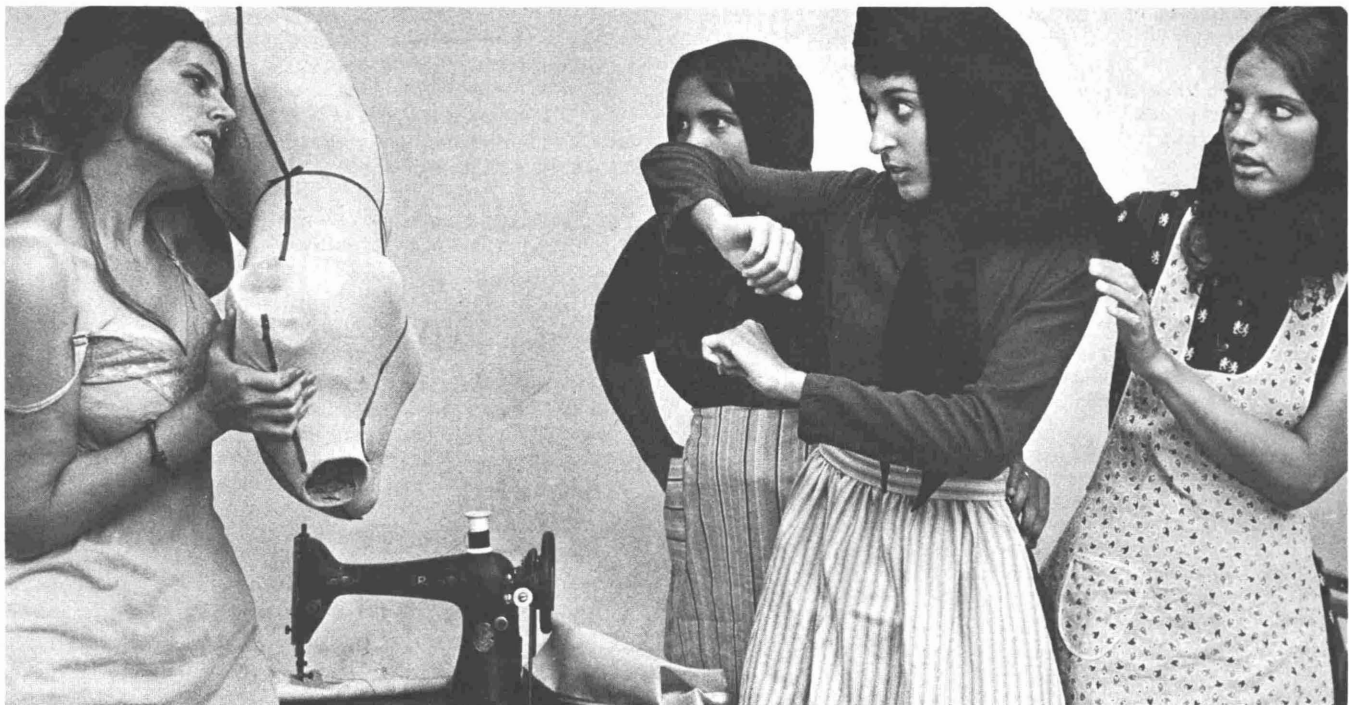
Drama and Theatre (Drama)

Senior Professor: Ernst. *Professors:* Brandon, Trapido. *Associate Professors:* Knapp, Langhans, R. Mason. *Assistant Professors:* Cannon, Carroll, Sasa, Wolz. *Instructor:* Boyd. *Visiting Assoc. Prof.:* Yang.

160 or 260, and 240 are prerequisites to all courses in direction, design, stagecraft, and lighting.

- 160 Introduction to Drama and Theatre (3) I, II**
Representative plays studied as illustrative of changing forms in the theatre and dramatic literature.
- 221-222 Beginning Acting (3-3) Yr.** Cannon
Individual exercises and group rehearsals with emphasis on voice, movement, relaxation. Students must perform in direction class scenes.
- 240 Basic Stagecraft and Stage Lighting (3) II** 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.
- 356 Costume for the Stage (3) II**
Survey of historical costume, with special emphasis on translation of historical styles into theatrical form.
- 370 Creative Dramatics (3) I, II**
Intensive study of dramatic activities for children and young people. Designed for teachers, group workers, recreation majors, others dealing with children. May be repeated.
- 372 Drama in Performance (3) II** Carroll
Study of plays as scripts for performance.
- 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.
- 388 Dance Composition (3) II** Wolz
Study of techniques and materials used in composing dances. May be repeated.

- 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.** Yang, 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** Yang
Principal form 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.
- 474 Children's Theatre (3) I, II**
Theories and principles of formal theatre for children. Study of selection, direction, production of plays. Pre: 240 and 260.
- 476 Puppetry (3) I, II**
Survey of history and scope of puppetry. Construction and presentation of puppets for adult and child audiences. May be repeated.
- 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.** Ernst
Directorial analysis of plays of different styles and periods; exercises; preparation of prompt books.
- 640 Problems in Stagecraft and Stage Lighting (3) II** Trapido
Special topics in staging and lighting of plays, and in planning and use of various types of modern theatres.
- 650 Advanced Design (3) I** Mason
Advanced study, analytical and creative, of visual aspects of dramatic art. Pre: 353-354.
- 660 Theories of the Theatre (3) I** Carroll
Theories of production, from Aristotle to Brecht.
- 662 Seminar in Drama and Theatre (3) II**
Special topics in Western theatre.
- 664 Seminar in Oriental Theatre (3) II** Yang
(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** Cannon
Organizational and artistic processes of the director. Pre: 631-632.
- 750 Seminar in Design (3) II** Mason
Design projects emphasizing conversion of historic materials to use in the theatre. Pre: 650.
- 760 Seminar in Aesthetics of the Theatre (3) II** Ernst
Consideration of the theatre as an art form.
- 799 Directed Work (v.) I, II** Staff
Reading or research in theatre theory or history; reading and practice in particular areas of dramatic production. Pre: consent of instructor.



East Asian Languages

Professors: DeFrancis, F.K. Li, Young. *Assistant Professors:* Ashworth, Cheng, Fujikawa, Jolly, Kusanagi, Y.C. Li, Lin, Song, Spencer. *Instructors:* Butler, Chang, Choi, Hasegawa, Herman, Hirayama, Ishigami, Ishikawa, Jedlicka, Kim, Kinoshita, Kondo, Kurokawa, Kwan, Landers, Larrabee, Lee, Miyaoka, J.D. Park, S.B. Park, Sakihara, Shoji, Smith, Speer, Suehiro, E. Sugita, H. Sugita, Takahashi, Takaki, Takeshita, Takeuchi, Tamiya, Yamaura, Yoshikawa, 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), 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.
- 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.
- 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.
- 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)

- 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 is given to development of writing system, social factors in evolution of modern Chinese, influence of Chinese on neighboring languages, and controversies regarding language reform.
- 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.
- 433-434 Selected Readings in Chinese (3-3) Yr.**
Selected readings in various discipline areas, with specific areas determined on basis of student interest and availability of staff. May be repeated for credit. Pre: consent of instructor.
- 435-436 Introductory Classical Chinese (3-3) Yr.**
Analysis of basic structural patterns in classical Chinese through selected readings in various texts. Pre: 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: 332, 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 Linguistics 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) language, (2) teaching methods. Pre: consent of department chairman. May be repeated.
- 800 Thesis Research (v.) I, II**
Pre: consent of department chairman.

Japanese (Jpnse)

- 101-102 Elementary Japanese (3-3) Yr.**
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 1 hour daily, Monday through Friday; 4 out of 5 hours devoted to directed drill and practice. Daily laboratory work.
- 103 Accelerated Elementary Japanese (6) I**
Meets 2 hours daily, Monday through Friday with daily laboratory drill. In one semester, content of 101-102 covered.
- 120 Special Elementary Japanese Conversation (3) I, II**
For students who have 102 equivalent writing ability but lack spoken proficiency. Content similar to spoken aspect of 101-102. Meets 3 times a week. Laboratory.
- 130 Special Elementary Japanese Reading (3) I, II**
For students who have 102 equivalent spoken ability but lack reading and writing proficiency. Content similar to reading and writing aspects of 101-102. Meets 3 times a week. Laboratory.
- 200 Intensive Fundamental Japanese (14) I**
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, *kyooiku 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, *tooyoo 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*, *sorobun*, 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) I**
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 (3) 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.
- 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**
(1) Language, (2) teaching methods. Pre: consent of instructor. May be repeated.
- 800 Thesis Research (v.) I, II**
Consent of chairman.

Korean (Kor)

- 101-102 Elementary Korean (3-3) Yr.**
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 1 hour daily. Monday through Friday; 4 out of 5 hours devoted to directed drill and practice sessions. Daily laboratory work.
- 201-202 Intermediate Korean (4-4) Yr.**
Continuation 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 Professor:* Fujioka. *Assistant Professors:* Ma, McLeod, Tahara. *Lecturers:* Uchida, Yao.

General (EALit)

- 399 Directed Readings (3) 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** Staff
Readings in traditional Chinese literature, with emphasis on analysis and comparison.
- 262 Chinese Literature in Translation—Modern (3) I, II** Staff
Readings in modern Chinese literature, with emphasis on analysis and comparison.
- 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.** Yao
Selected readings in Modern Chinese verse and prose, with emphasis on art of translation and critical analysis. Pre: completion of 342 and Chnse 302 or 322.
- 451 Readings in Traditional Chinese Literature (3) II** Ma
Introduction to premodern verse and prose styles and forms.
- 490 Reference Materials for Chinese Literary Studies (3) I** Staff
Reference materials important in Chinese literary studies. Pre: consent of instructor.
- 611-612 Contemporary Chinese Literature (3-3) Yr.** Winters
Representative works of leading modern novelists, poets, dramatists since 1919. Pre: consent of instructor.
- 613-614 Chinese Poetry (3-3) Yr.** Staff
Critical study of classical Chinese poetry in various forms. Pre: consent of instructor.
- 616 History of Chinese Literary Criticism (3) II** Staff
Survey of Chinese literary criticism from Confucius to 20th century. Pre: consent of instructor.
- 617 Traditional Chinese Fiction (3) I** Ma
Study of major novels of Yuan, Ming, Ch'ing periods. Pre: consent of instructor.
- 618 Traditional Chinese Drama (3) I** Lo
Study of major plays of Yuan, Ming, early Ch'ing periods (e.g. Romance of the Western Chamber, The Peony Pavilion, The Peach Blossom Fan). Pre: consent of instructor.
- 693-694 Methods in Chinese Studies (3-3) Yr.** Lo
Main fields of research, special methods evolved, principal sources of bibliographical information. Pre: consent of instructor.
- 750 Research Seminar in Chinese (3) I, II** Winters, Lo
Study of authors, a genre, a period, or a problem. Pre: consent of instructor. May be repeated.
- 800 Thesis Research (v.) I, II** Staff
Pre: consent of instructor.

Japanese (JaLit)

- 261 Japanese Literature in Translation—Traditional (3) I, II** Staff
Readings in traditional Japanese literature, with emphasis on analysis and comparison.
- 262 Japanese Literature in Translation—Modern (3) I, II** Staff
Readings in modern Japanese literature, with emphasis in analysis and comparison.
- 341-342 Readings in Contemporary Japanese Literature (3-3) Yr.** Fujioka, Staff
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.** Staff
Selected readings in modern Japanese verse and prose, with emphasis on the art of translation and critical analysis. Pre: completion of 342 and Jpnse 302 or 322. (Not offered 71-72.)
- 451 Readings in Traditional Japanese Literature (3) I, II** Staff
Introduction to premodern verse and prose styles and forms. Pre: consent of instructor.
- 490 Reference Materials for Japanese Literary Studies (3) I**
Reference materials important in Japanese studies. Pre: consent of instructor.
- 609-610 Japanese Poetry (3,3) Yr.** Ueyehara
Historical survey of poetical types including *tanka*, *haiku*, *senryuu shi*, folk songs. Pre: consent of instructor. 609 not prerequisite for 610.
- 611-612 Modern Japanese Literature (3,3) Yr.** Viglielmo, Staff
Reading and critical analysis of representative modern literary works, with emphasis on fiction. 611: Meiji-Taisho literature (1868-1926). 612: Showa literature (1926-present). 611 not prerequisite for 612. May be repeated for credit.
- 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 century. Pre: consent of instructor.
- 623 Japanese Folklore (3) I** Ikeda
Investigation of folk beliefs and customs, particularly as manifested in traditional literature and narrative literature. Pre: consent of instructor. (Not offered 1971-72.)
- 690 Japanese Bibliography (3) I, II** Ikeda
Advanced studies in bibliographical material. Research methods. Pre: 490. (Not offered 1971-72.)
- 750 Research Seminar in Japanese (3) I, II** Staff
(1) Traditional literature and (2) modern literature. Pre: consent of instructor. May be repeated.
- 800 Thesis Research (v.) I, II** Staff
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; 261 is not prerequisite.

- 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 (3) I, II** Lee
Specialization in (1) traditional literature and (2) modern literature. Pre: consent of instructor. May be repeated.

Economics (Econ)

Professors: Campbell, Demeny, Gorter, Hung, Kamins, Miklius, Miller, Oshima, Power. *Associate Professors:* Comitini, Lim, Naya, Yeh. *Assistant Professors:* Ashby, Chau, Ebel, Ghali, Haines, Hight, Mak, Overbeek, Pollock, Rose. *Acting Assistant Professors:* Burcroff, Coffman, Holmstrom, Moncur, Rice, Richards, Tawil. *Visiting Professors:* Friedman, Takayama, Yamamura. *Professor:* Heller. *Assistant Professor:* Abudu.

- 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.
- 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.
- 321 Introduction to Statistics (3) I, II** Moncur, Tawil
Basic elements of statistics, including descriptive statistics, probability and inference, distributions, hypothesis testing, and regression and correlation analysis.

- 340 Money and Banking (3) I, II** Ashby, Mak
Nature and role of money; development of national and international monetary standards; role of commercial banking and financial intermediaries; development and function of central banking. Pre: 150.
- 396 Contemporary Economic Issues for Nonmajors (3) I** Ebel
Purpose of this course is to apply economic analysis to economic problems currently under public discussion. Designed for nonmajors, so 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** Power, Lim
Study of characteristics of underdeveloped economies, theories of economic growth, strategies of economic development, and investment criteria. Pre: 300, 301 or consent of instructor.
- 411 Economic Development of Europe (3) I** Mak
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) II** Mak
Emphasizes period since World War I. Consideration of changing patterns of investment, consumption and employment. Pre: 150, 151.
- 415 Asian Economic Development (3) I** Yeh, Burcroff
Study of history and economic development of Asian nations other than Japan. Resources, population and income, savings, investment and consumption patterns. Role of government and private enterprise. Pre: 150-151 or consent of instructor.
- 420 Mathematical Economics (3) II** Ashby, Moncur, Tawil
Review and application of mathematical techniques in economic analysis; differentiation, integration, differential equations, difference equations, and linear programming. Pre: 300, 301, and Math 205 (calculus).
- 425 Econometrics I (3) I** Chau, Ghali, Tawil
Review of matrix algebra; examination of bi-variate and multivariate regression analysis, correlation theory, properties of least squares and maximum likelihood estimates under different assumptions; examination of estimation problems likely to be encountered. Pre: 321.
- 426 Econometrics II (3) II** Ghali, Tawil
Reviews of matrix algebra, multiple regression and problems of statistical estimation including the identification problem. Exploration of methods of simultaneous equation estimation such as indirect least squares, two-stage least squares, limited information maximum likelihood, three-stage least squares, and full information maximum likelihood. Pre: 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 Theory (3) I** Heller, Naya, Yeh
Theoretical, institutional and historical aspects of international economic relations considered, including foreign exchange rates, balance of payments adjustments, tariffs, quotas, trading blocks. Pre: 300, 301.
- 461 International Finance (3) II** Comitini, Yeh
Institutional and theoretical aspects of international financing: balance of payments, exchange rates, capital movements, and multilateral equilibrium in world money market. Pre: 300, 460.
- 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 regulation. 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
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 the instructor.
- 496 Selected Topics in Contemporary Economics Problems (3) II** Rose
Course purpose is 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** Hung, Miller
Rigorous analysis of consumer's choice; pricing of products and factors of production under competitive conditions, partial and general equilibrium monopoly and imperfect competition, risk and uncertainty, and capital theory. Pre: 301.
- 602 Economic Growth and Fluctuations (3) II** Campbell
Aggregate dynamic models of growth and fluctuations; current literature including neo-classical and neo-Keynesian models of economic growth, dynamic Leontief models and activity analysis. Pre: 600.

- 603 Advanced Microeconomic Theory (3) II** Hung
Topics include analysis of market structure; welfare economics; linear programming; risk and uncertainty; capital theory; decision theory. Pre: 601.
- 604 History of Economic Thought (3) I** 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, Takayama
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.
- 606 National Income Accounts (3) II** Oshima
Theory underlying construction of national economic accounts, methods of estimation of entries in accounts; uses of national accounting statistics. Pre: consent of instructor.
- 610 Economic Development I (3) I** Lim, Oshima, 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 Economic Development of the West (3) I** Mak
Analysis of growth, structural change, and development patterns in Western Europe and the U.S. since the Industrial Revolution. Comparison with Russian experience since 1917. Pre: 610 or consent of instructor.
- 614 Economic Development of Japan (3) I** Oshima, Yamamura
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.
- 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 economics 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.
- 698 Seminar in Marine Economics (3) I** Comitini
Application of techniques of economic analysis related to unique problems of utilization and development of marine resources. Topics include: economics of the fisheries and other uses of the seas; institutional and legal aspects of ocean use; resource management and public policies regarding rational use of marine environment; development and rate of diffusion of marine technology. Pre: consent of instructor.
- 699 Directed Research (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, Takayama
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, Frierson, Fujimura, Huntsberry, Larson, Lowers, Shen, Stempel, Summersgill, Winters. *Associate Professors:* Backus, Friedson, Hollingshead, Leib, Levy, Maltby, McCutcheon, Menikoff, Scott, Sinclair, Solomon, Stillians, P. Thompson, Ward, Wellein, Wiley. *Assistant Professors:* Creed, Edelstein, Fellmeth, Friederich, Glick, Gray, Hillman, Kau, Kennedy, Lafferty, MacMillan, McHenry, Nam, Newton, Pak, Seitz, Simson, Teevan, Topham, Whitlock, Wilson, Woods, Wright. *Instructors:* Abramson, Ahlstrom, Allen, Baber, Birkhoff, Breen, Damon, DeLuca, DeMoss, Denham, Derrick, Dick, Dorn, Frantz, Gujral, Harris, Jacobs, Jones, Kamins, Kissick, Leggett, Lichty, Lynch, Macdonald, McKean, Merz, Mockridge, Morriss, Murray, P. Nelson, V. Nelson, Roecklein, Rogers, Sage, Sherman, Shimer, Stokes, Sumida, Vella, Werner, Wieting.

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.** Woods, 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.** Thompson, Staff
Major works of classical, Oriental, European, American literature. 253: Classical times to Renaissance. 254: 1600 to present.

- 255-256 Types of Literature (3-3) Yr.** Huntsberry, Staff
Practical criticism in major genres of European and American literature. 255: short story, novel, introduction to poetry (narrative). 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** Kennedy, Staff
Practice in informative, analytical, persuasive writing. Open only to students in business administration and home economics. Pre: 100 and sophomore literature, or equivalents.
- 310 Technical Exposition (3) I, II** 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** 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, MacMillan, Thompson
Basic principles of the writing arts explored through composition of poems, short stories, and one-act plays.
- 315 Advanced Expository Writing (3) I, II** Gray, Staff
Writing of essays from logical and rhetorical principles, especially modes of definition, assertion, proof. Emphasis on clarity, coherence, style.
- 320 Introduction to Language (3) I, II** Fellmeth, Staff
Examination of modern concepts of structure and use of language, with special reference to English.
- 331 Introduction to Poetry (3) I, II** Solomon, Staff
Written and oral analysis of imagery, sound, language, form and structure of poems, leading to increased awareness of nature of poetry.
- 335 Backgrounds of World Literature (3) I, II** Backus
Most important sources of European literary themes and allusions, including King James Bible and western European myth and legend.
- 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.
- 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** Wellein
Introduction to older stages of English and processes by which modern English evolved.
- 404 English Phonology (3) I** Shen
Study of English sound system (including morphophonemics) and of recent theories of phonological interpretation. Pre: 320, 401, Ling 102, SpCom 211 or equivalent.
- 411 Poetry Writing (3) II** Friedson, Thompson
Writing and criticism of poetry, Pre: consent of instructor.

- 413 Form and Theory in Writing Fiction (3) I, II** **Huntsberry, Staff**
Study of techniques of prose fiction from standpoint of the writer.
- 414 Narrative Writing (3) I, II** **Huntsberry, Staff**
Instruction and practice in writing short story. Pre: 413 or equivalent.
- 415 Advanced Narrative Writing (3) I, II** **Huntsberry, Staff**
Developing skill in story telling (either short story or novel). Pre: 414 or equivalent.
- 421 English Drama to 1642 (3) II** **Fujimura, Lowers, Summersgill**
Origins of English drama; medieval drama and theatre; contemporaries and successors of Shakespeare.
- 431, 432 The English Novel (3,3) Yr.** **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, Wellein**
Study of Chaucer's development from early poems through *The Canterbury Tales*.
- 445, 446 Shakespeare (3,3) Yr.** **Staff**
Critical study of Shakespeare's plays. 445: from the beginning to *Hamlet*. 446: *Hamlet* through last plays. Both semester courses taught each semester.
- 447 Milton (3) I** **Larson, McCutcheon**
Selected poetry and prose.
- 451 Medieval English Literature (3) I** **Leib**
Representative Old and Middle English poetry, prose, exclusive of Chaucer, with continental backgrounds; chiefly in translation.
- 453 16th-Century English Literature (3) I** **Lowers, McCutcheon**
Poetry and prose of Tudor period, exclusive of the drama.
- 454 Early 17th-Century English Literature (3) II** **Fujimura, McCutcheon**
Poetry and prose of 17th century to 1660, exclusive of the drama.
- 456 Restoration Literature (3) II** **Anderson, Fujimura, Larson**
Poetry, prose, drama from 1660 to 1700, exclusive of Milton.
- 457, 458 18th-Century English Literature (3,3) Yr.** **Anderson, Fujimura, Maltby**
Poetry, prose (exclusive of the novel), drama. 457: from 1700 to 1740, with emphasis on Pope and Swift. 458: 1740 to 1780, with emphasis on Johnson and his circle.
- 461 The Romantic Movement in England (3) I** **Fong, Stemple, Stillians**
Poetry and prose from 1780 to 1832, exclusive of the novel.
- 463, 464 Victorian Literature (3,3) Yr.** **Frierson, Stemple**
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 American Literature (3,3) Yr.** **Staff**
Critical study of American literature. 471: from beginnings to Civil War. 472: from Civil War to present. Both semester courses taught each semester.
- 475, 476 The American Novel (3,3) Yr.** **Bouslog, 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 by Melville, Stevenson, London, Becke, Nordhoff, Hall.
- 482 The Narratives of Oral Tradition (3) II** **Staff**
Examination of folk narratives (prose types of folktale, ballad and related types of poetry, and epic); their relation to art-literature.
- 483, 484 Modern Dramatic Literature (3,3) Yr.** **Friedson, Maltby, Teevan, Topham**
483: European, Ibsen, and Chekhov to Shaw, 1880-1920. 484: European and American, O'Casey to Miller, 1920 on.
- 487, 488 20th-Century British and American Poetry (3,3) Yr.** **Sinclair, Teevan, Thompson**
487: Study of the classic moderns in 20th-century poetry, such as Yeats, Pound, Eliot, W.C. Williams. 488: Study of other 20th-century poets, such as Stevens, Auden, Dylan Thomas, Lowell, Roethke.
- 491-492 Senior Honors Tutorial (6-6) Yr.** **Stempel, Stillians, Staff**
Tutorials in English and American literature, criticism. Intensive individual reading, occasional group meetings. Consent of instructor or instructors required. Consult departmental honors adviser for course particulars.

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, Stemple**
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 **Wellein**
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.

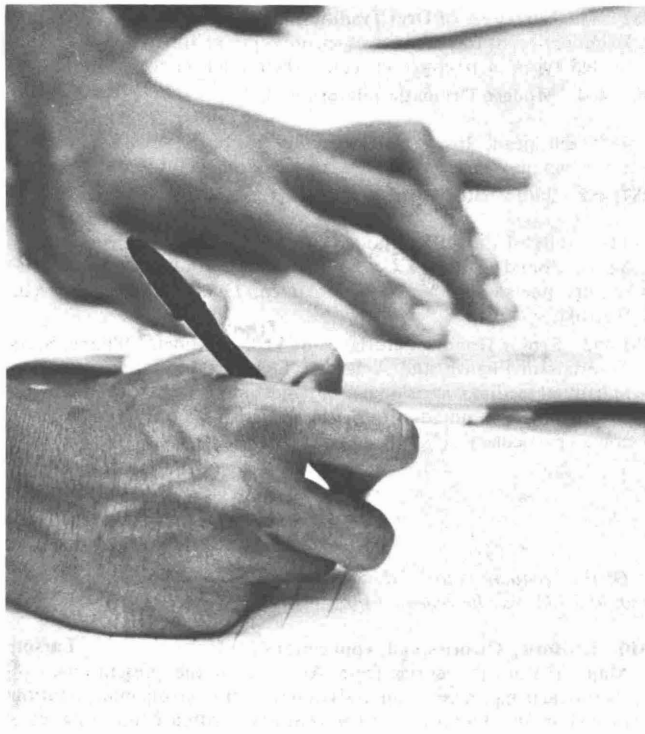
785 Seminar in American Literature (3) I, II **Staff**
Study of a problem or a period. Pre: consent of instructor.

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.



English as a Second Language

Associate Professors: Crymes, Higa, Lester, Plaister. *Assistant Professors:* Alter, N. Cramer, Blatchford, Jackson, Krohn, Mason, Rodgers, D. Steinberg, M. Steinberg, Whitman. *Instructors:* H. Cramer, 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.

- 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 English Structure 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 and communicating 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.

English as a Second Language (ESL)

- 350 Introduction to Grammars of English (3) I, II**
Examination of the various traditions of English language study which have made contributions to language teaching.
- 450-451 English Syntax (3-3) Yr.** Crymes, Krohn, Lester
Basic course in English syntax primarily within the generative transformational framework with attention wherever possible to implications for the language teacher. Pre: Eng 320, Ling 320 or ESL 350.
- 460 English Phonology (3) I, II** Krohn
Basic course in English phonology comparing structural and gen-

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** Hillman, Nam, Ward
Fundamentals of news style, reporting, ethics. Pre: Eng 100.
- 206 News Editing (3) I, II** Scott, Ward
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 result of technological, industrial organization; characteristics of mass media and consumer response to media.
- 305 Advanced Reporting (4) I, II** Staff
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, Staff
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** Hillman
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** Staff
Professional problems of news media as 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.

erative approaches to phonology with particular attention paid to areas of interest to language teachers.

470 Language Learning and Teaching (3) I, II

Review of recent works in psycholinguistics as it applies to first language acquisition, 2nd language learning and teaching, and related language topics. Pre: Psych 100 and ESL 350 or equivalent. Required for B. Ed. in English Language Teaching.

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 the 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 a 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.

613 Experimentation in Language Acquisition and Modification (3) I, II

Dykstra

Problems in language acquisition and modification. Use of equipment designed to aid language acquisition. Creation of language-learning materials. Innovation of special techniques for different language-learning situations. Equiv. SpCom 613.

640 Contrastive Analysis and Linguistic Universals (3) II

Jackson, Whitman

Critical survey of psychological and linguistic theories concerning linguistic universals and the procedures and purposes of contrastive analysis. Implications of these theories for language teaching methodology and materials. Pre: permission 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 2nd language acquisition. Relation of language to mind, behavior and culture considered.

660 Culture in 2nd Language Learning (3) I, II

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 1st and 2nd 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.

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.

European Languages and Literature

Professors: Aspinwall, S. Baciú, Dauer, Fairbanks, Hadlich, Holton, Jackson, Knowlton, Lusseyran, Seymour. *Associate Professors:* Burns, Gasinski, Klimenko, M. Montes, Niedzielski, Sang. *Assistant Professors:* M. Baciú, Dias, Elliott, Heien, Ignatius, Kleinbergs, Kratky, Lerond, Y. Montes, A. Moore, Roldan, Scherer, Schweizer, Tyler, Tucker. *Instructors:* Durbin, Hull, Rorke.

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).

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 principal myths of Greek and Roman literature.

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 **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 **Rorke**

Literature as quest for self-knowledge and becoming in the introspective writings of Augustine, Montaigne, Pascal, Rousseau, Novalis, Kierkegaard, Hammarckjold, and others. Lectures and discussions.

251-252 Hispanic Civilization (3-3) Yr. **Kleinbergs**

Study of the way of life of Spanish speaking peoples.

303 Greek Literature (3) I **Tyler**

Major writers of ancient Greece in English translation.

304 Roman Literature (3) II **Tucker**

Major writers of ancient Rome in English translation.

331 19th-Century Russian Novel (3) II **Klimenko**

Survey of important novelists in English translation, particularly Gogol, Goncharov, Turgenev, Saltykov, Dostoevsky, Tolstoi.

332 20th-Century Russian Literature (3) 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) 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.

373 European Poetry in the Middle Ages (3) I or II

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

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 IIAspinwall,
Ignatius, Jackson

Rapid reading in translation; lectures, discussions, and reports.

380 The Classical German Poet (3) I or II

Scherer

Readings in translation from dramatic works of Lessing, Goethe, and Schiller, and lectures on philosophic and aesthetic 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."

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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 or 401 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 (1) I

(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 chairman.

Dutch (Du)

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

Introduction to modern Dutch designed for students who wish to study a second foreign language. Reading, grammar, with some conversation and laboratory drill. 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.

197 French Workshop I (2) I, II

Niedzielski

Semi-independent individual or small group study and practice of any aspect of French on first-year level. May be taken concurrently with or independently of other French courses. May be repeated for credit. Cannot be used toward meeting foreign language requirement. (See also 297).

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

Reading, conversation, laboratory drill, composition. Pre: 102 or equivalent for 201; 201 or 207 for 202.

204 Intermediate: Scientific Readings (3) II

Accurate reading over wide range of subjects. Practice in translation from French to English. Laboratory practice in listening to professional speeches in French. B.S. candidates only or permission of department chairman. Pre: 201.

207-208 Intermediate French: Culture and Conversation (3-3) Yr.

Lerond

Reading and discussion of varied material dealing with French culture and daily life. Various realia and audio-visual aids will be used. May be taken in lieu of 201-202. Pre: 102 or equivalent for 207; 207 or 201 for 208.

210 Accelerated Intermediate French (6) I, II

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

297 French Workshop II (2) I, II

Niedzielski

Semi-independent individual or small group study and practice of any aspect of French on second-year level. May be taken concurrently with or independently of other French courses. May be repeated for credit. Cannot be used toward meeting foreign language requirement. (See also 197) 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, 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

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**
 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.**
1st sem.: Drama. Study of the principal works of major dramatists of the 17th century: Corneille, Moliere, Racine. *2nd sem.*: 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** Jackson, Lusseyran
 Pre: 331 or 332.
- 415-416 Masterpieces of 19th-Century Literature (3-3) Yr.** Aspinwall, Ignatius, Jackson, Lusseyran
 415: Poetry; 416: Prose. Pre: 331-332.
- 420 20th-Century French Novel (3) I or II** Jackson, Lerond, Lusseyran
 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. Baciu, Lusseyran
 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. Baciu, Lerond
 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. Baciu
 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** Jackson
 Poetry, theatre, prose. Emphasis on Montaigne and Rabelais. Lectures, discussions, reports.
- 620 Masterpieces of the Seventeenth Century (3) I or II**
 Study of dramatic or prose works of the Classical period.
- 651 Philosophic Currents in the 18th Century (3) I or II** Jackson, Lusseyran
 Study of philosophic movements and their impact on the social, political and literary life of the period and the modern era.
- 661 Stylistics (3) I** Lerond
 Designed to give mastery of structure and phrasing. Translation into French, discussion, composition.
- 666 Seminar in History of French Literary Criticism (2) I or II** Jackson
 Study of important literary criticism in France from Renaissance to present and its influence upon French literary history.
- 671 History of the Language (4) I** Niedzielski
 Introduction to historical development of the French nation, its civilization and its language. Contrastive analysis. Readings of selected texts.
- 672 Medieval Literature (3) II** Niedzielski
 Early Medieval literature: genesis and evolution of literary genres in Old French.
- 681 The Novel in France (3) I or II** Jackson, Lusseyran
 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, Lusseyran
 Study of the major authors and works relevant to the development of the realistic school in the novel and the theatre.
- 690 The Theatre in France (3) I or II** Lusseyran
 Historical development of genre and study of major dramatists who have influenced movements or established techniques. Pre: 6 credits at 400 level or equivalent.
- 699 Directed Research (v.) I, II**
 Pre: consent of chairman.
- 735 Seminar in French Literature (3) I or II**
 Study of authors or a period. Pre: consent of chairman of graduate field.
- 800 Thesis Research (6) 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** 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.** 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 chairman.
- 215 Intermediate: Readings in the Humanities (3) I or II**
 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.
- 297-298 Intensive Intermediate German (4-4) Yr.**
 Special course designed to give the student more intensive and extensive training in German than afforded by 201-202 or 207-208. Completion of 298 will fulfill College language requirement. Pre: 102 or equivalent for 297; 297 for 298.
- 305-306 Composition and Conversation (3-3) Yr.** Dauer, 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.**
 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** Moore, Seymour
Phonological, morphological, syntactic structure of contemporary German, as analyzed by descriptive linguists. Pre: 202 or equivalent.
- 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** 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**
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 sem: Study of grammar, syntax, phonetics, rhythm, meter (alliteration), reading. *2nd sem:* Middle High German literature. Reading of Nibelungenlied, Parzifal, Minnesang and other poetry and 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.
- 650 Seminar: The German Essay (3) I or II**
Development of the genre as exemplified by typical works from various periods.
- 651 Seminar: The German Novelle (3) I or II** Dauer
Discussion of representative works of this genre from end of 18th century up to 1955.
- 652 Seminar: German Drama (3) I or II** Dauer, Schweizer
Development of dramatic theory and literature exemplified by typical works of literary periods.
- 653 Seminar: Lyric Poetry (3) I or II** Scherer
Interpretation and comparative study of works of representative German poets.
- 654 Seminar: The German Novel (3) I or II** 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.)
- 656 Faust II (3) I or II**
Symbolic "greater world" or higher plane of human aspiration.
- 699 Directed Research (v.) I, II** Seymour
Pre: consent of chairman.
- 735 Seminar in German Literature (3) I, II** Dauer
Study of authors, a genre, or a period. Pre: consent of chairman of graduate field.
- 800 Thesis Research (6) I, II** Seymour
- Greek (Greek)**
- 101-102 Elementary Greek (3-3) Yr.**
Introduction to literary Greek, with readings.
- 201-202 Intermediate Greek (3-3) Yr.**
Selected readings in Greek literature; introduction to Christian origins, readings in New Testament. Pre: 102 or the equivalent.
- 409 Plato (3) I or II**
Selections from *Apology*, *Crito*, *Phaedo*. Pre: 202 or permission. (Alt. yrs.)
- 410 Historians (3) I or II** Tyler
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** Tyler
Selected readings in Greek dramatists. Pre: 202 or permission. (Alt. yrs.)
- 432 Drama (3) II** Tyler
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**
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 chairman.
- 800 Thesis Research (6)** 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.**
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.**
Review of grammar, reading of selections from prose and poetry. Pre: 102 or the equivalent.
- 301-302 Structure of Latin (3-3) Yr.**
Intensive study of structural idiomatic and stylistic aspects of Latin. Pre: 202 or permission.
- 401 Historians (3) I or II**
Reading of Livy, Sallust, Tacitus and other Roman historians. (Alt. yrs.) Pre: 202 or permission.
- 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**
Selected dramas of Plautus and Terence. Pre: 202 or permission. (Alternates with 427.)
- 433 Roman Philosophy (3) I or II** Burns
Pre: permission. (Alt. yrs.)
- 434 Lucretius (3) I or II** Burns
De Rerum Natura. Pre: permission. (Alt. yrs.)

- 440 Oratory (3) I or II**
Pre: permission. (Alt. yrs.)
- 490 Seminar (3) I, II** Tyler
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**
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 chairman.
- 800 Thesis Research (6)**

Polish (Polish)

- 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.

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Portuguese (Port)

- 101-102 Elementary Portuguese (4-4) Yr.** S. Baciu
Reading, conversation, laboratory drill, grammar.
- 201-202 Intermediate Portuguese (3-3) Yr.** S. Baciu
Reading, conversation, writing laboratory drill. Pre: 102 or the equivalent.
- 360-361 Introduction to Luso-Brazilian Literature (3-3) Yr.** S. Baciu, 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. 43.

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

- 101-102 Elementary Russian (4-4) Yr.** Hull
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 language requirement.
- 162 Russian for Reading Proficiency (3) II** Heien
Reading in selected texts from those fields in which the students in the class are enrolled. Cannot be used to fulfill language requirement. Pre: 161 or equivalent.

- 201-202 Intermediate Russian (3-3) Yr.** Heien, Hull
Reading, conversation, laboratory drill. grammar. composition.
Pre: 102 or equivalent.
- 207-208 Intermediate Scientific Russian (3-3) Yr.** Heien, Hull
Rapid reading of scientific material. Translation and grammar
review. May be taken by majors for credit concurrently with 201-
202, but not instead of it. May not be counted toward major. Re-
commended to students completing language requirement and to
graduates. Pre: 102.
- 209 Russian Phonetics (3) I** Gasinski, Heien
Analysis of the Russian phonological system along with practice
in speaking and reading to improve the student's oral proficiency.
Pre: 102 or equivalent. May be taken concurrently with 201.
- 303-304 Advanced Oral Practice (3-3) Yr.** Hull
Systematic practice designed to develop students' control of spoken
Russian through vocabulary building and stress on fluency of ex-
pression in a variety of subjects reinforced with laboratory drill.
Pre: 202 or equivalent.
- 306 Structure and Composition (3) II** 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.** Hull
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.** 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** Hull, Klimenko
Study and analysis of representative prose selections which exhibit
variations in style. Practice in written composition. Translation into
Russian. Pre: 304 or consent of instructor.
- 419 Advanced Reading in the Russian Daily Press
(3) II** Hull, Klimenko
Reading and discussion of current problems from selected articles
in the Soviet press.
- 495 Seminar in Russian Literature (3) I, II** Klimenko
Important literary movements and writers. Pre: consent of instruc-
tor. 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** Gasinski, 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 con-
trasted 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. Im-
portant 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 chairman.
- 735 Seminar on Problems of Russian Literature
(3) I, II** Gasinski, Klimenko
Special study of topics, movements, genres, or of their representa-
tives. May be repeated for credit. Pre: consent of instructor.

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 con-
currently 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 prac-
tical 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 labora-
tory 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 con-
currently with, or independently of, other Spanish courses. May be
repeated for credit. Cannot be used toward meeting foreign lan-
guage requirement. Pre: 102 or equivalent. (*See also* 120.)
- 303-304 Advanced Grammar and Composition
(3-3) Yr.** Dias, Kratky
More detailed study of problem areas of Spanish grammar. Cultiva-
tion 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, Roldan
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, Roldan**
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, Roldan**
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 descriptive linguists. Pre: Ling 102 or equivalent and Span 202 or consent of instructor.
- 441 History of the Spanish Language (3) I or II** **Hadlich, Knowlton, Roldan**
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. Baciu**
National and international significance of principal currents of Latin American thought as expressed in fundamental works of national authors. Pre: 351-352 or the equivalent.
- 485-486 Spanish-American Prose (3-3) Yr.**
Reading and discussion of important plays, short stories, novels and essays.
- 490 Hispano-Philippine Literature (2) II** **Knowlton**
Study of important writers in Spanish from the Philippine Islands. (Alt. yrs.; offered 1971-72.) Pre: 202 or equivalent.
- 625-626 Stylistics and Advanced Composition (3-3) Yr.** **M. Montes, Roldan**
Study and analysis of representative prose selections which exhibit variations in style: colloquial, informal, formal expository, poetic, epistolary and the like. Practice in written composition in various styles analyzed.
- 658 Seminar in Spanish Linguistics (3) 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, Roldan**
Major works and trends of periods prior to Golden Age. The epic poetry, and prose. (Alt. yrs.; not offered 1971-72.)
- 670 Spanish Literature of the Golden Age (3) II** **Y. Montes**
Representative readings in poetry, drama and prose of the 16th and 17th centuries. (Alt. yrs.; not offered 1971-72.)
- 674 Spanish-American Lyric Poetry (3) II** **S. Baciu**
- 681-682 Spanish-American Novel (3-3) Yr.** **Kleinbergs**
Development of the novel in Spanish America with emphasis on the 20th century. Pre: consent of instructor.
- 695 Seminar in Hispanic Literature (3) I, II** **S. Baciu, M. Montes, Y. Montes**
Study of a period, author, genre or region. Pre: consent of instructor. (May be repeated.)
- 699 Directed Research (v.) I, II**
Pre: consent of chairman.
- 800 Thesis Research (v.) I, II** **Knowlton**

Geography (Geog)

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

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SYSTEMATIC PHYSICAL GEOGRAPHY

- 300 Introduction to Climatology (3) I or II** **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 occupancy.
- 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 or II** **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** **Bowers, Pearce**
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 towards 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 in-

clude 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**
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 censusing 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. 43.
- 350 Geography of Asia (3) I** **S.D. Chang**
Introduction to geographic analysis of East Asia, Southeast Asia, South Asia: physical setting, resource endowments, patterns of occupancy, problems of economic transformation. Not open to those who have taken 352, 353, 355, or 356.
- 352 Geography of Japan (3) I** **Manchester**
Regional synthesis of physical and cultural features which characterize economic, social, political geography of Japan. Emphasis on origins of these patterns.
- 353 Geography of China (3) II** **Wiens**
Regional geographic exposition of historical, ethnic, political, economic character of China. Analysis of physical and resource base for agriculture and industry.
- 355 Geography of South Asia (3) I or II** **Bowers, 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) 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.

TECHNIQUES AND METHODOLOGY

- 370 Airphoto and Image Interpretation (2) I, II (1L, 1Lb)** S.D. Chang, Wingert
Quantitative and qualitative interpretation of photographic, infrared, radar imagery. Use of aerial photography, space photography, other remote sensors as tools for research in physical and social sciences. Pre: 101 or Geosc 102 or consent of instructor.
- 375 Cartography (3) I, II (2L, 1Lb)** S.D. Chang, Wingert
Principles of cartography, including map scales, grid systems, map projection, compilation, symbolism, map reproduction. Laboratory practice with cartographic equipment; techniques of quantitative mapping and terrain presentation.
- 380 Quantitative Methods in Geography (3) I** Fuller
Basic concepts and techniques: data collection, probability theory, tests of hypothesis, sampling methods, analysis of variance and regression, correlation analysis. Application to spatial problems.
- 680 Advanced Quantitative Methods in Geography (3) I or 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 or II** 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.
- 691 History of Geographic Thought (3) II** Manchester
Development of geographic thought from early Greece to present. Emphasis on origins of current trends and relations to contemporary thought in natural and social sciences.
- 695 Pro-seminar I—Models in Geography (3) I** Fuchs and Staff
Concept, theory, models in physical, human and regional geography. Required of entering graduate students.
- 696 Pro-seminar II—Research Design (2) II** Schwind
Research methods in geography. Principles of scientific method and applications to research design. Preparation of individual research proposals. Consent of instructor.
- 700 Seminar in Geography (3) I or II**
Study and discussion of significant topics and problems. May be repeated.
- 750 Research Seminar (3) I, II**
Selected problems in Research.
(1) Applied urban climatology, 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
- 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**

Geology and Geophysics (GG)

Senior Professor: Macdonald. *Professors:* Abbott, Adams, Cox, Laurila, Moberly, Rose, Sutton, Woollard. *Associate Professors:* Daugherty, Fan, Furumoto, Malahoff, Manghnani, Resig. *Assistant Professors:* Khan, Morris, Pankiwskyj, Peterson, Veeh.

- 101-102 General Geology and Geophysics (4-4) I, II (3L, 1Lb)** Abbott, Moberly
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 or 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)** Pankiwskyj
Mineral structure, composition and identification by physical and x-ray techniques; crystal form and symmetry. Pre: 101, Chem 113-117.
- 302 Petrology (3) II (2L, 1Lb)** Macdonald
Composition, classification, origin, occurrence of rocks. Pre: 301.
- 303 Structural Geology (3) I (2L, 1Lb)**
Tectonophysics, structural analysis, interpretation of geologic maps. Pre: 102, Phys. 170.
- 305 Geological Field Methods (2) I** Abbott, Macdonald
(8 hrs. Saturday in field) Methods used in geological investigations in the field. Pre: 302, or concurrent registration.
- 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. (Offered 1971-72.)
- 351 Seismology (3) I** Adams
Elastic properties of rocks, behavior of earthquake waves; earthquake recording instruments; reading of seismograms. Pre: Phys. 170. (Alt. yrs.; offered 1971-72.)
- 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)** Resig
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.
- 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)** Pankiwskyj
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)**
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.; not offered 1971-72.)

- 440 **Economic Geology (2-2) Yr.** **Abbott, Moberly**
 (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.; not offered 1971-72.)
- 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.; offered 1971-72.)
- 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.; not offered 1971-72.)
- 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) II** **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. (Offered 1971-72.)
- 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.
- 84 481 **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.; offered 1971-72.)
- 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.; not offered 1971-72.)
- 609 **Seminar in Geomorphology (2) II** **Abbott**
 Consideration of special problems and geologic processes in development of land forms. Pre: 316. (Alt. yrs.; not offered 1971-72.)
- 614 **Advanced Field Study (v.) I, II**
 Field projects in geologic sciences.
- 619 **Sedimentology (3) I** **Moberly**
 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.; offered 1971-72.)
- 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.; offered 1971-72.)
- 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.; offered 1971-72.)
- 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.; not offered 1971-72.)
- 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.; not offered 1971-72.)
- 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.; offered 1971-72.)
- 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.; offered 1971-72.)
- 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.
- 672 **Seminar in Geotectonics I (3) I** **Malahoff, Moberly**
 Evolution of the ocean basins and margins, from regional syntheses of structure, petrology, geophysics, stratigraphy, and physiography. Offered jointly as Ocean 672. (Alt. yrs.; not offered 1971-72.)
- 673 **Seminar in Geotectonics II (3) II** **Malahoff, Moberly**
 Evolution of the shields and mountain systems, from regional syntheses of structure, petrology, geophysics, stratigraphy, and physiography. Pre: consent of instructor. (Alt. yrs.; not offered 1971-72.)
- 674 **Rock Magnetism and Paleomagnetism (3) I** **Malahoff**
 Ferromagnetism of rocks, various forms of remanent magnetism; paleomagnetism, application of paleomagnetic data. Pre: consent of instructor. (Alt. yrs.; not offered 1971-72.)
- 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.
- 684 Advanced Geodesy (3) II** **Daugherty, Laurila**
 Precision leveling. Baseline measurements. Orthometric and dynamic heights. Geodetic computations of arc lengths. Fundamentals of spatial coordinates in terrestrial geodesy. Changes in geodetic coordinates due to changes in reference ellipsoid. Direct and inverse problems for medium and long distances. Derivations of ellipsoidal projections. Differential formulae. Modern electronic surveying equipment, reductions and applications in geodesy. Pre: 457.
- 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**
- 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.
- 405-406 History of Southeast Asia (3-3) Yr.** **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** **Vella**
 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. (Not offered 71-72)
- 417-418 History of Korea (3-3) Yr.** **Choe, Kang**
 Detailed political, economic and social survey of Korean history.
- 419 European Expansion (3) I** **Stein**
 Historical processes in modern European colonization (16th to 20th c.) emphasizing impact upon non-Europeans in Asia and Africa. (Not offered 1971-72.)
- 421 Australia and New Zealand (3) II**
 Major historical developments from colonization to independent nationhood; present problems and policies; (Not offered 71-72)
- 422 History of Oceania (3) I** **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) 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** **Speidel**
 Survey of the social, religious, political, and literary history of the peoples of Mesopotamia, Persia, and eastern Mediterranean from Sumerian to pre-classical Greek times.
- 427 Ancient Greek History (3) II** **Speidel**
 Political and cultural history of ancient Greece. Emphasis on discussion of source materials.
- 428-429 Roman Civilization (3-3) Yr.** **Speidel**
 Political, social, and cultural history of the Roman Republic and the Roman Empire. Emphasis on discussion of source materials. (428 not offered 1971-72.)
- 430 History of Science (3) I** **Bernatowicz**
 Man's changing ideas concerning universe reflected against historical setting. Pre: one yr. of natural science. (Cross-listed as Sci 430.)
- 431-432 Medieval Europe, 300-1300 (3-3) Yr.** **Ernest**
 Cultural, social, economic and political changes in development of European community.

History (Hist)

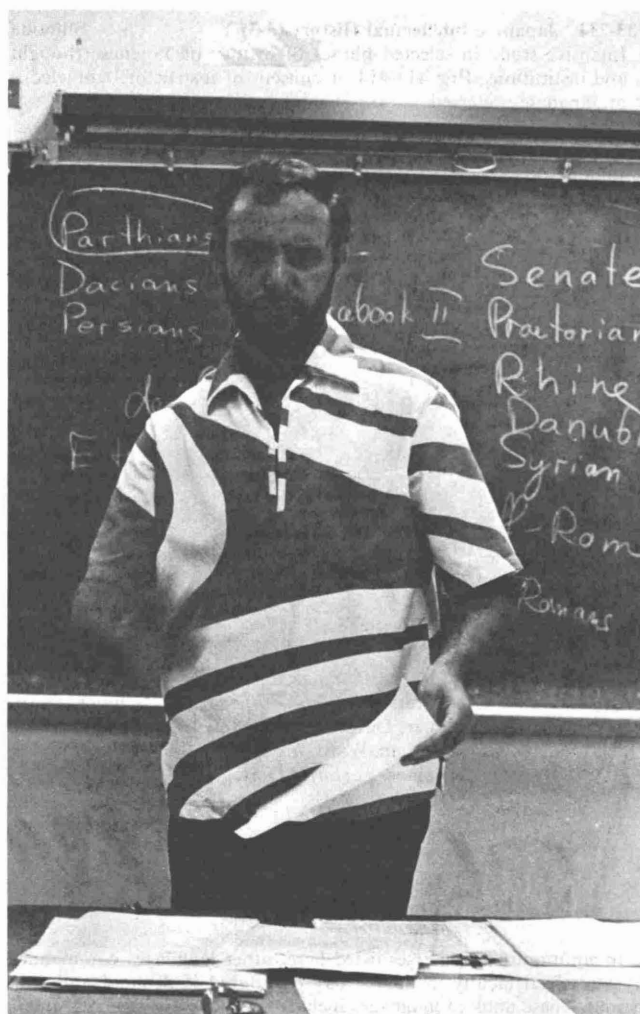
Professors: Akita, Cowing, D. Johnson, W. Johnson, Kwok, Margulies, Maurer, Melendy, Newby, Nunn, Sakai, Shinoda, Stalker, Stein, Van Niel, Vella, J. White. *Associate Professors:* Beechert, Connors, Daws, Ernest, Kang, Lamley, J. McCutcheon, McKnight, Rapson, Saville, Sharma, Speidel, Uhalley, Wade. *Assistant Professors:* Choe, Cubberly, Ladd, Lind, McGlone, Morris, Nader, Stephan, Tao, Winchester. *Acting Asst. Professor:* B. Miller.

- 151-152 World Civilization (3-3) Yr.** **Connors, Daws, B. Miller**
 Development of civilization from its prehistoric origins to present. Prerequisite for advanced courses.
- 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**
 Interpretive survey of U.S. history from earliest settlements to present.

- 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** 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.
- 443-444 History of Germany (3-3) Yr.** Saville
Major political, social, economic and intellectual trends in evolution of Germany. (Not offered 1971-72.)
- 445-446 History of France (3-3) Yr.** Cubberly
Major political, social, economic, and intellectual trends in evolution of France. *1st sem.*: end of the Middle Ages to the Revolution. *2nd sem.*: 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.
- 465 Troubled Peace: U.S. History 1920-1941 (3) I** W. Johnson, Stalker
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, Stalker
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
History of American foreign policy and diplomacy.
- 473-474 History of Spain and Portugal** 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** Margulies, 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. (Not offered 1971-72.)
- 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.: offered 1971-72.)
- 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.: not offered 1971-72.)
- 486 Representative Americans (3) I** Margulies, Stalker
Series of biographical sketches of leading characters in American history from Revolution to present.
- 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 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**
History of history, and historians; philosophies of history.
- 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 1971-72)
- 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. (455 not offered 1971-72; 456 offered fall semester 1971.)
- 459 Constitutional History of England (3) I, II** Ernest
Anglo-Saxon institutions; Norman innovations; legal administrative, parliamentary development under Angevins; rise of cabinet system, (Alt. yrs.; not offered 1971-72.)
- 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, Beechert
Response to industrialism, emergence of U.S. as world power, progressive movement, World War I and Reconstruction.

For information on the Russian Area Studies Certificate, see p. 43.

- 619 **Seminar in Russian History (3) I or II** Wade
Research in problems on history of Russia and Soviet Union.
- 620 **Seminar in Russian Foreign Policy (3) I, II** White
Research in problems of foreign policy in Russia and Soviet Union.
- 631 **Advanced Problems and Reading in American History (3) I, II** Cowing
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. (Not offered 1971-72.)
- 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. (Not offered 1971-72.)
- 640 **Seminar in American Social and Intellectual History (3) I** Rapson
Research in history of American thought and culture.
- 641 **Seminar in American Diplomatic History (3) II** D. Johnson
Selected problems in development of U.S. foreign policy and its implementation.
- 654 **Seminar in the History of Mainland Southeast Asia (3) I, II** 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, II** Van Niel
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 reading 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
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.** Kang, Choe
Detailed treatment of developments in political, economic and social institutions of traditional Korea.
- 711 **Korean Historical Sources (3) I or 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. (Not offered 1971-72.)
- 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.
- 727-728 **Japanese Historical Materials and Sources (3-3) Yr.** Sakai
Examination of different forms and styles of historical documents. Problems of terminology and interpretation. Reading knowledge of Japanese required.
- 730 **Japan: The Bakumatsu Period (1830-1873) (3) I or II** Sakai
Analysis of structure and substance of feudal power; pressures for change; transition to the nation-state.
- 731 **Seminar in Political History of Modern Japan (3) II** Akita
Bibliography, controversies and schools of thought among major Japanese political historians. Selected topics and research papers. Reading knowledge of Japanese required.

- 733-734 Japanese Intellectual History (3-3) Yr.** **Shinoda**
Intensive study in selected phases of history of Japanese thought and institutions. Pre: 413-414 or consent of instructor. Knowledge of Japanese preferred.
- 735-736 Seminar on Pre-Modern Japan c. 850-1800 (3-3) Yr.** **Morris**
Bibliography, research tools, special problems. Recent controversies among Japanese scholars. Reading knowledge of Japanese required. (Not offered 1971-72.)
- 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

Professors: Elbert, Maurer. *Associate Professor:* R. Baumer. *Assistant Professors:* J. Baumer, Dardjowidjojo, Gething, Jenner, Nguyen-Dang-Liem, O'Harrow, Roop, Ward. *Instructors:* Billups, R. Johnson, Ramos. *Lecturer:* DeHeer.

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, Burmese, Cham, Ilokano, Javanese, Madurese, Minangkabau, Mon, Muong, Persian (Old and Modern), Prakrit, 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.
- 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 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.
- 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.
- 301-302 Third-level Bengali (3-3) Yr.**
Continuation of 202. Primary emphasis on reading and written work. Introduction to modern literature of Bengal.
- 690 Directed Readings in Bengali Texts (v.) I**
Pre: consent of instructor. May be repeated.

Cambodian (Cam)

- 101-102 Elementary Cambodian (3-3) Yr.**
Development of basic skills 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.
- 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.
- 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.
- 301-302 Third-level Hawaiian (3-3) Yr.**
Continuation of 202. Conducted in Hawaiian. Advanced conversation and reading. Pre: 202 or equivalent.
- 361 Hawaiian Literature in English (3) I**
Survey of traditional myths, legends, chants, songs, sayings. Conducted largely in English. 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.

Indonesian (Ind)

- 103 Accelerated Elementary Indonesian (6) I**
Development of listening, speaking, reading, writing. Structural points introduced inductively. Meets 2 hours daily, Monday through Friday. 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work.
- 204 Accelerated Intermediate Indonesian (8) II**
Continuation of 103. Meets 2 hours daily, Monday through Friday. 8 out of 10 hours devoted to directed drill and practice. Daily laboratory work. Pre: 103 or equivalent.
- 303 Accelerated Third-level Indonesian (6) 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. 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. 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 Hīnāyana texts. Pre: 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 sem. Introduction to Veda in 2nd sem. 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)

- 103 Accelerated Elementary Tagalog (6) I**
Development of listening, speaking, reading, writing. 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 Tagalog (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.
- 301-302 Third-level Tagalog (3-3) Yr.**
Continuation of 204. Conversation, advanced reading and composition. Meets 3 times weekly. Laboratory work. 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) I**
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. 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. 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.

Vietnamese (Viet)

- 101-102 Elementary Vietnamese (3-3) Yr.**
Development of listening, speaking, reading, writing. 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 have an understanding of Vietnamese culture. Meets 1 hour daily, Monday through Friday. 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: 202 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 or equivalent.
- 461-462 Introduction to Vietnamese Literature (3-3) Yr.**
Selected readings in major genres, with emphasis on analysis. First semester devoted to traditional literature, second semester to modern. 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 Bulletin*.

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

- 301-302 Computers and Information Sciences (3-3) Yr.** Abramson
Introduction to computers and computer programming. History of information processing machines. Algorithms, languages and computer organization. Applications to linguistics, music and business. Experimental work using 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.
- 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** Jones
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, II** Watanabe
Fundamental properties of information. Sources and channels and coding of information. Applications to communication, linguistics, music, economics, psychology. Method of study based on elementary probability theory, but emphasis on significance of results. Open to all students. Pre: Math 134, ISc 371, junior standing or consent of instructor.
- 466 Computer Organization and Programming Techniques (3) 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 (3) I, II** Peterson
Introduction to algorithms, languages for describing them, associated programming techniques. Commonly used languages for numerical and non-numerical computation. Pre: knowledge of some general programming language, such as FORTRAN, PL/I, or COBOL.
- 491 Special Topics in Information Sciences (3) 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.

- 621 Formal Linguistics (3) I or II** **Pager**
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.
- 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) 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) II** **Jones**
Filtering, prediction, spectrum estimation and transfer function estimation for stationary processes. Regression with stationary errors. Random fields and space-time processes. Pre: 443.
- 655 Applied Regression Analysis (3) I or 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. Turing 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) II** **Lew**
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.
- 693 Special Topics in Information Sciences (3) 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.
- 697 Seminar in Information and Computer Sciences (1) I, II** **Abramson**
Consists of a series of talks on advanced research topics in information sciences.
- 698 Seminar in Time Series Analysis and Applications (1) I or 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 the newer methods of time series analysis.
- 699 Directed Reading (v.) I, II** **Staff**
Graduate standing, consent of instructor.

Linguistics (Ling)

Professors: Bender, Elbert, Fairbanks, Grace, Li, McKaughan, Thompson. *Associate Professors:* Schultz, Topping, Tsuzaki. *Assistant Professors:* Forman, Josephs, Lyovin, Roberts, Starosta. *Acting Assistant Professor:* Howard. *Assistant Professors:* Hsu, Lee.

- 102 Introduction to the Study of Language (3) I, II**
Nature and workings of language; its role in culture and history.
- 320 General Linguistics (3) I, II**
Approaches, concepts, component areas of linguistics; its development as a science.
- 410 Articulatory Phonetics (3) I, II**
Intensive training in recognition, reproduction, recording of speech sounds throughout the world; preparing students for field work, especially with unrecorded languages.
- 421 Introduction to Phonological Analysis (3) I, II**
Introduction to phonemic analysis and phonological theory. Pre: 410, or concurrent registration.
- 422 Introduction to Grammatical Analysis (3) I, II**
Introduction to morphological and syntactic analysis, grammatical theory. Pre: 421, or concurrent registration.
- 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.
- 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.
- 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.
- 92 760 Problems in Comparison and Pre-History (3) I, II**
Special problems dealing with areas of language classification, measures of language divergence, dialect geography, other phases of comparative-historical linguistic study. Pre: 645. May be repeated.
- 770 Areal Linguistics (3) I, II**
Seminar dealing with structures of languages of various areas of the world, topics depending on both resident and visiting staff specialties. Pre: 622. May be repeated.
- 780 Ethno-Linguistics (3) I**
Seminar for advanced students of both linguistics and anthropology, dealing with methods and their application to research on these fields, with concentration on inter-relations between culture and language. Pre: consent of instructor.
- 800 Thesis Research (v.)**
- Mathematics (Math)**
- Professors:* Bear, Gregory, Hanf, Hirschfeld, Mookini, Pierce, Pitcher.
Associate Professors: Colby, Mader, Nobusawa, Rogers, Wallen, Wells, Wong, Yeh. *Assistant Professors:* Allday, Bertram, Brase, Clark, Csordas, Fakhruddin, Gilfeather, Hilden, Iha, Johnson, Kibler, Koehler, Kranzler, Lee, McDermott, Reiter, Shukla, Siu, Spielvogel, Stout, Wenska, Wilkerson, Williamson, Brown, Calica, Martin, Monroe, Myers.
- 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 is given in first class meeting.
- 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 and trigonometric functions with applications. Pre: C in 134 or in equivalent courses covering trigonometry and analytic geometry.
- 206 Calculus II (3) I, II**
Exponential, logarithmic and hyperbolic functions; techniques of integration; infinite series. Pre: C in 205 or equivalent.
- 211 Matrix Algebra (3) I, II**
Operations on matrices, determinants, solvability and solution methods of systems of linear equations, vectors and linear transformations in two- and three-dimensional Euclidean space. Pre: C in 134 or equivalent.
- 231 Multi-Variable Calculus (3) I, II**
Vector-oriented study of functions of several variables; partial differentiation and multiple integrals; line and surface integrals. Pre: C in 206 or equivalent.
- 232 Ordinary Differential Equations (3) I, II**
First order equations, linear equations with constant coefficients, Laplace transform, systems of equations. Pre: 231 or consent of department.
- 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.
- 301 Introduction to Numerical Analysis (3) I**
Iterative methods for algebraic problems, including convergence criteria and error analyses, interpolation and numerical integration. Pre: 211, 231 and 232.
- 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 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.
- 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 Higher Analysis (3-3) Yr.**
Vector calculus, functions of complex variable, residue theory, conformal mapping; Fourier series and integrals, Laplace transformation, special functions, partial differential equations, calculus of variations. Pre: 232.
- 412 Introduction to Abstract Algebra (3) I, II**
Introduction to basic algebraic structures including groups, rings, fields. Pre: 311.
- 413 Abstract Algebra (3) I**
Continuation of 412 including finite abelian groups, unique factorization domains, and finite fields. Pre: 412 or equivalent.

- 420 Introduction to the Theory of Numbers (3) I**
Congruences, quadratic residues, arithmetic functions, distribution of primes. Pre: 311 or consent of instructor.
- 431-432 Advanced Calculus (3-3) Yr.**
Topology of \mathbb{R}^n , theorems on continuous functions, development of Riemann integral, sequences and series, uniform convergence, implicit function theorems, differentials and Jacobians. Pre: 311.
- 441 Numerical Analysis (3) II**
Theory of matrices in numerical analysis, norms and convergence. Pre: 301 and 311, and either 431 or 403.
- 442 Vector Analysis (3) II**
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.
- 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.

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101 or consent of instructor prerequisite to all courses above 300.

- 101 Introduction to Meteorology (4) I, II (3L, 1Lb)** Adams, Staff
(Also offered at Hilo College during first semester)
Introduction to meteorology, ocean-atmosphere interactions, land and sea climates emphasizing Hawaii and the central Pacific. Pre: high school algebra, trigonometry, geometry.
- 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.; not offered 1971-72.)
- 350 Theoretical Meteorology Laboratory I (1) I (1Lb)** Adams, Daniels, Taylor
Exercises related to 352. Required for meteorology majors. Pre: credit or registration in 352.
- 352 Theoretical Meteorology I (3) I (3L)** Adams, Daniels, Taylor
Atmospheric statics; optical acoustical, electrical phenomena; condensation and precipitation; radiation and heat balance; thermodynamics; kinematics. Pre: Phys 275; concurrent registration in 310, or consent of instructor.
- 353 Theoretical Meteorology II (3) II (3L)** Adams, Daniels, Taylor
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, Daniels, Taylor
Exercises related to 353. Required for meteorology majors. Pre: credit or registration in 353.
- 444 Meteorological Satellites (3) II (2L, 1Lb)** Adams, Sadler
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.; offered 1971-72.)

- 445 Tropical Meteorology (3) II** Taylor
History; tropical clouds and hydrometeors; easterly waves and typhoons; monsoons; local and diurnal effects. Pre: 352. (Alt. yrs.: not offered 1971-72.)
- 450 Meteorological Analysis Laboratory (3) II** Adams, 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.; offered 1971-72.)
- 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.; not offered 1971-72.)
- 639 Meteorology of the Tropical Oceans (2) I** Sadler
Trade winds, typhoons, synoptic climatology, research exercises. Pre: 445 or consent of instructor.
- 640 Advanced Tropical Meteorological Laboratory (3) II (3Lb)** Sadler, Ramage
Modern methods of analysis and forecasting applied to the tropics. Pre: 639 or consent of instructor. (Alt. yrs.; offered 1971-72.)
- 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.; not offered 1971-72.)
- 643 Cloud Physics (3) II**
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.
- 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; knowledge of ordinary and partial differential equations.
- 651 Advanced Theoretical Meteorology II (3) II** Chiu
Basic theories of the mechanics of compressible fluids; atmospheric waves and tides; stability problems. Pre: 650.
- 742 Atmospheric Turbulence (3) II** Chiu
Equations of motion for turbulent flow; turbulent diffusion; atmospheric boundary layer processes. Pre: 650 or consent of instructor. (Alt. yrs.; offered 1971-72.)
- 745 Numerical Analysis and Weather Prediction I (5) I (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 Numerical Analysis and Weather Prediction II (5) II (3L, 2Lb)** Murakami
Instability theory; numerical integration procedures; special problems in numerical analysis; programming exercises of numerical integration. Pre: 745.
- 752 Special Topics in Meteorology (3) I, II**
Concentrated studies on selected atmospheric problems. Pre: 651 or consent of instructor. May be repeated for credit.
- 765 Seminar in Meteorology (1) I, II** Chiu
(Also offered at Hilo College)
(a) General. (b) Research results. May be repeated for credit.
- 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, Vine. *Associate Professors:* Chadwick-Cullen, Lum, W. Pfeiffer, Tait, Trubitt. *Assistant Professors:* Brown, Coraggio, Crabtree, Gordon, Krantz, Shipwright, Spielman, Susilo, Trimillos, Uchi-
ma, Walz, Wolz. *Instructor:* Gillett. *Lecturers:* Allton, S. Arai, T. Arai, Burton, DeMello, Fleming, Gilmore, Harling, Kaeppler, Mikami, Miyamura, H. Nakasone, Y. Nakasone, R. Pfeiffer, Rajapur, Ransom, Richards, Roblee, A. Rowell, L. Russell, Sapp, Valentin, Watkins, White, Yamada. *Instructor:* Freitas.

Numbers in parentheses in course descriptions refer to the different sections in each course and are used for scheduling purposes.

- 102 University Chorus (1) I, II** Gillett, Uchima
Performance of choral literature from Renaissance to present. Previous choral experience not required.
- 115-116 First-Level Secondary Piano (1-1) Yr.** Shipwright
Study of piano as secondary performance field including application of music theory to problems in improvising, harmonizing, creating accompaniments, transposing and sight-reading at keyboard. For music majors.
- 117-118 Introduction to Music Theory (1-1) Yr.**
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 1971-72.)
- 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) Yr.**
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.** Krantz
For students preparing to teach instrumental music. Performance techniques, materials and pedagogy for string instruments.
- 153 Woodwind Methods (2) I** Uchima
Similar to 151-152.
- 154 Brass Methods (2) II** Lum
Similar to 151-152.
- 155 Percussion Methods (2) I** L. Russell
Similar to 151-152.
- 160 Introduction to Music Literature (3) I, II**
Elements, styles and forms of music, from listener's point of view. Lab section required.
- 170 Music in World Culture (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. Shipwright**
Continuation of 115-116 with increased emphasis on piano literature up to intermediate level. Pre: 116 or consent of instructor.
- 265 History of Western Music to 1750 (3) I, II**
Development of Western music from its origins to 1750. Styles, schools, composers. Pre: either 160, 170, 180, 181 or consent of instructor.
- 266 History of Western Music after 1750 (3) I, II**
Development of Western music from 1750 to the present. Styles, schools, composers. Pre: either 160, 170, 180, 181, or consent of instructor.
- 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: 181-182, and 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: 181-182 and 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. Lum, Uchima**
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. Gillett**
For majors in elementary school music (vocal-general). Detailed study of music concepts and literature appropriate for elementary schools. Materials and procedures necessary for organization of music in childhood experience. Pre: 118 or 119 or 180 or 181.
- 353 Survey of Music in the Elementary School (3) I, II**
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. 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 America (3) I Trimillos**
Varieties of music, including jazz and other popular forms, in contemporary American society, with relevant antecedents. Pre: freshmen admitted only with permission of instructor. (Cross-listed as American Studies 370.)
- 399 Directed Study (v.) I, II**
Limited to senior majors with 2.7 grade-point ratio or 3.0 in music.
- 401 Ensembles (1) I, II**
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, (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. Pre: audition or consent of instructor. May be repeated for credit.
- 402 University Concert Choir (1) I, II Crabtree**
Performance of a cappella literature and major choral works. Pre: previous choral experience and consent of instructor. May be repeated for credit.
- 404 Opera Workshop (3) I, II**
Opera in performance. Styles and characterizations. Performance of scenes and one complete work. May be repeated for credit. Pre: 236(11) or consent of instructor.
- 405 University Symphony Orchestra (1) I, II Krantz**
Performance of orchestra literature, including major works for chorus and orchestra, opera and dance. Pre: audition or consent of instructor. May be repeated for credit.
- 409 University Concert Band (1) I, II Lum**
Performance of band literature, including major works by contemporary composers. Pre: audition or consent of instructor. May be repeated for credit.
- 420 Music Literature Laboratory (2) I, II**
Specific areas of music literature with emphasis on problems of style and interpretation and their implications in performance. Inquiry with laboratory performance. (11) solo voice, (21) piano, (22) organ. 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.
- 451 Advanced String Methods (2)**
Advanced performance techniques, materials and pedagogy for string instruments: (31) violin, (32) viola, (33) cello, (34) double bass. Pre: 152. May be repeated for credit. (Not offered 1971-72.)
- 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 1971-72.)
- 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 1971-72.)
- 457 Asian and Pacific Music in Education (2) II Gillett**
Musical concepts in songs, dances and instrumental music of Asia, Hawaii and other Pacific islands appropriate for elementary school. Pre: 352 or 353; teaching experience or consent of instructor.
- 458 Voice Methods (2) I**
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: either 160, 170, 180, 181 or consent of instructor.
- 462 Choral Music (2) II**
Historical study of choral literature from Palestrina to present. Pre: either 160, 170, 180, 181, or consent of instructor.
- 463 Opera (2) I**
Historical study of operatic literature from Monteverdi to present. Pre: either 160, 170, 180, 181, or consent of instructor.
- 464 Twentieth Century Music (2)**
Study of major styles and composers from Debussy to present. Pre: either 160, 170, 180, 181, or consent of instructor.
- 465 Chamber Music (2)**
Historical study from Renaissance to present, of music written for one performer to a part. Pre: either 160, 170, 180, 181, or consent of instructor. (Not offered 1971-72.)

- 466 Music of the United States (2)**
Historical study of music of U.S. from colonial times. Pre: either 160, 170, 180, 181, or consent of instructor. (Not offered 1971-72.)
- 469 Keyboard Music (2)**
Study of literature for harpsichord, piano and organ from Renaissance to present, emphasizing development of historical styles. Pre: either 160, 170, 180, 181, or consent of instructor. (Not offered 1971-72.)
- 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 Sem*: transcribing or composing for band, orchestra and chorus. Pre: 182, or consent of instructor.
- 483-484 Counterpoint (2-2) Yr.**
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.
- 491-492 Movement Notation (2-2) Yr.**
Analysis and recording of movement through Labanotation; reconstruction of notated exercises and dances.
- 519 Music for Elementary Teachers (3)**
Music fundamentals; basic music skills and theory with emphasis on reading music. Sight singing, ear training through melodic and rhythmic dictation, creative activities, analysis of simple song forms, study of basic harmony with direct application to classroom instruments. Pre: 118 or 119 or 180 or consent of instructor (Not offered 1971-72.)
- 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 approached from various standpoints, i.e., works of specific composers, forms or periods. Pre: 266 or consent of instructor. May be repeated.
- 661 Bibliography and Research Methods in Music (3) I**
Basic materials and techniques for research in music.
- 670 Regional Musics (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.
- 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. (Not offered 1971-72.)
- 785 Comparative Theory (3) I**
Rowell
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, (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 music 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) horn, (53) trombone, (54) tuba, (61) percussion.

636 Graduate Recital (3) I, II

For students accepted for M.M. in performance. Individual instruction in solo vocal or instrumental performance at graduate performance level; full recital required. (11) voice, (21) piano, (22) organ, (31) violin, (32) viola, (33) cello, (34) bass, (41) flute, (42) oboe, (43) clarinet, (44) bassoon, (45) saxophone, (51) trumpet, (52) horn, (53) trombone, (54) tuba, (61) percussion.

Oceanography (Ocean)

Professors: Chave, Groves, Hardy, Murphy, Wyrcki, *Associate Professors:* Caperon, Malahoff, Stroup. *Assistant Professors:* Andrews, Cattell, Clarke, Gallagher, Kroopnick, Newbury, Tait, Young.

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 biotic community and interrelationships with 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 GG 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

Wyrcki

Techniques and methods of analysis in physical oceanography. Pre: Math 232 and consent of instructor.

633 Chemical Oceanography Laboratory Methods (1) I (1 3-HrLb)

Kroopnick

Laboratory and field analytical techniques used in chemical oceanography. Pre: consent of instructor.

636 Phytoplankton Ecology (3) II (2L, 1 3-HrLb)

Cattell

Phytoplankton-environmental relations and community ecology; phytoplankton-zooplankton interactions; phytoplankton synecology. Pre: 620 and consent of instructor.

640 Advanced Physical Oceanography (3) II

Wyrcki

Dynamics of ocean currents; equations of motion and continuity; ocean circulation; heat budgets. Pre: 620, Math 402.

642 Sedimentology II (3) II (2L, 1 3-HrLb)

Staff

Analysis of sedimentary textures, physical properties, and sediment compositions; distribution of recent marine sediments; statistical applications to sedimentology: to be preceded by GG 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 GG 661. Pre: consent of instructor. (Alt. yrs; offered 1971-72.)

646 Zooplankton Ecology (3) I (2L, 1 3-HrLb)

Newbury

Environmental factors related to acquisition, assimilation and utilization of energy by zooplankton; practical experience with sampling methods and taxonomic analysis production models and measurements. Pre: 620, 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 Wave Theory (3)

Groves

Generation and propagation of waves at sea; tsunamis; internal waves; observation and recording of ocean waves; wave spectra and forecasting. Pre: either 640, Math 432 and consent of instructor.

661 Tides (3)

Groves

Mechanics of particles and finite bodies; tide-generating forces; response of ocean and earth; harmonic and non-harmonic methods of analysis and prediction, geophysical implications of the tide. Pre: either 640, Math 432, and consent of instructor.

662 Marine Hydrodynamics (3) I

Gallagher

Introduction to classical hydrodynamics and development of Navier-Stokes equations as applied to oceans. Techniques for solution on various scales of oceanic motion, including potential theory, dimensional analysis, and viscous, rotational, and turbulent processes. Pre: math at 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 physical "optics" of underwater sound propagation in the ocean, including effects of diffraction, scattering, refraction, and reflection. Pre: consent of instructor and Math 404.

- 672 Seminar in Geotectonics I (3) I** Staff
Evolution of ocean basins and margins, from regional synthesis of structure, petrology, geophysics, stratigraphy, and physiography. Pre: consent of instructor. Offered jointly as GG 672. (Alt. yrs.; not offered 1971-72.)
- 673 Continental Shelves (3) I** Andrews
Geological structure and mineral resources of continental shelves. Pre: consent of instructor. (Alt yrs.: offered 1971-72.)
- 699 Directed Research (v.) I, II** Staff
Pre: consent of instructor.
- 702 Deep Sea Biology (3) II (2L, 1 3-HrLb)** Young
Distribution, ecology and adaptations of pelagic and benthic organisms within the deep sea.
- 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** Chave
- 800 Thesis Research (v.) I, II** Staff

Overseas Career Program (OCP)

Director: Hackler. Associate Director: Moscotti.

- 297 Overseas Americans and Asian Societies (3) I, II** Hackler, Moscotti
Comparative survey of contemporary institutions of U.S. and Asia and their interactions, with emphasis on the cultural realities which Americans encounter in Asia. Preparatory for overseas study in Asia by 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 Bulletin* for description of Overseas Career Program and requirements for the Overseas Career Certificate.



Pacific Islands Program (PIP)

Professors: Barnet, D. Cox, J. Cox, Johnson, Lamoureux, Mahony, Meller, Oliver, Pirie, Redding. *Curator:* Heyum.

A cross-disciplinary program offered by the Pacific Islands Committee.

390 Change in the Pacific (3) I, II

Impact of cultural and physical change, and their interrelationships, on various selected island regions of the Pacific.

699 Directed Reading and Research (v.) I, II

Pre: consent of instructor.

Pacific Urban Studies and Planning Program (Plan)

Director: Dinell. *Associate Professors:* Armstrong, Bauman. *Assistant Professors:* Earickson, Holmstrom, Minerbi, Nitz, Povey, Schwind. *Associate Specialist:* Wiederholt.

A program offered by the departments of architecture, economics, geography, political science and sociology, the College of Engineering and the schools of Public Health and Social Work.

600 Contemporary Planning Theory (3) I

Staff

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

Staff

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.

695 Planning Practicum (3) II

Staff

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 the planning issue being examined, develop a research design for implementation and initiate research. Pre: 600 and 601 or consent of instructor.

696 Planning Practicum (3) I

Staff

Final unit in three-part Planning Practicum sequence which includes 695, summer field work and 696. 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.

The courses described below and offered by the participating units are part of the planning studies program:

Arch 342 Elements of the Planning Process (3) I or II

Minerbi

Planning as decision-making process for infra-urban and supra-urban environmental situations. Pre: consent of instructor.

Arch 442 Methods of Urban and Regional Design (4) I or II

Minerbi

Methods for descriptive, predictive, prescriptive, implemental and managerial phases of development and design of urban and regional patterns. Pre: consent of instructor.

CE 464 Urban and Regional Transportation Planning (3) Bauman
Application of land use planning and traffic engineering techniques to solution of urban transportation problem. Topics include: forecasting methods, traffic generation and simulation theory, methods of planning and design, and future concepts. Pre: consent of instructor.

CE 664 Analysis & Design of Urban Transportation Systems (3) II

Bauman

Applications of systems engineering to the analysis and design of transportation systems. Economics, financial capacity, operating characteristics, and demand interrelationships of all transportation modes which have potential in the urbanized area considered with respect to development of integrated transport facilities. Pre: CE 464.

CE 665 Simulation & 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: CE 464.

Econ 458 Public Resource Allocation (3) II

Holmstrom

Application of economic analysis to public decision-making. Introduction to benefit-cost analysis; social rate of discount; external economies; treatment of uncertainty; planning and program budgeting systems (PPBS). Applications to planning. Pre: Econ 120 or consent of instructor.

Econ 492 Regional Economic Development (3) II

Holmstrom

Sources of regional economic growth and of regional development planning. Emphasis on Hawaiian economy and experience. Pre: Econ 300, 301 or consent of instructor.

Geog 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: Geog 151 or consent of instructor.

Geog 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 investigations. Application to urban structure, human interaction, and urban planning. Pre: upper division standing in social sciences. Geog 380 or equivalent background in quantitative methods or consent of instructor.

Geog 612 Ecological Concepts and Planning (3) I

Armstrong

PH 612

Concepts of human ecology as bases for environmental-management planning with emphasis on comprehensive health planning. Pre: consent of instructor.

Geog 621 Urban Systems and Analysis (3) II

Schwind

Use of descriptive and predictive 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: Geog 380 or equivalent, and consent of instructor.

PH 614 Political Aspects of Policy Planning (3) I

Staff

PolSc 770

Includes examination of planning as a conflict-resolution process within which decisions are made; problems involved in goal determination, comprehensiveness, individual choice, resource allocation, organization and participation; and utilization of planning processes in effecting change. Pre: consent of instructor.

PolSc 651 Planning Administration and Implementation (3) II

Povey

Review of administrative theory and analysis of relationships and contributions of organization theory and political decision theory to the planning process. Emphasis placed on identification and consideration of factors critical to the organization, administration and implementation of planning endeavors. Pre: consent of instructor.

PolSc 670 Decision Making Strategies (3) I

Nitz

Examination of problems of choice and individual and organizational behavior with emphasis on developing problem solutions and decisional implementation strategies that enhance the probability of achieving desired planning outcomes. Pre: consent of instructor.

Philosophy (Phil)

Professors: Chang, Copi, Deutsch, McCarthy, Mehta, Nagley. *Associate Professors:* Cheng, Upadhyaya, Yamasaki. *Assistant Professors:* 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.

100

- 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.
- 300 Greek Philosophy (3) I** Goodman, Harter
Basic philosophical works of schools and thinkers of Greek philosophy from Pre-Socratics to Neo-Platonism.
- 302 Medieval Philosophy (3) II** Goodman, 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** Wargo, Yamasaki
Analysis of development of empiricism in writings of Locke, Berkeley and Hume. Special attention to concepts of substance, sensation, self, nature, causation, mathematics, morality, religion.
- 306 Continental Rationalism (3) I** Harter, 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 and of Marx, Kierkegaard, Nietzsche, Freud.
- 310 20th-Century Philosophy (3) II** Deutsch, Stewart
Survey of recent developments in Western philosophy.
- 315 Ethical Theory (3) I** Goodman, Moore
Comparative analysis of ethical theory in theological, legal, literary, scientific, 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.
- 376 Aristotle (3) II** Harter
Analysis of the fundamental ideas and works including his methodological, metaphysical, ethical, political, logical and aesthetic theory.
- 400 Political Philosophy (3) 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** 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 Western philosophical tradition.
- 405 American Philosophy (3) I** Cheng, Wargo
Major trends in development of American philosophy in relation to socio-political background and influence.
- 410 Philosophy of the Physical Sciences (3) I**
Systematic study of methods and procedures in formal and natural sciences. Pre: 210.
- 415 Philosophy of the Social Sciences (3) II**
Substantive methodological problems in current analyses of social sciences.
- 417 Theory of Knowledge (3) II**
Examination of major historical and contemporary approaches to the theory of knowledge. Problems to be considered will include: truth and error, scepticism, the problem of induction, the possibility of a priori knowledge, the analytic-synthetic distinction, meaning and verification, perception, and other minds.
- 418 Metaphysics (3) II** 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** McCarthy, Moore
Study of art from points of view of creation, appreciation, criticism. Particular attention to painting, sculpture, music, poetry.
- 422 Philosophy and Psychoanalysis (3) II** 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 such writers as Beckett, Camus, Hemingway, Kafka, Rilke, Sartre, T.S. 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** Nagley
Survey of main themes of European existential philosophy. Particular attention to Kierkegaard and Heidegger.
- 435 Philosophy of Religion (3) II** Goodman, Yamasaki
Problems concerning existence of God, nature of religious experience, faith and reason, immortality, religious language, alternatives to theism.
- 440 Introduction to Phenomenology (3) I or II** Bender
Study of conceptual and historical aspects of phenomenological philosophy. Emphasis placed upon the works of Husserl, Sartre and Merleau-Ponty. Pre: 304 and 306.
- 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. Pre: 210 desirable preparation.
- 600 Problems of Philosophy (3) I, II**
Persistent specific problems of philosophy, primarily those concerning nature, man, God. Pre: graduate standing; consent of instructor.
- 604 Metaphysics of Language (3) I**
Ontological and historical dimensions of language in metaphysical tradition of Plato, Aristotle, Buridan, Vico, Humboldt.
- 605 Philosophy of Language (3) II** Cheng
Concepts of meaning, truth, existence, reference, predication, quantification; analysis of analyticity and modalities with applications to philosophy, science, art.
- 611 Symbolic Logic II (3) II** Copi
Basic course in the theory of logistic systems covering both the sentential and first 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: 710 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.
- 740 Seminar in Philosophy of Science (3) I**
Pre: graduate standing; consent of instructor.
- 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.

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**
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, Shankara, 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 (Dharmastras) 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.
- 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 of 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** Deutsch, Mehta
Pre: graduate standing; consent of instructor.
- 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**

Physics (Phys) and Astronomy (Astr)

Professors: Cence, Henke, Holmes, Jefferies, McAllister, Orrall, Peterson, Pong, Sinton, Steiger, Tuan, M.S. Watanabe, J. Zirker.
Associate Professors: Bonsack, Dobson, Pakvasa, Stenger, Wolstencroft, Yount. *Assistant Professors:* Boesgaard, Hayes, Nose, Peters, Shyu, Crooker.

Mathematics 231 and Physics 151-154 or 170-273 are prerequisites to all courses numbered 300 or above.

- 100 Survey of Physics (3) I, II**
Introduction to physics; basic concepts. Not open to those with previous college physics or experience beyond Math 134.
- 101 Survey of Physics Laboratory (1) I, II (1, 3-hr. Lb)**
Simple experiments in basic concepts of physics. Pre: credit or concurrent enrollment in 100 or 102.
- 102 Elementary Modern Physics (3) I, II**
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 (1-2) 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. Pre: Math 403 or 402 and Phys 440.
- 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.
- 610 Analytical Mechanics I (3) I**
Dynamics of particles, systems of particles, and rigid bodies; Lagrangian and Hamiltonian equations; special theory of relativity. Pre: Math 403-404 or credit or registration in 400 or 600.
- 611 Analytical Mechanics II (3) 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 403-404 or credit or registration in 400 or 600.
- 623 Stellar Interiors and Evolution (3) II**
Equilibrium structure of stars and their evolution in time. Interpretation of observed color-luminosity and mass-luminosity relations. Nuclear reactions, radiative opacity, convection and model star calculations. Pre: Math 403-404, or credit or registration in 400 or 600.
- 627 Galactic Structure I (3) II**
Stellar statistics, stellar populations, and structure of galaxy. Pre: consent of instructor.
- 629 Astrophysical Techniques (3) II**
Experiments in photoelectric and photographic photometry spectroscopy optics infra-red techniques, stellar classifications, and positional astronomy. Practical observing experience. Pre: consent of instructor.
- 650 Electrodynamics I (3) II**
Potential theory, Maxwell's equations, electromagnetic waves, boundary value problems. Pre: 450; Math 403-404 or credit or registration in 400 or 600.
- 651 Electrodynamics II (3) I**
Relativistic electrodynamics, radiation by charged particles. Pre: 650.
- 660 Advanced Optics (3) I**
Wave motion, interference, diffraction, fundamentals of spectroscopy, optics from viewpoint of electromagnetic theory, lasers. Pre: 460.
- 690 Seminar (1) I, II**
Discussions and reports on physical theory and recent development. Pre: graduate standing or consent of instructor.
- 695 Seminar on Atomic and Solid-State Physics (1)**
Discussions and reports on recent development of atomic and solid state physics. Pre: graduate standing or consent of instructor. May be repeated.
- 700 Seminar on Elementary Particle Physics (1) I, II**
Report and discussion of recent developments in the field of elementary particle physics. Pre: consent of instructor. May be repeated for credit; maximum 4 semesters.
- 711 Advanced Topics in Theoretical Physics (3) I, II**
Course content varies from term to term to cover topics of interest in current theoretical research. Topics may include, but 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.
- 730 Statistical Mechanics (3) I**
Probability and statistics, classical and quantum-mechanical statistical mechanics, relation to thermo-dynamical variables, applications. Pre: 430, 610, 770. (Alt. yrs.)
- 732 Astrophysical Spectra (3) II**
Description and interpretation of spectra of such objects as: stars with extended atmospheres, planetary and gaseous nebulae, H II regions, novae. Pre: 480.
- 733 Special Topics in Astronomy (3) I, II**
Course content reflects special interest of staff and visiting faculty, but includes detailed discussion of planetary astronomy, stellar pulsation, cosmology, interstellar medium, variable stars. Pre: consent of instructor.
- 770-771 Quantum Mechanics (3-3) Yr.**
Physical basis and formulation of quantum theory. Exact solutions of Schrodinger equation and their applications. Approximation methods. Applications to atomic, nuclear, and molecular physics. Pre: 481, Math 403-404 or Physics 600.
- 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.

- 777 Nuclear Physics I (3) I**
Properties and structure of nuclei, reactions, and nuclear models. Pre: 481, 770.
- 778 Nuclear Physics II (3) II**
Elementary particles, nuclear forces, meson theory. Pre: 777 and consent of instructor.
- 780 Atomic and Molecular Spectra (3) II**
Study of atomic and molecular structure by quantum mechanical interpretation of line, band, continuous spectra. Pre: 770.
- 785 Solid-State Theory (3) I**
Quantum theory of crystalline solids. Pre: 440, 770. (Alt yrs.)
- 799 Directed Research (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:* Alschuler, Lee, Nitz, Rohter, Wilson. *Acting Assistant Professor:* Povey.
Professor: Gregor. *Associate Professor:* Vincent.

110 is a prerequisite for all other courses, except when waived by the department.

- 110 Introduction to Political Science (3) I, II** Bwy, Kariel
Introduction to political problems, systems, ideologies, processes.
- 300-301 Political Thought (3-3) I, II** 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
Genesis, organization, expression, efficacy of political demands.
- 333 American Government (3) I, II** Miwa
Organization and functioning of American political system.
- 335 Topics in Policy Formation (3) I, II** Cahill, Neubauer, Nitz
To be pre-announced. Recent topics include: Public Opinion and Politics, Democratic Theory, Politics of Poverty, Personality and Politics, Community Politics.
- 340-341 Comparative Government and Politics (3-3) I, II** Alschuler, Bwy, Kuroda, Paige, Stauffer
Integrated introduction to comparative political institutions and patterns.
- 345 Topics in Comparative Government and Politics (3) I, II** Alschuler, 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, Wilson
Each semester a topical or chronological section on normative Western political thought; in addition, sections with geographical delimitation (as America, Asian, etc.) offered as staff conditions permit.
- 620 American Government (3) I, II**
At least one section a semester, with focus of sections varying among national, state, local governments, and special topics.
- 630 International Relations (3) I, II** Chadwick, Haas, Jacob, Levi, Kent, Lee, Rummel, Vincent
At least one section a semester, with focus of sections varying among foreign policy, international law, theoretical problems in international relations, global or regional organization.
- 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 of 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 of 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, Vincent**
Pre-announced problems of both international organization and politics; at least one section a semester.
- 740* Seminar: Comparative Government and Politics (3) I, II Alschuler, Bwy, Kuroda, Stauffer**
Pre-announced topics; at least one section a semester.
- 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, Tabb**
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, Overbeek, 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.
- 750 Interdisciplinary Seminar in Population Studies (3) II Staff**
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, Crowell, A.L. Diamond, Digman, Herman, Johnson, Staats, Tharp, Weaver. *Associate Professors:* Blanchard, Dubanoski, Gallimore, MacDonald, Mansson, Shapiro, Watson. *Assistant Professors:* Carlson, 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, 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.
- 425 Psychological Testing (3) I**
Rationale of test construction, validation, and administration; fundamentals of statistical test theory. Pre: 216.
- 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.
- 431 Verbal Learning and Memory (3) II**
Theories, models, and mechanisms of verbal learning and memory, basic variables, research procedures, design, and methodology. Pre: 100 or consent of instructor.

- 471 Environmental Psychology (3) I**
Psychological aspects of problems of ecology, environment, and the future. (Cross-listed as Arch 471)
- 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: 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.
- 604 Scaling Methods (3) II**
Theory and construction of major types of scales with examples from education, psychology, sociology. Pre: 602 or equivalent. (Identical with Ed EP 729.)
- 605 Problems of Measurement and Evaluation (3) II**
Theory of measurement and evaluation; statistical and psychological analysis of tests and scales. Pre: 425 or equivalent, 601, 602. (Identical with Ed EP 709.)
- 606 Multivariate Methods (3) I**
Advanced regression analysis, factor analysis, canonical analysis, grouping methods. Pre: 602. (Alt. yrs.)
- 607 Introduction to Mathematical Models (3) II**
Logic and structure of mathematical models; their application to various areas of psychological theory. Pre: 602. (Alt. yrs.)
- 630 Experimental Method (3) I**
Research methodology in experimental psychology.
- 631 Methods in Social Psychology (3) I**
Laboratory and natural environment methods in social psychology; representative investigations. Pre: 322 or equivalent.
- 633 Comparative Psychology (3) II**
Comparative study of natural behavior, learned behavior, sensory processes, social behavior in animals.
- 634 Physiological Psychology (3) I**
Relationship of central and peripheral nervous systems to behavior.
- 635 Sensory Processes and Psychophysics (3) II**
Basic research and theories describing the sensory systems.
- 636-637 Learning and Motivation (3-3)**
Consideration of principal findings and major theories in learning and motivation.
- 638 Perception (3) II**
Historical review of major theories and research in perception.
- 640 Verbal Learning (3) I**
Basic variables, processes, and theories in field of verbal learning and memory.
- 641 Skill Learning (3) II (alternate years)**
Human learning, with special reference to information processing, attention, memory, motor involvement in performance of skilled acts.
- 643 Cognitive Processes (3) II**
Theory and basic experimentation in concept formation, problem solving, logical reasoning, creative thinking.
- 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 (alternate years)**
Conflict, dissent, community issues, problems; social change and its relation to mental disorder.
- 670 Applied Social Psychology (3) II**
Problems in use of social psychological principles in human affairs, including multi-disciplinary considerations.
- 675-676 Behavior Assessment (2-2) Yr.**
Principles and methods of assessing behavior, such as direct observation, interviewing, psychological examination. Pre: consent of instructor.
- 677-678 Behavior Assessment Laboratory (1-1) Yr.**
Practicum experience in behavior assessment methods; must be taken concurrently with 675-676.
- 681 Childhood Behavior Disorders and Intervention (3) I**
Disturbances in the development of child behavior, and techniques for amelioration. Pre: 675, 676.
- 682 Adult Behavior Disorders and Intervention (3) II**
Disturbances in adult behavior, and techniques for amelioration. Pre: 675, 676.
- 683 Social Behavior Disorders and Intervention (3) I**
Development of social problems such as crime and delinquency, substance abuse, cultural deprivation, etc., and techniques for amelioration. Pre: 675, 676.
- 685 Child Learning Laboratory (3) I, II**
Application of learning theory and procedures to individual and group work with children in controlled studies; basic to behavior modification procedures in clinical and educational psychology. (Identical with Ed EP 685.)
- 687 Practicum in Behavior Change: Community Issues (3) I**
Supervised experience in educational, mental health, correctional, consulting, or community action agencies. Pre: consent of instructor.
- 688 Practicum in Behavior Change in Children (3) I**
Supervised experience in analyzing and developing methods for therapeutic change in children. Pre: consent of instructor.
- 689 Practicum in Behavior Change in Adults (3) II**
Supervised experience in analyzing and developing methods for therapeutic change in adults. Pre: consent of instructor.
- 690 Practicum in Clinical Psychology (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.

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, Long, Seifert, White. *Assistant Professors:* Chappell, Crawford, Douglass.**150 Introduction to World's Major Religions (3) I, II**

Introduction to the world's major religions—Hinduism, Buddhism, Shinto, Confucianism, Taoism, Judaism, Christianity, Islam.

151 Religion and the Meaning of Existence (3) I, II

Introduction to basic ideas and issues of contemporary religious thought as related to the question "What is the meaning of existence?"

200 Understanding the Old Testament (3) I

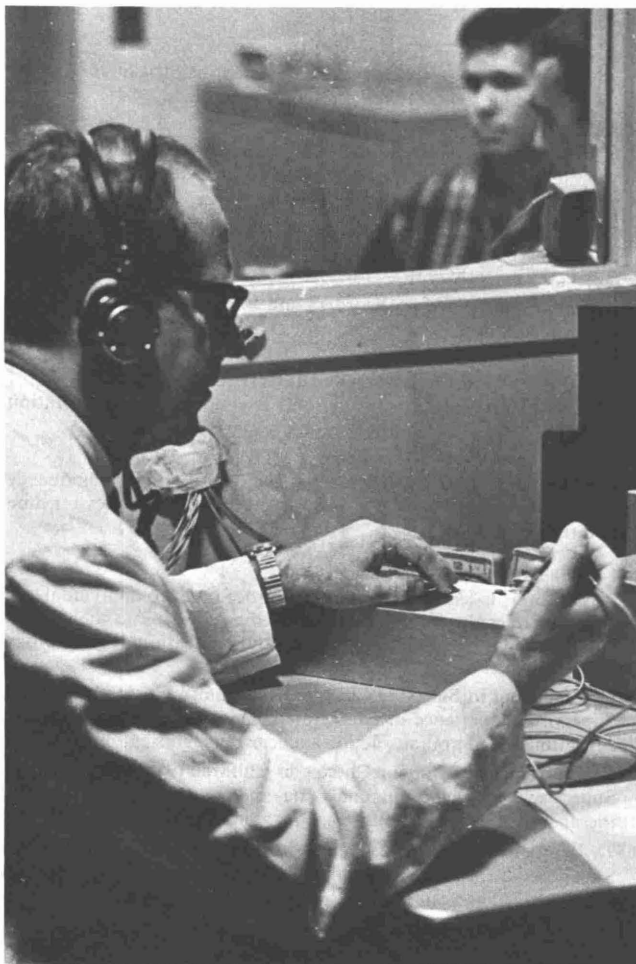
Study of developing beliefs and practices of Hebrew religion as set forth in the Old Testament. Emphasis on meaning of its faith for the modern world.

201 Understanding the New Testament (3) II

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 1971-72.)

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.**474 Religion, Reform and Revolution (3) I****Douglass, Bobilin**
Analysis and discussion of classical and recent sources dealing with religion and rapid social change, non-violence, black power, and theology of revolution.**480 Russian Religion (3) I****Klimenko**
Historical background of Orthodox Christianity in Russia from the beginnings of the 9th century and following up to the 19th century and its impact on people and culture.**481 Russian Religion (3) II****Klimenko**
Russian State Church, rational and mystical sects from the 19th century through the Communist Revolution up to the present. Marxism and religion.**482-483 The History of Living Religions (3-3) Yr.****Bobilin, White**
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) I****Crawford**
Basic systems and application of Christian ethics. Emphasis on differing thought on major social issues, analysis of significant factors affecting differing thinkers and indication of relevance of Christian thought to contemporary social problems.**487 Religion in the Thought of Weber and Mannheim (3) II****Bobilin**
Study of religion and its significance for social thought and research in the writings of Max Weber and Karl Mannheim. Pre: upper-division standing or consent of instructor.**488 Theology of Peace (3) I****Douglass**
Study of the nature of peace, revolution, and war, violence and non-violence, as revealed especially in contemporary history, from a theological perspective.

- 499 Directed Reading or Research (3) I, II** Staff
Pre: 2.7 or 3.0 in religion, consent of instructor.
- 630 History and Theory of the Study of Religion (3) I** White
Focus on significant events, phenomena and ideas in the history and practices of religions. Insights and methodologies of scholars from anthropology, history, philosophy, political science, psychology, and sociology will be related to the history and practice of religions.
- 651 Selected Problems of Theology (3) I, II** Staff
Pre: graduate standing, consent of instructor. May be repeated for credit.
- 682 Studies in Indian Religion: Bhakti (3) I, II** White
Advanced study of one of the religions of India. Pre: 482.
- 685 Studies in Japanese Religion (3) I**
Advanced study of one of the religions of Japan.
- 784 Religion and Social Change in Asia (3) II** Bobilin
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 Professors: Dobson, Newhouse. Assistant Professors: Fellows, Haraway, Lipparelli. Instructors: Bigelow, Hubbard, Nishimoto, Weiner, Wilson.

- 121-122 Introduction to Science (4-4) Yr. (3L, 1Lb)**
Fellows (121), Dobson (122)
Characteristics of science and interaction of society with science, illustrated by topics from biological science (121) and physical science (122).
- 124 Technology, Ecology, and Man (4) II** Newhouse
Man's ecology in past, present, and future as seen by analysis of the interrelationships between science and technology, the means these provide for manipulation of environment, and the effects of this manipulation on environment and on human populations. Pre: 121.
- 320 The Atoll (3) II** Newhouse
Formation, structure, distribution and biotas of atolls. Emphasis on the atoll as an ecosystem and as one of man's environments. Pre: one year of introductory science. (Alt. yrs.; offered 1971-72.)
- 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.; not offered 1971-72.)
- 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, C.K. Cheng, Freeman, Hormann, Kassebaum, Volkart, Yamamura. Associate Professors: Babbie, Barringer, Cho, Palmore, Sakumoto, Sunshine, Swift, Won, Yamamoto. Assistant Professors: Chandler, R. Cheng, Endo, Steinhoff, Weinstein.

Students should consult sociology departmental adviser and the current description 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.
- 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**

- 610 Methods and Statistics I (3) I**
Logic of social research; principles of conceptualization, formal design, observation. Pre: 472 or equivalent.
- 611 Methods and Statistics II (3) II**
Logic of social research; statistical treatment of social data. Pre: 610 or equivalent.
- 612 Classics of Sociological Theory (3) I**
Study in depth of selected works by early sociologists such as Emile Durkheim and Max Weber. Influence of such works upon modern sociology. Pre: consent of instructor.
- 613 Concepts and Propositions in Sociology (3) II**
Survey of major propositions in modern sociology. Sociological concepts such as primary group, social role, social class related to these propositions; their place in sociological theory and research. Pre: consent of instructor.
- 714 Seminar in Methods of Research (3) I, II**
Individual or group projects providing training in (1) the design of social research, (2) field techniques, (3) survey research design, (4) survey data analysis, (5) problems in comparative research. Pre: consent of instructor.
- 715 Seminar in Social Statistics (3) I, II**
Advanced statistical procedures; may include individual projects. (1) Measurement of social variables, (2) data analysis. Pre: consent of instructor.
- 716 Seminar in Theory Construction (3) II**
Application to sociology of logical or mathematical deductive systems. Nature of such systems and their application to sociology. (1) Logical models, (2) mathematical models. Pre: consent of instructor.
- 720 Seminar in Social Organization (3) I, II**
Structural elements of human group life. (1) Industrial sociology, (2) social stratification, (3) social control. Pre: consent of instructor.
- 108 721 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.
- 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**

Speech-Communication (SpCom)

Professors: Bilborrow, Bystrom, Dykstra, Ellingsworth, Heinberg, Klopff, Rider. *Associate Professors:* Breneman, Byers, Harms, Welden, Wong. *Assistant Professors:* Ekroth, Larson, Nishiyama, Ogawa, Oxford, Rosario, Sanderson, Sitaram. *Instructors:* Kido, Kunimoto, Marciel. *Assistant Professor:* Krause.

- 145 Interpersonal Speech-Communication (3) I, II**
Introduction to speech-communication theory through participation in interpersonal communication activities.
- 200 Introduction to Speech-Communication Theory (3) I, II**
Introduction to theory of speech-communication through models of the process. Examination of major variables of source, message, medium, receiver, and how their interaction affects speech-communication. Pre: 145 or equivalent.
- 201 Message Development (3) I, II**
Theory and practice in development of speech-communication messages and the selection and use of appropriate media. Pre: 200 or equivalent.
- 211 General Phonology (3) I, II**
Dynamic phonology of American English. Systematic goal-oriented study of dialects in use. Modification of speech for particular purposes including pedagogy.
- 221 Speech-Communication in the Management of Learning (3) I, II**
Overview of principles of speech-communication management: message composition, media utilization and evaluation of speech-communication events, with special reference to problems of teaching-learning. Part of pre-service or in-service preparation of teachers; not intended for majors in speech-communication. Pre: 145 or 200.
- 231 Reading Aloud (3) I, II**
Principles of interpretative reading. Practice in textual analysis and in transmitting intellectual and aesthetic content of literature. Pre: 145 or 200.
- 251 Public Speaking (3) I, II**
Adaptation of rhetorical theory to particular speakers, audiences, occasions. Extensive practice in planning and delivering speeches. Pre: 145 or 200.
- 253 Argumentation and Debate (3) I**
Adapting ideas about communication theory to structuring of argumentative strategies for social action. Extensive practice in formal argument. Pre: 145 or 200.
- 261 Broadcasting (3) I**
Analysis and survey of radio and television as communications media and as industries.
- 262 Radio-TV Speech-Communication (3) I, II**
Preparation and performance of radio-television program material. Emphasis on microphone and camera techniques. Suitable for the non-specialist.
- 263 Broadcast Laboratory (3) I**
Intensive introduction to equipment and operation of radio and television studios, and the roles of members of the production team. Basic production techniques.
- 304 Speech-Communication Characteristics of the Source (3) I, II**
Acoustical, anatomical, physiological and psychological relationships involved in processes of communication between source-receivers. Pre: 145 or 200.
- 305 Language in Speech-Communication Behavior (3) I, II**
Effects on communication process attributable to language forms and meanings. Pre: 201 or concurrent registration.
- 333 Storytelling (3) I, II**
Esthetic communication through storytelling for entertainment and education. Oral tradition; analysis of story types; techniques of preparation and presentation; performance.
- 352 Group Speech-Communication (3) II**
Study of discussion within context of small group. Effects of variables such as group organization, leadership, membership, goals on how group attempts to achieve its purpose. Pre: 145 or 200.

- 364 Broadcast Production (3) II**
Theory in practice of planning, producing, and directing programs for radio and television. Pre: 263.
- 365 Development and Writing of Broadcast Messages (3) I**
Theory and practice in the design and writing of broadcast messages. Emphasis is placed on the purpose of the message, available alternatives, and the form and style. (Alt. yrs.) Pre: 263.
- 366 Strategies and Methods in Broadcast News (3) II**
Comparative study of print and the broadcast media as purveyors of news; the strategies and techniques available to the broadcaster in the selection, editing, and presentation of news.
- 367 Strategies in Management of Broadcast Stations (3) I**
Detailed study of the functions, duties, and problems of the management team of broadcast stations and the strategies available to them in solving problems.
- 384 Intercultural Communication (3) I, II**
Analysis of major variables affecting interpersonal communication between persons of differing cultural backgrounds. Pre: none. Social science background desirable.
- 406 Evaluation of Speech-Communication (3) I, II**
Development of skill in evaluation of appropriate variety of speech-communication activities. Pre: 200, 201, 304, 305, or consent of instructor.
- 412 Phonetics and Phonemics of American English (3) I, II**
Major transcription systems of American English sounds. Application of English phonology to problems of acceptable pronunciation in English language learners. Role of teacher in developing materials and techniques based on phonetic and phonemic analysis. Pre: 211 or Ling 202 or Ling 620.
- 434 Advanced Interpretative Reading (3) I, II**
Problems in selected literary forms; development and arrangement of programs; introduction to group interpretation; individual and group reports and performances. Pre: 231, Eng 252, or consent of instructor.
- 454 Strategies of Extended Speech-Communication (3) I**
Investigation of the public speaker's role in planning and carrying out programs of social action. Pre: 145 or consent of instructor.
- 468 Broadcasting and the Public (3) I**
Relationship and interaction between broadcasting agent, government regulatory agencies, and public. Development of bases for critical evaluation of educational, cultural, and economic significance and impact of broadcasting.
- 469 World Broadcasting (3) II**
Comparative analysis of broadcasting systems in the world and radio and television communication between countries and cultures.
- 491 Semantics (3) I, II**
Understanding language; verbal meaning and implication; roles of perception and assumption (inference and judgment) in human relationships.
- 499 Special Problems (v.) I, II**
(1) Speech-communication behavior; (2) teacher preparation; (3) oral interpretation; (4) public address; (5) broadcasting; (6) microsystems; (7) macrosystems. Pre: consent of instructor or department chairman.
- 521 Process in Modification of Speech-Communication Behavior (3) I, II**
Course designed for in-service teachers. Provides a theoretical background and practical applications; designed to enable teachers to become planners and managers of learning systems in the area of speech-communication development. Pre: none.
- 601 History of Theory and Trends in Speech-Communication Research (3) I**
Examination of major theories and hypotheses about speech-communication which have accompanied trends in research. Study of current research methods and their application to contemporary problems. Pre: 406 or consent of instructor.
- 602 Methods of Scientific Research in Speech-Communication Systems (3) II**
Study of methods of scientific research. Development of competence in fundamental skills necessary for completion of a thesis. Pre: 601 and one of the following—671, 672, 681, or 682.
- 613 Experimentation in Language Acquisition and Modification (3) I, II**
Problems in language acquisition and modification. Use of equipment designed to aid language acquisition. Creation of language-learning materials. Innovation of special techniques for different language-learning situations. Pre: 305, 406, or 602 or equivalents.
- 631 Seminar in Interpretation (3) I**
Current literature in interpretation; reports; lecture-recitals. Pre: consent of instructor.
- 651 Seminar in Rhetoric and Public Address (3) II**
Review of rhetoric and public address. Pre: consent of instructor.
- 671 Speech-Communication in Control of Cognition (3) I**
Research and research techniques in the facilitation via speech-communication of the learning and accessing of various types of meaningful verbal information. Pre: 305, 406 or equivalents.
- 672 Speech-Communication in the Control of Behavior (3) II**
Research and research techniques in the use of speech-communication to shape psychomotor skills and relevant attitudes. Pre: 671.
- 681 Speech-Communication Process Analysis (3) II**
Description of the problems involved in analyzing various aspects of the speech communication process. Theoretical frameworks of analysis. Pre: permission of instructor.
- 682 Speech-Communication: Theories of Source-Receiver Behavior (3) II**
Description and analysis of some major behavioral science theories which describe and predict the behaviors of sources and receivers in communicating. Pre: permission of instructor.
- 696 General Seminar (3) I, II**
Seminar on selected topics in speech-communication. May be repeated with permission of department chairman. Pre: consent of instructor and department chairman.
- 784 Seminar in Intercultural Speech-Communication (3) I**
Focus on the major variables of speech-communication in an intercultural context. Linguistic and non-verbal factors. Possibilities for training in intercultural, face-to-face communication roles. Pre: 384 or at least one course in cultural anthropology, or permission of instructor.
- 785 Seminar in Speech-Communication in Innovation (3) II**
Role of speech and other forms of communication in facilitating the adoption of new ideas and practices. Analysis of client systems and their relation to the agent of change. Development of criteria for measuring change. Pre: permission of instructor.
- 799 Research (v.) I, II**
See instructions under 499.
- 800 Thesis (v.) I, II**

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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
	43-46

Lower Division Business Requirements

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
	52-55

Additional Requirements for Lower Division Business Students in Travel Industry Management

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 pp. 32-33*);
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 taken GE 251 or BAS 351 or ISc 301 and 302.

*Travel Industry Management is an exception; see requirements listed under majors.

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 Statistics. 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.

BUSINESS ADMINISTRATION COURSES

See p. 3 for a discussion of course descriptions.

Professors: Adler, Bailey, Baird, Barnet, Bradley, Buchele, Corbin, Crampon, Ferguson, Gee, Gilson, Hook, Ige, Jacobsen, Laitila, Lowe, Miccio, Neeley, Pendleton, Richman, Seo, Spencer, Taussig. *Associate Professors:* Bess, Carol, Chung, Congdon, Cotlar, Currie, Faison, Freitas, Hopkins, Jacobs, Kessner, Kim, Kramer, Lie, Reeser, Sprague. *Assistant Professors:* Bell, Bonbright, Bury, Cox, Dawson, Edge, Ellis, El-Ramly, Feisthamel, Hicks, Holtfreter, Ibrahim, Jonish, Kelley, Kesling, Kimball, Kirkpatrick, Marcus, Marsh, Metelka, Moscove, Otsuki, Peterson, Portwood, Stellmacher, Vlachos, Williams, Worthley. *Instructors:* Armstrong, DuMont, Hall, Hamilton, Jungbluth, Kanehiro, Karbens, Mau, Omori. *Lecturers:* Helber, Hill, Mednick, Mett, Reid, Savio, Witwer.

DEPARTMENT OF ACCOUNTING AND FINANCE**Accounting (Acc)****201-202 Elementary Accounting (3-3) Yr.**

Theory and practice of income determination and asset valuation. Preparation and analysis of statements; uses for decision making. Pre: sophomore standing.

305 Cost Accounting (3) I, II

Cost determination and analysis as a tool of management in such areas as pricing and make, rent or buy decisions. Includes job order, process, direct and standard costs. Pre: 202.

307 Income Tax Problems (3) I, II

Study of accounting problems related to income taxation, with emphasis on income, exclusions from income, deductions, and credits in the determination of income tax liability and the preparation of income tax returns. Pre: 202.

321 Financial Accounting I (3) I, II

The accounting process, and the application of generally accepted accounting principles to accounting for cash, receivables, inventories, plant and equipment and current liabilities. Pre: 202.

323 Financial Accounting II (3) I, II

Accounting for corporate equities, long-term debt, investments, funds flow, analysis of financial statements, and partnerships. Pre: 321.

325 Financial Accounting III (3) I, II

Venture accounting, consignments, installment sales, insurance, branch accounting, consolidated statements, estates and trusts, statement of affairs, and foreign exchange. Pre: 323.

331 Auditing (3) I, II

Principles of conduct of a business audit. Practical aspects of auditing emphasized by problems. Pre: 305, and 323 or 365.

335 Governmental Accounting (3) II

Accounting classification, budgetary procedure, fund accounting, revenues, operating costs. Pre: 202.

341 Accounting Systems and Procedures Analysis (3) II

Examination of accounting subsystems and the role of computers in the accounting process. Pre: 202. BAS 351 recommended.

361 Accounting for Managerial Planning (3) I, II

Profit planning, budgeting, programming budgetary systems, projecting flows of funds, strategic and long-range planning. 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.

437 Advanced Tax Problems (3) I, II

Emphasis on advanced aspects of accounting and tax problems as related to individuals, partnerships, estates, trusts, and corporations; a study of estate and gift taxation also included. Pre: 307.

445 Advanced Cost Accounting (3) I, II

Application of costs and other control techniques to complex managerial costs and problems dealing with performance evaluation, intra-company transfer pricing, return on invested capital, internal profit measurement. Pre: 305.

703 Advanced Auditing (3) I

Advanced studies of auditing standards, internal control, professional ethics and audit reports, including those required by the S.E.C., and professional examinations. Pre: Acc 331.

704 Computers and Accounting in Business Systems (3) I

The theories of organizations, communications, measurement, information, file organization, and system design, and their applications in the business environment with emphasis on simulation, feedback, control, definition of total systems and evaluation of systems design.

705 Advanced Accounting Problems (3) I

Complex accounting problems with emphasis on assets, liabilities, owners' equity, partnerships, corporations, cost 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 the American Institute of C.P.A.'s and the American Accounting Association. Pre: consent of instructor.

707 Accounting for Management Planning and Control (3) II

Profit planning, budgeting, programming budgetary systems, projecting flows of funds, strategic and long-range planning.

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.

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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 permission of instructor and Fin 300.

311 Investments (3) I, II

Mechanics of investment banking and markets, corporate and government securities, selection and security analysis, risk programming and establishment of investment policy for individuals and institutions. Pre: 300.

315 Security Analysis and Portfolio Management (3) I or II

Familiarizes the student with recent advances in econometric security valuation models, portfolio selection and techniques, methods of appraising portfolio performance. Discussion will concentrate on both theory and application. Pre: BAS 301-302 or permission of instructor and Fin 300.

321 International Business Finance (3) 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 will be 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 the areas of finance, investments, and the capital markets. Topics will vary from semester to semester. Course is designed to prepare the student for independent research. Pre: permission of instructor.

733 Problems in Business Finance (3) I or II

Application of financial principles and analytical techniques to current financial problems and developments from view point of business firm.

734 Investment Analysis and Management (3) 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

What insurance buyers should know about protecting income against illness or premature death; protection of home and business against property losses; third party liability.

311 Property and Casualty Insurance (3) I

Protection against loss of personal and business property and income occasioned by fire and allied perils, crime, and transportation risks. Emphasis also upon third party liability coverages, general liability, automobile insurance, and workmen's compensation.

331 Life Insurance (3) II

Policy forms; calculation of premiums, reserves, non-forfeiture values; underwriting; regulation of policy provision; related coverages.

Law (Law)

300 Legal Environment of Business I (3) I, II

Introduction to legal environment in which business operates and some of the legal principles applicable to effective business administration. Particular attention given to government regulation of business and to laws of contracts, agency, partnerships, and corporations.

311 Legal Environment of Business II (3) I

Critical and penetrating study of legal environment of business administration, including laws relating to corporate securities, monopolies, mergers and acquisitions, competition and labor, and the functions of regulatory agencies in these fields. Material presented as it relates to a beginning, operating, or terminating business. Pre: 300.

313 Law for the Accountant (3) II

Intensive study of those basic areas of law not covered in Law 300 in which the accountant should have special knowledge. Included are such topics as the law of sales, commercial paper, bailments, insurance, bankruptcy, property, trusts and wills. Special emphasis on subjects represented by questions appearing in the business law section of the C.P.A. examinations. Pre: 300.

786 Legal Environment of Business (3) I

Analysis of contemporary American business and contractual law with critical examination of contracts, agencies, corporations, trusts, partnerships, Uniform Commercial Code and anti-trust legislation.

Real Estate (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) II

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.

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 MANAGERIAL 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.

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: BAS 121.

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.

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.

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: BAS 122 or 125 with a grade of B or better.

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: BAS 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 Research (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: BAS 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: BAS 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: BAS 351 or equivalent work experience. No credit for experienced computer people or those with credit for BAS 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: BAS 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: BAS 783 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 the current social and economic issues in the American economy as they affect business and industry. Acquaintance with the existence of issues and their complexity stressed.
- 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 the 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 BEc 201 or AgEcon 220 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: BEc 201.
- 343 Business Conditions Analysis (3) I, II**
Study of the interrelationships of macro economic events and developments to micro economic 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: BEc 201.
- 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.
- 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, multi-factors and multiproducts, technological change; capital budgeting; input-output analysis and programming techniques. Pre: BEc 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: BEc 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: BEc 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.

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: Mgt 302.

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: Mgt 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: Mgt 301.

344 Seminar in Management (3) I, II
In-depth analysis of selected current practices and trends in administration. Pre: 300, 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: 2nd semester senior standing.

743 Selected Topics in Organization Theory and Practice (3) I, II
Evolution of organization theory and practice, with major emphasis on contemporary organizational problems, issues, and developments.

744 Comparative Management (3) I, II
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) I, II
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 view point. 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) I, II
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) I, II
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) I, II
Study and discussion of significant topics and problems in the field of marketing. Pre: consent of instructor and usually senior standing.

371 Consumer Behavior
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) I, II
Methods and organization peculiar to international marketing, with emphasis on practical and technical aspects.

391 Marketing Strategies (3) I, II
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) I, II
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) I, II
The variables that affect or control the communication process; theoretical considerations are stressed in presenting hypotheses, techniques, and research studies. Within this framework advertising, personal selling, and promotion are viewed analytically.

755 Marketing Research Methodology (3) I, II
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 Selection and Training (3) I, II
Policies and procedures essential to staffing, developing and maintaining proper relationships at all organizational levels.

353 Personnel Compensation (3) I, II
Wage and salary systems, payments and incentives; fringe benefits, evaluation of jobs at all levels.

- 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) I, II**
Principles and concepts of collective bargaining; methods of settling disputes over rights and interests.
- 365 Labor and Social Legislation (3) I, II**
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) I, II**
Review and analysis of the basic factors which distinguish private from public employment relations, and examination of the development of recent legislation and programs on the federal, state and municipal levels. Specific consideration will be given to current problems on the mainland and Hawaii. Pre: 361 or permission of instructor.
- 763 Personnel Administration (3) I, II**
Analysis and critical evaluation of those issues, policies, and trends in personnel administration.
- 764 Advanced Personnel Administration (3) I, II**
Intensive analysis of a limited number of specific subjects in the field of personnel administration.
- 765 Labor Relations (3) I, II**
Review of labor history, labor legislation and labor problems including collective bargaining for public employees.
- 766 Problems of Collective Bargaining (3) I, II**
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 world-wide travel industry is such that some knowledge of all areas is mandatory, although the TIM programs provide opportunities for special attention to each field as consistent with the student's professional interests.

EMPHASIS A—TOURISM ADMINISTRATION

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
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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
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Transportation (Trans)

- 351 Economics of Transportation (3) I**
Development of major transportation systems and their marketing function in American economy as integral part of process of physical distribution. Pre: Econ 151 or BEc 341.
- 352 Passenger Transportation (3) II**
Analysis of models of passenger transportation, including rates and services in urban, local, intrastate, interstate and international operation, with particular emphasis on Pacific areas. Impact on areas served. Regulations of carrier operation and passenger travel. Pre: Econ 151 or BEc 341.
- 453 Air Travel Management (3) II**
Designed to develop students' understanding of the breadth and challenge of strategic problems—current and future—which confront airline and airport executives. The program will cultivate an awareness of the environment in which the airline and airport industry must function, both today and in the future. New techniques and management tools employed by effective airline and airport managers analyzed. Pre: 351, 352.

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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 Principles (3) I, II**
Basic management functions: planning, controlling, organizing, staffing, directing; emphasis on human factors and quantitative analysis in developing sound philosophy of management. Critical evaluation of current practices in business firms. Emphasis on principles as they affect hotel, restaurant, tourism industries. Pre: 101.
- 314 Institutional Purchasing (3) I, II**
Introduction to, and analysis of, the procurement responsibilities in travel industry management. Special emphasis is given to the organized institutions supplying hotels, restaurants, airlines, etc. and the legislation which controls the standards of industrial supplies and goods. 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 is required based upon the student's written proposal of content and objectives of his course program. A seminar course under the direction of a single faculty member who will utilize other faculty resources as required by individual student program.

774 Land Resource Development (3) II

Analysis of the techniques of planning, developing and marketing of land resources. Cross-listed as RE 774.

775 Advanced Travel Industry Management (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 implementary institutions.

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 the 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 Methods (3)

An elementary survey of basic tools for quantitative analysis for business.

Bus 504 The Management Process (3)

Concepts involved in the management of an organization.

Bus 505 Marketing and Operations Management (3)

Producing and marketing in today's business environment.

M.B.A. COURSES**GROUP II—Advanced Disciplines and Functions (Graduate Core)****Bus 601 Managerial Accounting (3)†**

The evaluation and utilization of cost and other quantitative data with emphasis upon its contribution to managerial planning, control and decision making.

Bus 611 Statistical Methods of Business Analysis (3)

Mathematical methods and techniques of statistical inference used in business.

Bus 621 Managerial Economics (3)

Applications of economic analysis to wide variety of problems in business. Topics include management decision theory, profit, demands, production, cost, pricing, competition, capital budgeting. Pre: Bus 501, 502, 503 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.

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.

Bus 651 Marketing (3)

Analysis of the fundamental problems in marketing management and modern methods of attacking them. Emphasis is upon strategy, decision-making, and the relationship of the firm to its customers.

GROUP III—See individual departmental listings.**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.

*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.







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 state DOE grants the Professional

Teacher's Certificate (Class III). This post-baccalaureate work may be pursued in full-time study or part-time in conjunction with teaching.

Undergraduate work leading to a Bachelor of Science degree in recreation is also offered in the College, and substantive service courses are provided in the areas of health, physical education, and industrial arts.

The College currently offers Master of Education degrees in educational administration, educational communications, educational foundations, elementary education, secondary education, and the M.Ed. and Ph.D. in educational psychology. Information concerning these programs can be obtained from the Graduate Division of the University and from the departments offering the various programs.

Research and development and community service are two other very important aspects of the College's functions. The College provides professional leadership and service to projects in the Pacific islands and Southeast Asia. As the only state-supported teacher education institution in Hawaii, the College, particularly its research and development centers, has responsibility for leading the advance of education in the state through research studies on the learning process and curriculum development of new materials and methods for teaching.

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.

General Education

The general education core requirements of the College of Arts and Sciences constitute most of the non-major courses in the liberal art 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.
 - 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.

**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.*

*Specific requirements are available in the College of Education, Division of Field Services.

- 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:
 - 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.



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- c. Student Teaching: 10 credits, full time for one semester; 2 credits, in 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.

*Specific requirements are available in the College of Education, Division of Student Services.

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; and Ed CI 333.

Arts: 60 credits in art, including: 18 credits in art history or related studies (aesthetics, music, etc.) including Art 270 and 280; 42 credits in studio courses, including Art 101, Studios A, B, C, D; and Ed CI 336.

Biology: 32 credits in biology; general physics; organic chemistry; introductory geoscience; history/philosophy of science; introductory calculus, Ed CI 333.

Business Education: 36 credits in business, including a minimum of 21 credits in economics, and skills courses in typewriting, shorthand, business and secretarial machines and accounting, and Ed CI 348, 349.

Chemistry: 32 credits in chemistry; general and modern physics; introductory biology and geoscience; history/philosophy of science; integral calculus; Ed CI 333.

Distributive Education: 36 credits in business, including a minimum of 21 credits in economics, marketing and management; and Ed CI 349, 460.

English: 60 credits in English and related subjects; and Ed CI 330, 331, 345.

Foreign Languages: 60 credits in a foreign language (Chinese, Japanese, French, German, or Spanish) and related subjects; and Ed CI 335.

Geosciences: 32 credits in geosciences; general and modern physics; inorganic chemistry; introductory biology; history/philosophy of science; integral calculus; Ed CI 333.

Health and Physical Education: 60 credits in health and physical education; and Ed CI 343.

Home Economics Education: 65 credits in home economics including management and family economics, housing and equipment, clothing and textiles, food and nutrition, human development, and sciences (minimum of 20 credits); and Ed CI 371.

Industrial Arts Education: 60 credits in industrial and technological education; and Ed CI 346, 347.

Mathematics: Junior High—30 credits in mathematics; Senior High—42 credits in mathematics; and Ed CI 334.

Music, Instrumental: 74 credits in instrumental music and related subjects; and Ed CI 337.

Music, Vocal: 70 credits in music theory and voice and related subjects; and Ed CI 337.

Physics: 32 credits in physics; inorganic, qualitative and physical chemistry; introductory biology and geoscience; history/philosophy of science; differential equations; Ed CI 333.

Social Studies: 60 credits in social sciences (anthropology, economics, geography, history, political science, psychology, sociology, or inter-disciplinary courses in the social sciences) to include a major from one of the disciplines, the remainder to be in related social sciences; and Ed CI 332.

Speech: 60 credits in speech and related subjects; and Ed CI 339.

Program for Vocational Agriculture Education Majors

Prospective vocational agriculture education majors have the options of enrolling in the College of Arts and Sciences for the freshmen and sophomore years, followed by transfer to the College of Education for the junior, senior, and fifth years, or in the College of Tropical Agriculture for the bachelor's degree, followed by transfer to the College of Education for the fifth year. To be admitted for work in the College of Education, vocational education majors must meet the general entrance requirements of the College.

Program for Business Education and 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

*Specific requirements are available in the College of Education, Division of Student Services.

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 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's degree and Professional Diploma. Their major teaching field work is completed through courses taken in the departments of human development, fashion design, textiles and merchandising, food and nutritional science, and home economics.

Program for Industrial Arts, Technical and Industrial Vocational Education Majors

To prepare competent teachers for expanding industrial arts education and technical-industrial vocational education positions in the junior-senior high schools and community colleges, a coordinated program of preparation has been established between the College of Education and the Honolulu Community College. Prospective teachers enroll in the Honolulu Community College for their first and second years of the program, taking courses in technology and general education. Candidates transfer to the College of Education at the end of their sophomore year to complete professional education and teaching field major work during the junior, senior, and fifth years.

Program for Community College Teaching

The College of Education in cooperation with the Hawaii community college system is currently operating a program for the preparation of community college faculty. Fellowship support is available for graduate students in this area. Those who are interested should confer with the chairman of the department of curriculum and instruction.

Program for Recreation Leadership Majors

The department of health and physical education offers a program of study leading to a B.S. degree in Recreation Leadership. This four-year program is centered in training leaders in community recreation and related fields of recreation. Interested persons should contact the chairman of the department.

Admission and Graduation Requirements

The College of Education admits students who have junior standing or higher. Applicants pursuing all programs except those leading to the M.Ed. and the Ph.D degrees, must arrange a personal interview with the staff of the College of Education, division of student services. (Personal recommendations are accepted in lieu of interview for out-of-state applicants.) Additional interviews for applicants for the B.S. degree in recreation leadership are arranged with the department of health and physical education.

In addition to the University requirements listed on pp. 24-26 students entering the College are required:

1. To be competent in written English and have adequate speech patterns;
2. to have an absence of emotional or adjustment problems;
3. to provide letters of recommendation giving evidence of being able to adjust to the demands of teaching and to cope with the problems of working with students;
4. to have no physical limitations which would interfere with teaching effectiveness;
5. to present transcripts of all college records showing a cumulative grade-point average no less than that required for admission by the College of Education faculty for any given semester.
6. to submit an application form and all transcripts of previous collegiate work to the division of student services, College of Education, by July 1 for the fall semester, and by November 1 for the spring semester.

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The B.Ed. Degree. The College awards a Bachelor of Education degree upon the completion of four years of work at the University. To be eligible for the B.Ed. degree, the student must:

1. Fulfill all University requirements;
2. complete the College of Education undergraduate curriculum in early childhood, elementary, secondary or special education;
3. acquire a minimum aggregate of 114 semester hours of credit in addition to student teaching;
4. have a cumulative GPA not less than that required for admission to the College;
5. file for graduation and pay \$5 fee at least one semester prior to intended graduation date.

The Professional Diploma. In recognition of successful completion of a post-baccalaureate teacher education program for teaching at the elementary or secondary school level, the College awards the Professional Diploma. To be eligible for the Professional Diploma, the student must:

1. Meet all admission requirements of the College of Education;
2. have been awarded a bachelor's degree from an accredited institution;

3. have successfully completed student teaching;
4. have completed all course requirements for the Professional Diploma;
5. have acquired a minimum of 156 semester hours;
6. have a final cumulative GPA not less than that required for admission to the College;
7. have filed for graduation and paid a \$2.50 fee not later than the semester prior to intended graduation date.

Student Teaching

The division of field services of the College of Education plans for, arranges, and coordinates the student teaching experiences in the elementary and secondary public and non-public schools of Hawaii. In spite of the hundreds of requests for student teaching during the year, selection of assignments will consider as many personal preferences as possible. Semester preferences will be considered to the extent they allow a balance of teachers in the field during the fall and spring.

Prior to registering for student teaching (Ed CI 390), a student is required:

1. To be enrolled in the College of Education as a classified student;
2. to complete a 30-hour field experience with children of the age group requested in student teaching;
3. to have a cumulative GPA not less than that required for admission to the College, and a GPA in the teaching field (secondary level only) not less than 2.3;
4. to be cleared for student teaching by the division of student services;
5. to be accepted for student teaching by the division of field services upon the recommendations of the instructor(s) of the appropriate methods course(s);
6. to request student teaching of the division of field services no later than October 15 or March 15 for teaching during the subsequent semester. (There is no student teaching during the summer session.)

Certification Programs

Administrative Intern Program. The administrative intern program is sponsored by the College and the state Department of Education. To be admitted to the program, the candidate must have two years of teaching experience, hold the professional certificate and successfully pass the annual examinations administered by the state Department of Education. Interested candidates should confer with the chairman of the department of educational administration. Successful completion of the administrative intern program is a requirement for the Professional School Administrator's Certificate.

Certification in School Psychology. There are two levels in the school psychology program—the certificate level and the doctoral level. The certificate program is a 48-60 semester credit program of professional and academic courses. The M.Ed. degree in psychology is included as part of the certification requirement. Students who complete the certificate program will be recommended for school psychology credentials in Hawaii and other states. The doctoral level program is designed to prepare supervisors, college instructors and researchers in the field. Program advisements are available for qualified graduate students in the department of educational psychology.

School Counseling Certificate Program. The counseling and guidance program is designed for students who wish to develop competency in counseling and guidance in the schools, and to meet certification requirements in Hawaii or other states. The master of education degree may be completed as part of the requirements for the professional level certificate. Individuals who complete the counseling and guidance program satisfactorily are recommended for the counselor certification. Those interested should confer with the counselor-educator in the department of educational psychology.

Media Specialist Certificate Program. The College offers a 30-semester hour graduate program which qualifies candidates to meet the Hawaii State Department of Education Professional Media Specialist Certificate. For further information, contact the chairman of the department of educational communications.

EDUCATION COURSES

See p. 3 for a discussion of course descriptions.

Curriculum and Instruction (Ed CI)

Professors: R. Alm, Austin, Carr, Hayes, Ihara, In, Jenkins, Lang, Martin, Morris, Nelson, Noda, Pickens, Poyzer. *Associate Professors:* Braun, Campbell, Fujita, Fultz, Inn, Pang, Picard, Reddin, Whitman, Zane. *Assistant Professors:* Brown, Chattopadhyay, Thompson, Uehara. *Acting Assistant Professor:* Whitesell. *Instructors:* Jackstadt, 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, Fultz, Inn, Jenkins, Martin, Reddin, Whitesell, Fujita
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, Jenkins, Reddin
Modern approach to teaching of language arts—reading, 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** Pickens
Understanding scope and importance of art in elementary school curriculum, creative use of art media through laboratory experiences. Pre: 312 or concurrent registration.
- 329 Creative Expression in Elementary Education (3) I** Hayes
Development of communication skills through creative dramatics, rhythmic movement, related arts. Pre: 312 or concurrent registration, or consent of instructor.
- 330 Language Arts, Secondary (3) I, II** Whitesell
Teaching of speaking, reading, writing, listening in secondary school; literature, grammar, usage, spelling. Pre: 312 or concurrent registration.
- 331 Teaching of Reading in Intermediate and High School (2) I, 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** Fultz
Scope and organization of social studies in secondary school; development of social knowledge and understanding. Pre: 312 or concurrent registration.
- 333 Science, Secondary (3) I** 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** Byers
Objectives, materials, procedures for teaching speech-communication: speech modification and development; selected speech activities. Pre: 312 or concurrent registration.
- 343 Physical Education, Secondary (3) I** 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 (10) 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**
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.** Reddin
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.
- 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.
- 497 Seminar in Interdisciplinary Science Curriculum (3) II** Campbell
Fundamental science concepts from the viewpoint of physical, biological and earth sciences; integrative processes and conceptual schemes relevant for science curriculum development; significance of ideas and models for contemporary and futuristic problem solving. Pre: basic courses in biology, chemistry and physics. (Identical with IS 497)
- 520 Supervision of Student Teaching (3) I** Staff
Principles and methods; role of supervisor; human relations in supervision of student teaching. Pre: teaching experience; consent of instructor.
- 540 Practicum in Curriculum Development (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** Jenkins, Reddin, Austin
Examination in depth of traditional and modern literature for children, with emphasis upon genre, historical development, research, curriculum development. Pre: 319.
- 620 Teaching Reading in the Elementary School (3) I, II** Braun, Uehara, Young
Developmental and psychological aspects of the reading process, studying current trends, research, techniques of evaluation. Pre: 321.
- 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; 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** 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.
- 629 Curriculum Development in Creative Expression (3) I** Hayes
Leadership training for teachers of creative dramatics, rhythmic movement, related arts. Pre: 329 or consent of instructor.
- 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.
- 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 and consent of instructor.
- 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. (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.
- 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. 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** Reddin
Study of current issues in nursery, kindergarten, early elementary education, with emphasis on research and theory basic to curriculum development and program planning. Pre: 312 or equivalent; teaching experience.
- 699 Directed Reading and/or Research (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; 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; consent of instructor. May be repeated once for credit.
- 737 Foundations in Art Education (3) II** Pickens
Advanced study in development and growth of art in secondary education. Pre: 336; consent of instructor; Phil 500 desirable.
- 800 Thesis Research (v.) I, II** Gorter

INDUSTRIAL EDUCATION (IE)

- 300 Industrial Crafts—Jewelry and Lapidary Processes (2) I**
Design, processes and materials of jewelry making; lapidary processes and materials for polishing semi-precious gemstones; black coral polishing and mounting.
- 301 Industrial Crafts—Leather (2) II**
Design and fabrication of leather products. Materials and processes taught through creative projects and problems.
- 302 Industrial Crafts—Plastics and Wood Sculpture (3) II**
Design and fabrication of plastic projects; materials and processes of metal enameling; other industrial crafts native to Hawaii.
- 303 Advanced Wood Fabrication and Technology (3) I**
Nomenclature, setup and operation of power equipment. Design, patterns, jigs, templates; production procedures.
- 304 Advanced Metal Fabrication and Technology (3) II**
Organization, layout, equipment, management, uses of instructional materials. Selected projects in benchmetal, forging, heat-treating, machine shop, oxyacetylene welding, cutting.
- 307 Advanced Drafting and Design (3) II**
Drafting and design principles in fabrication of industrial products; problems of wood, metal, other materials; architectural drafting. Application to instruction.

- 309 Graphic Arts (3) I**
Survey course for industrial education majors and others desiring experiences in printing and allied industrial processes. Job press, multilithography, photography as applied to printing, related technical and production processes.
- 348 Industrial Arts for Elementary Teachers (2) II**
Hand and simple machine tool instruction taught through selected elementary education projects and units.
- 401 Problems in Industrial Education (v.) I, II**
Program 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.
- 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, Jackson. *Associate Professors:* J. Thompson, Varney.

- 600 Theory of Administration (3) I, II** Varney
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.)
- 610 School-Community Relations (3) I** Varney
Application of principles, techniques, policies, organization of school-community information program. Pre: consent of instructor.
- 620 School Finance (3) II** Thompson
School revenues, apportionments, budgetary procedures, costs, business management. Pre: consent of instructor.
- 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. Pre: consent of instructor.
- 640 Systems Analysis in Educational Administration (3) II** Varney
Designed for management personnel who wish to pursue modern ideas of system analysis and project management and the approaches which lead to effective planning, programming, and budgeting. Pre: rudiments of management theory; consent of instructor.
- 650 School Personnel Practices (3) I, II** Ingils
Recent theory and practices with emphasis on philosophy and democratic aims, principles, models and research in human relations, leadership, group processes taken from anthropology, psychology, sociology, educational administration.
- 660 School Plant (3) I** Ingils
Problems and techniques in school plant planning, operation, maintenance; working with other agencies and with classified personnel. Pre: consent of instructor.
- 670 School Supervision (3) I** Staff
Principles of supervision and development of supervisory programs. Pre: consent of instructor.

- 680 School Organization (3) I, II** **Thompson**
 Function of teacher in school administration; state organization of public education; Hawaii school law and state Department of Education regulations. Pre: teaching experience (may include student teaching) or consent of instructor.
- 685 Educational Administration: Theory and Principles (3) I, II** **Dunwell**
 Theory and principles of administration. Required for M.Ed. Pre: consent of instructor.
- 699 Directed Reading and/or Research (v.) I, II** **Staff**
 Individual reading and/or research. Pre: consent of instructor and department chairman.
- 700 Research Seminar in Educational Administration (3) I, II** **Dunwell**
 Basic concepts of research in educational administration. Study and discussion of significant topics and problems; preparation and reporting of scholarly paper. Required of Plan B M.Ed. candidates. Pre: consent of instructor.
- 720 Seminar and Internship in Administrative Leadership (v.) I, II** **Staff**
 School administrator as curriculum and personnel leader in school organization; techniques of administrative control; strategies in leadership functions. Intern experience in schools. Pre: admission to state Department of Education Administrative Intern Program, or admission to East-West Center program, or consent of instructor.
- 770 Seminar in School Supervision (3) II** **Ingils**
 Application of methods and tools of supervision; faculty meetings; classroom observation; conferences; evaluation. Pre: 670, teaching experience, or consent of instructor. May be repeated.
- 780 Seminar in Educational Administration (3) I, II** **Staff**
 Analysis of selected problems in school administration. (1) Elementary, (2) intermediate, (3) secondary, (4) adult, (5) technical and vocational, (6) community college, (7) higher education. Pre: 670, 680, 685, or consent of instructor. May be repeated.
- 800 Thesis Research (v.) I, II** **Gorter**

Educational Communications (Ed EC)

Professor: Wittich. *Associate Professors:* Butler, Kucera, Sanderson. *Assistant Professors:* Lum, Sparks. *Lecturer:* Wiley.

599, its equivalent, or consent of department chairman is prerequisite to all 600 and 700 level courses; additional prerequisites as noted.

- 314 Audio-Visual Techniques (2) I, II** **Lum, Staff**
 Nature and use of educational media as they relate to pupil needs in classroom learning situations. Identification, use and evaluation of audio-visual instructional materials; application of known principles in educational media in classroom communications.
- 399 Directed Reading (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, Wittich**
 Overview of research which supports selected media channels, survey of selected communication channels characteristics and development of understanding and practices related to media systems structures as applied to a chosen learning problem.
- 599 Workshop in Educational Media (1) I, II** **Staff**
 Concentrated study and practical experience in utilization of educational media through 8 hours of lecture-demonstrations and 8 laboratory hours for each 1-credit sequence. May be repeated through workshops covering different media up to maximum of 3 credits.

- 614 Audio-Visual Media Systems (3) I, II** **Butler, Wittich, Lum**
 Study of educational communications principles and their practical relationship to new educational media; techniques for design and utilization of combinations of media, both projected and non-projected, audio and visual, leading toward achievement of instructional goals; investigation of new teaching strategies: systems analysis, self-instructional, interrelated techniques.
- 620 Production of Instructional Materials (3) I, II** **Butler, Sparks**
 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 Study Materials (3) II** **Butler, Lum**
 Selection, evaluation and use of instructional materials available to teachers of secondary school Asian studies subjects. Adapting existing materials or creating new materials; maps and models, audio recordings, flat pictures, slide sets, projectuals, film-strips, realia and films.
- 625 Educational Still Photography (3) I, II** **Sparks**
 Theory and practice involved in planning and producing educational film strips, slides, prints. Emphasis on meeting curriculum goals through systematic development of strip film as learning material for presentations. Pre: basic knowledge of photography and consent of instructor.
- 626 Motion Picture Production for Educational Communications (3) I, II** **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, II** **Kucera, Sparks**
 Research backgrounds; development and utilization of television in education including fundamentals of television production and teaching with emphasis on utilization of television in school.
- 635 Advanced Educational Television (3) II** **Kucera**
 Research and study of educational development and utilization of instructional television with emphasis on ETV and systems approach to multi-media instruction in specific learning situations. Pre: 630, its equivalent, or consent of instructor.
- 639 Mass Communication and Education (3) I, II** **Kucera**
 Investigation of educational role of radio, TV and film as social forces of times; seeking out of perspectives on technological revolution of educational communications. Mass media and the future of education. Pre: consent of instructor.
- 640 Programmed Learning (3) I, II** **Butler, Sparks, Wiley**
 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** **Butler, 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.
- 699 Directed Reading and/or Research (v.) I, II** **Staff**
 Individual reading and/or research. Pre: consent of instructor and department chairman.
- 700 Seminar in Educational Media Research (3) I, II** **Kucera**
 Review of general and current audio-visual research. Applications of same to problems in improvement of instruction. Pre: 614 or concurrent registration.
- 710 Seminar in Organization and Administration of Media Programs (3) I, II** **Wittich**
 Current principles and practices in organization and administration of programs utilizing new learning media: audio-visual, automated learning, educational television, facilities for such purposes. Pre: 700.
- 800 Thesis Research (v.) I, II** **Gorter**

Educational Foundations (Ed EF)

Professors: Amioka, Anderson, Boyer, Ezer, Keppel, Potter. *Associate Professors:* Frazier, Jaekel, Kobayashi, Stueber. *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.
- 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, 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** Staff
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.)
- 485 Education for a World Without War (3) I, II** Boyer
Study of theories and strategies for reducing the probabilities of war as a basis for developing educational programs.
- 650 Historical Foundations of Western Education (3) I, II** Jaekel, Keppel, Stueber
History of European thought and practice as basis for study of modern education.
- 651 History of American Education (3) I, II** Jaekel, Keppel, Stueber
Introduction to history of American educational thought from 17th century to present.
- 652 History of Education in Hawaii (3) I, II** Stueber
From Cook's discovery to the present. Social and intellectual influences on development of Islands' culture; emphasis upon the role of public and private schools in developing a common language community. Pre: 310 or its equivalent.
- 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, crucial issues. Pre: consent of instructor. (Identical with Ed CI 657.)
- 660 Philosophy of Education (3) I, II** Amioka, Kobayashi, Frazier
Philosophical considerations essential to theories of education. Pre: student teaching.
- 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.

- 681 The Church and the School (2) I, II** Staff
Church, state and school relationships in U.S., Canada, Latin America and Europe. Pre: 660.
- 683 Social Foundations of Education (3) I, II** Boyer, Keppel, Frazier
Impact on education of major social trends and forces operating in American society; social change and education.
- 685 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.
- 699 Directed Reading and/or Research (v.) I, II** Staff
Individual reading and/or research. Pre: consent of instructor and department chairman.
- 751 Recent History of American Education (3) II** Jaekel, Keppel, Stueber
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.
- 768 Seminar in Problems in Education (2) II** Staff
Study and discussion of significant topics and problems. For Plan B M.Ed. candidates in final semester or summer session. Pre: consent of department chairman.
- 770 Seminar in Comparative Education (2) 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, Leton, Ryan, Ryans, Staats. *Associate Professors:* Chang, Dunn-Rankin, Fargo, Fujita, Gust, Haehnlen, Nunokawa, Reid. *Assistant Professors:* Ayabe, Bail, Comcowich, Kozuma, O'Malley, Shapiro, Westcott. *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.

450 Practicum Experience with the Mentally Retarded (9) II

Observation and supervised student teaching with mentally retarded children at elementary and secondary levels. Includes 2-hour seminar each week. Pre: SpEd 405 and SpEd 406.

451 Practicum for Teachers of Emotionally Disturbed Children (9) II

Classroom and clinical experiences to prepare teachers for work with children whose learning problems are associated with behavioral disorders. Pre: SpEd 408 or concurrent registration.

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.

601 Guidance in the School (3) I, II

Basic principles of guidance; consideration of techniques, organization, materials, resources.

602 Elementary School Guidance (3) I

Principles, techniques, organization of guidance services in elementary school.

604 Occupational Information in Guidance (3) I

Occupational research and survey techniques; trends, sources of materials, use of occupational information in vocational guidance. Pre: 601.

605 Problems of School Adjustment (3) I

Principles of behavior affecting human relationships in school, with emphasis upon application to actual situations.

606 Student Personnel Services in Higher Education (3) II

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

Application of learning theory and procedures to individual and group work with children in controlled studies; basic to behavior modification procedures in clinical and educational psychology. Pre: consent of instructor. (Identical with Psy 685.)

699 Directed Reading and/or Research (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 Psy 605.)

710 Counseling: Group Theory and Practice (3) I, II

Theories and techniques of group counseling and psychotherapy as preparation for practicum and field work. Pre: 610 or equivalent preparation, basic course in guidance, tests and measurements, counseling theory-practice, and consent of instructor.

729 Scaling Qualitative Data (3) II

Theory and construction of major types of scales with examples from education, psychology, sociology. Pre: 429 or its equivalent. (Identical with Psy 604.)

768 Seminar in Educational Psychology (3) I, II

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:* Gustuson, Little, O'Brien, Vasconcellos. *Assistant Professors:* Asato, Beamer, Krahenbuhl, Martin, Thompson. *Acting Assistant Professor:* Rocker. *Instructors:* Hanson, Hisaka, Kaina, Seichi. *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** Gustuson, Thompson
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** Staff
Adjusting to and immersing in water, floating, sculling; correct arm stroke, leg kick, breathing techniques and their coordination.
- 104 Swimming: Intermediate (1) I, II** Seichi, Staff
Perfecting and integrating basic strokes with added emphasis on swimming for distance and speed.
- 105 Swimming: Advanced (1) II** Staff
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) 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** Kaina, Staff
Rules, etiquette, arm swing, approach, execution, scoring, spare pickups. Students pay charge for use of alley.
- 120 Badminton (1) I, 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) I, II** Kaina
Social dances including ballroom dances, mixers, etc.
- 135 Volleyball (1) I, II** Thompson, Rocker
Rules, serving, passing, setting-up, spiking, blocking, offensive and defensive team play strategy. Separate sections for men and women.
- 137 Basketball (1) I, II** Rocker, Thompson
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** Gustuson
Kinesiology of lifting and weight training, various types of exercises and methods of training with resistance.
- 154 Tumbling and Rebound Tumbling (1) II** Gustuson
Single and combination stunts on tumbling mats and trampoline, balancing stunts; techniques of spotting; safety procedures.
- 156 Heavy Apparatus (1) II** Gustuson
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 T'ai 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) I, II** Staff
Mental-emotional health, family-living and scientific health information for personal hygienic living.
- 195 Modern Health: Personal and Community (2) I** Krahenbuhl, Thompson
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** O'Brien
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, Rocker
Nature, responsibilities, personal and professional requirements of coach. Scientific principles applicable to coaching methodology and athletic competition.
- 208 Introduction to Recreation (2) I, II** Saake
Aims, objectives, foundations of recreation, emphasizing historical analysis of forces and influences affecting recreation and leisure in modern society. Recreation as professional field.
- 231 Methods and Materials in Health Education (2) II** O'Brien
Organization and content, methods and materials for health teaching in elementary and secondary schools. Pre: 201 or 202.
- 232 Safety Procedures and Accident Prevention (2) I, II** Saake
Understanding the fundamental principles and techniques of safety and accident prevention programming emphasizing school, home, public places, on the job and motor vehicle situations.
- 233 Physical Education: Elementary (3) I, II** Hanson
Content and methods for physical education in elementary school, emphasizing selection, planning, teaching, evaluation of movement exploration and physical activities.
- 235 Team Sports for Secondary Girls (2) II** Kaina, Thompson
Fundamental skills, rules, strategy of team sports for secondary school girls. Hockey, soccer, speedball, basketball, volleyball, softball.

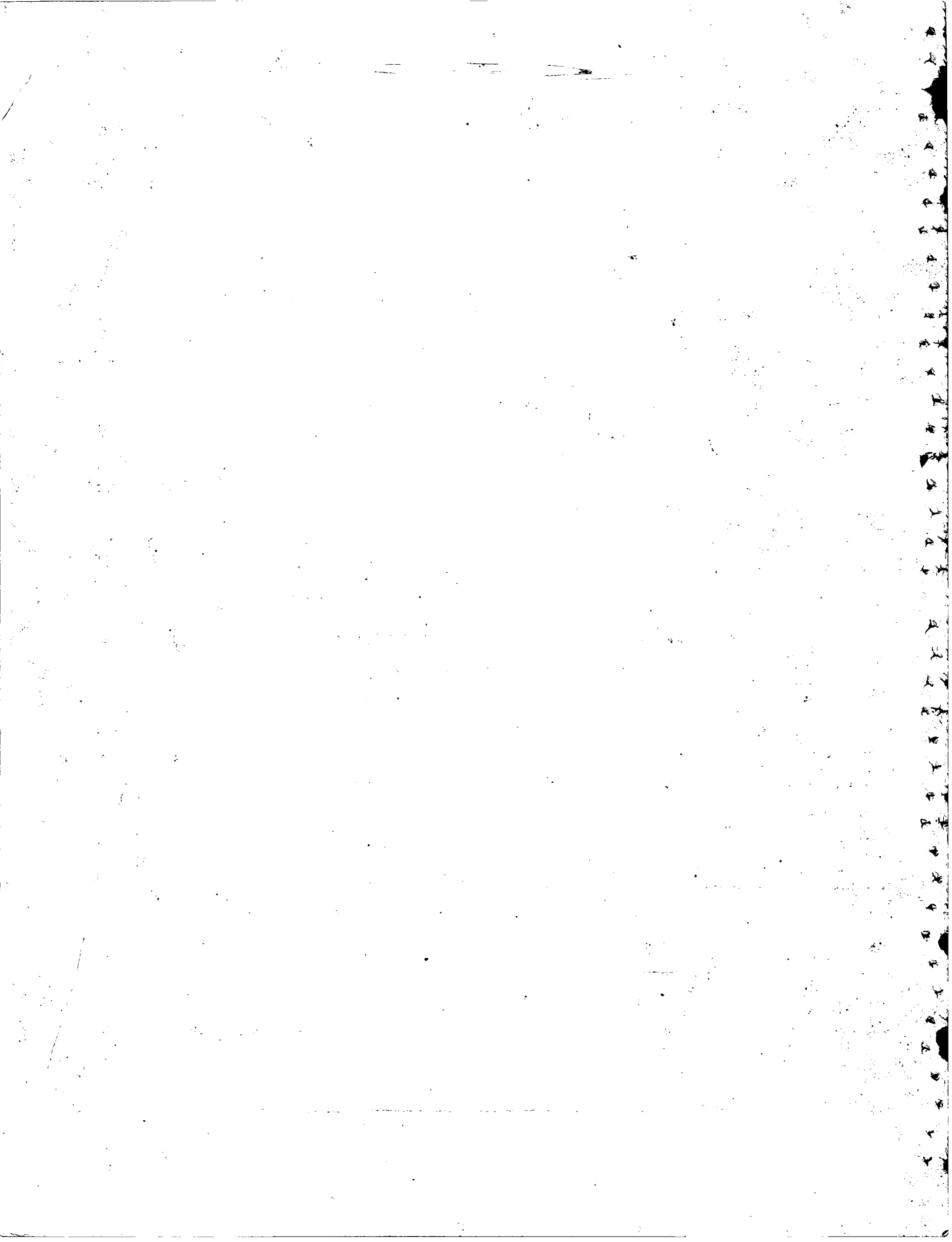
- 236 Team Sports for Secondary Boys (2) II** Asato
Fundamental skills, rules, strategy of team sports for secondary school boys. Touch football, soccer, basketball, volleyball, softball, water polo.
- 238 Outdoor Recreation (2) II** Staff
Objectives and values of outdoor recreation; characteristics and determinants of program; planning, organization, leadership and facilities for recreational uses of natural environment.
- 241 Health Education Curriculum (2) I** O'Brien
Objectives of school health program, emphasizing scope and sequence of health instruction; critical examination of health curriculum guides from various states. Pre: 201 or 202.
- 249 Social Recreation (2) I** Kaina
Objectives and values of social recreation; social club organization; selections, planning, conduct and evaluation of social activities; characteristics and responsibilities of leadership. Pre: 208.
- 271 Evaluation in Health Education (2) I** Staff
Processes involved in assessing school health education program with emphasis on measurement criteria and instruments, interpretation of data and content, organization and conduct of evaluation program. Pre: 201 or 202.
- 301 Health of the School Child (2) I** O'Brien
Health problems of school child; role of school in meeting them, with emphasis on symptoms, causes, treatment. Pre: consent of instructor; 201 or 202 desirable.
- 302 School's Role in Community Health (2) II** O'Brien
Functional interrelationships between school and other community health organizations in solving community health problems. Pre: consent of instructor; 201 or 202 desirable.
- 328 Community Recreation (2) I** Saake
Organized community recreation; recreation and government; recreation and social institutions; industrial recreation; commercial recreation interests; special groups. Pre: 208 desirable.
- 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** Saake, Seichi
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** Vasconcellos
Techniques and rules of sprints, distance runs, relays, hurdles, long jump, high jump, pole vault, shot put, discus and javelin throws; conduct of track and field meets; specific conditioning and training problems. Pre: 204.
- 336 Coaching of Swimming (2) II** Staff
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
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** Staff
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** 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** Little
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** Staff
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, Krahenbuhl
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) 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, II** Staff
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, II** 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, Staff
Individual reading and/or research. Pre: consent of instructor and department chairman.

Special Education (Sp Ed)

Professors: Dunn, Dupont, Hensley. *Assistant Professors:* Apffel, Foster, McIntosh, Takeguchi-Feldman.

- 399 Directed Reading (v.) I, II** Staff
- 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 (2) I, II** Hensley
Study of current issues and patterns of organization of school curriculum, discussion of principles, practices and objectives in special education; role of special education teacher. Pre: 404 and consent of instructor.
- 406 Learning Characteristics of the Mentally Retarded (3) I, II** Apffel, Takeguchi-Feldman
Characteristics and abilities of mentally retarded children in relation to generalized learning characteristics, readiness, motivation, perceptual motor and communications. Pre: 404.
- 407 Learning Characteristics of the Child with Learning and Behavior Disorders (3) I, II** Dupont
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.
- 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: 406 and consent of instructor.
- 409 Culturally and Economically Disadvantaged Pupil (3) II** Hensley
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) I, II** 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: 406 and consent of instructor.
- 411-412 Identification and Remediation of Learning Difficulties (3-3) Yr.** Foster
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: 404, 405, 407.
- 414 Education of Gifted Children (3) II** McIntosh
Characteristics and educational provisions for gifted children. Particular attention to psychological aspects of creativity. Pre: 404.
- 418 Methods and Materials in Teaching the Educable Mentally Retarded (3) I, II** 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: 406 and consent of instructor.
- 422 Introduction to Learning Disabilities (3) I** Dupont, McIntosh
Introduction to education of learning-disabled children. A survey course covering mental, physical and academic characteristics of learning-disabled children and a discussion of their programming, adjustment and school placement. Pre: 404.
- 497 Behavior Modification of Handicapped Children (3) I** Dupont
Application of principles of behavior modification in treatment and classroom instruction of exceptional children. Pre: 404, 405, 406, 407, consent of instructor.
- 597 Contemporary Developments in Special Education (3) I, II** Staff
In depth review of selected contemporary developments in field of special education. Emphasis on recently completed studies which have implications for instruction of exceptional children. Pre: consent of instructor.
- 611 Advanced Curriculum and Instruction in Special Education (3) I, II**
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** Staff
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: 9 credits from 404, 405, 406, 407, 408, 410.
- 619 Theory and Practice of Clinical Teaching (3) II**
Theories and techniques of clinical teaching with mentally retarded children and children with learning and behavior disorders. Pre: 411-412.





College of Engineering

The quality of life which we will or will not enjoy on this planet in year 2000 A.D. is dependent to a large extent upon the wisdom that is exercised during the next thirty years in the management of technology. An engineering degree provides an excellent background for seeking solutions to many of the problems related to the urban crisis, the enhancement of our living environment, and the preservation of the species man. The programs of study in all engineering curricula include both general and theoretical course work designed to equip the student with the ability and the motivation to meet the challenges of our technology-oriented society. 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 the majority of the professional engineers currently practicing in industries, consulting firms, and governmental agencies throughout the state are graduates of this University. Curricula in civil, electrical, and mechanical engineering are fully accredited by the national accrediting agency—the Engineers' Council for Professional Development—which verifies that a graduate of the University of Hawaii is well-qualified to begin a challenging career in engineering.

Admission and Degree Requirements

General admission requirements of the University and recommended courses for prospective engineering students are listed on pp. 24-26. Additional screening of aptitude tests and high school records may be made for acceptance into the College of Engineering.

Although all undergraduate curricula are set up for completion in eight semesters, some engineering students take an additional semester or enroll in summer school course work to complete degree requirements. However, with the improved level of high school instruction and a reduction in the number of credits now required for an engineering degree, an increasing percentage of students are receiving their degrees in eight semesters.

To receive the bachelor of science degree in engineering a student must:

1. Complete the course work for one of the engineering curricula, which also satisfies all university requirements;
2. have a 2.0 grade-point ratio for all registered credits;
3. have a 2.0 grade-point ratio for all upper division courses in the major department.

Curricula

The College of Engineering offers accredited undergraduate programs in civil, electrical, and mechanical engineering, as well as a business-oriented curriculum in general engineering. The course work in each of these programs provides a fundamental science-oriented university education with adequate coverage of communications, the humanities and social sciences; the basic physical sciences of mathematics, physics, and chemistry; the engineering sciences common to all engineering disciplines, such as thermodynamics and electricity; and engineering elective courses which introduce the student to the engineering method of design.

All engineering freshmen enroll initially in the department of general engineering and are advised by engineering faculty from the beginning of their academic program. The first two years provide a flexible core of courses that is common to all four curricula and includes the following:

Common Two-Year Flexible Curriculum

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General Educational Requirements	Credits
Communications & Required Humanities 9	
English 100 & One Literature course from the 251 through 256 series.	
Speech 145	
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
Engineering Sciences	
Civil, General, and Mechanical Majors—two of the following courses:	(4)
Electrical Majors—one of the following courses:	(2)
GE 111 Engineering Communications (2)	
GE 113 Graphical Analysis (2)	
GE 121 World of Engineering (2)	
GE 251 or 253 Digital Computer Programming	2
CE 270 & 271 Applied Mechanics	6
(Electrical Engineering majors may substitute an additional mathematics course and Physics 310)	
Total	10-13

*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.

Additional Department Requirements

Civil Engineering	3
CE 211 Surveying	
Electrical Engineering	4
EE 311 Basic Circuit Analysis & EE 313 Circuits Laboratory	

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 Curriculum

THIRD YEAR			
First Semester	Credits	Second Semester	
CE 320 Fluid Mechanics I	3	CE 322 Fluid Mechanics II	3
CE 321 Fluid Mech Lab	1	CE 350 Soil Mechanics	3
CE 370 Mech of Materials I	4	CE 372 Mech of Materials II	3
CE 371 Mech of Materials Lab	1	ME 311 Thermodynamics	3
EE 200 Electrical Science	3	Elec. (Human or Soc. Sc.)	6
Econ 120 Intro to Econ	3		
Elec. (Human or Soc. Sc.)	3		
Total	18	Total	18

FOURTH YEAR			
CE 431 Sanitary Eng	3	CE 405 Eng. Management	3
CE 461 Transportation Eng	3	*CE Electives	6 or 7
CE 485 Structural Design I	4	Elec. (Human or Soc. Sc.)	3
CE 421 Hydraulics or		†Elec.	3
CE 481 Structural Analysis	3		
Elec. (Human or Soc. Sc.)	3		
Total	16	Total	15 or 16

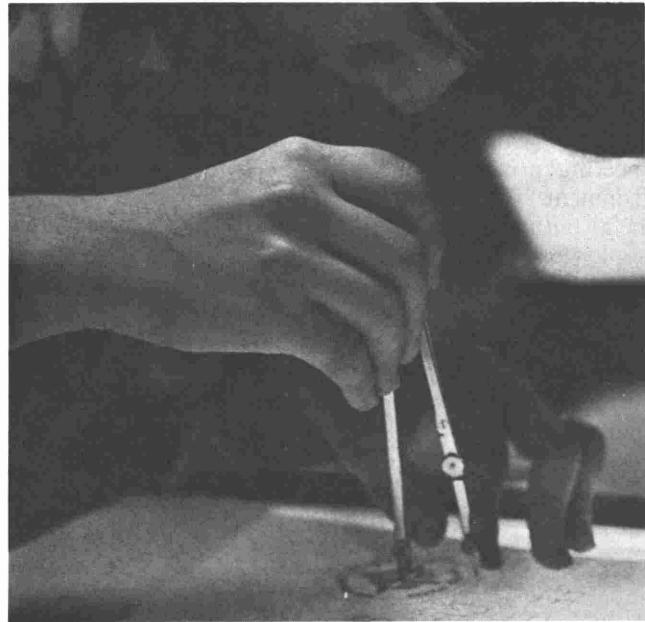
- *CE Elective sequences:
1. Hydraulic Eng; CE 424, CE 426.
 2. Structural Eng; CE 482, CE 486.
 3. Transportation Eng; CE 462, CE 450.
 4. Sanitary & Environmental Eng; CE 424, CE 432.

†Approved by Adviser.

Other alternatives differing from suggested curriculum above are possible with the consent of the student's adviser.

Electrical Engineering Curriculum

	Credits
FIRST TWO YEARS	
See Common Two-Year Flexible Curriculum	63-64
THIRD AND FOURTH YEAR	
University Requirements	
Economics (Econ 120)	3
Humanities or Social Science Electives	6
	9
Departmental Requirements	
Mathematics (300 or above)	3
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)	24
Technical Electives* (Engineering, Math and and Science courses 300 or above)	9
Other Elective*	3
	52
Total	61
	124-125



*Electives must constitute a coherent program with adviser's approval.

Mechanical Engineering Curriculum

THIRD YEAR			
First Semester		Second Semester	
	Credits		Credits
ME 311		EE 200 Electrical Science	3
Thermodynamics	3	ME 300	
ME 321 Mechanics of		Measurements Lab	2
Fluids	3	ME 312 Applied	
ME 331 Materials		Thermodynamics	3
Science	3	ME 341 Materials	
ME 371 Mechanics of		Processing	3
Solids	3	ME 375 Intro. to	
Econ. 120 Intro. to Econ.	3	System Dynamics	3
Elective (Human. or Soc.		Elective (Human. or Soc.	
Sciences)	3	Sciences)	3
	18		17
Total		Total	

FOURTH YEAR			
EE 304 Electronics		EE 305 Electr.	
Circuits	3	Science Lab	1
ME 400 Mechanical		ME 468 Intro. to Engr.	
Eng. Lab	2	Design	4
ME 422 Heat		Electives (Technical)*	9
Transfer	3	Elective (Human. or Soc.	
ME 467 Optimum		Sciences)	3
Design of Mechanical			
Elements	3		
Elective (Technical)*	3		
Elective (Human. or Soc.			
Sciences)	3		
	17		17
Total		Total	

*Technical Electives: Any mathematics, physics or engineering courses numbered 300 or above approved by adviser; 6 credits must be ME courses.

General Engineering Curriculum

THIRD YEAR			
First Semester		Second Semester	
	Credits		Credits
CE 370 Mechanics of		CE 320 Fluid Mechanics I	3
Materials I	4	CE 321 Hydraulics Lab	1
CE 371 Mechanics of		Business or Technical	
Materials Lab	1	Engineering Elective	3
ME 311 Thermodynamics	3	EE 200 Electrical Science	3
Econ 120 Introduction to		Business or Technical	
Econ	3	Engineering Elective	3
Elective (Human or		Mgt 301 Management and	
Soc. Sc.)	3	Organizational Behavior	3
	14		16
Total		Total	

FOURTH YEAR			
ME 331 Materials Science	3	EE 305 Elect. Science Lab	1
EE 304 Elect. Circuits	3	*Technical Engineering	
Business Elective (see list		Elective	3
below)	3	CE 405 Engineering	
Business Elective (see list		Management	3
below)	3	Elective (Human or Soc. Sc.) ..	3
Eng 310 or 315 or Technical		FREE Elective	3
Engineering Elect.	3	Business Elective (see list	
	15	below)	3
Total		Total	16

Business Electives: Acc 201, Acc 202, BEc 341, Mkt 300, †Mgt 302 (The above courses satisfy the undergraduate requirement in Business) BAS 302, Law 300, Finance 300. Technical electives must be approved by a G.E. advisor. If both "Business or Technical Engineering Electives" are taken in business, they must complete the undergraduate business requirement and the "*Technical Elective" must be ME 312.

*400 series course.

†Prerequisite not required for engineering students.

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.

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.

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:* Anderson, Bauman, Fok, Grace, Hamada, Hummel, Taoka, Williams, Young. *Assistant Professors:* Cheng, Nader, Zundelevich.

- 211 Surveying I (2) I (1L, 1Lb)** **Nader**
Basic principles, computations, use of instruments involving horizontal and vertical measurements. Pre: trigonometry; GE 109.
- 212 Surveying II (3) (2L, 1Lb)** **Nader**
Topographic mapping; curves; earthwork; computer applications; route problems. Pre: Math 205, CE 211 and GE 107 or GE 251.
- 270 Applied Mechanics I (3) I, II** **Mitsuda**
Equilibrium of particles, rigid bodies, frames and machines; vectors, centroids, friction and moments of inertia. Pre: Phys 170.
- 271 Applied Mechanics II (3) I, II** **Taoka**
Dynamics of particles and rigid bodies; force acceleration, impulse-momentum, work-energy. Pre: 270, Math 206.
- 320 Fluid Mechanics I (3) I, II** **Fok**
Properties of fluids, fluid statics, kinematics and kinetics; principles of momentum and energy; real fluid effects. Pre: 271 or Phys 310.
- 321 Fluid Mechanics Laboratory (1) I, II** **Cheng**
Experiments and demonstrations of fluid flow in open and closed conduits, fluid measurements and hydraulic machinery. Pre: credit or concurrent registration in 320.
- 322 Fluid Mechanics II (3) II** **Grace, Yuen**
Principles of ideal and real fluid flow applied to incompressible fluids with introduction to compressible fluid motion. Pre: 320, or concurrent registration in ME 311.
- 350 Soil Mechanics (3) I, II (2L, 1Lb)** **Evans, Hummel**
Soil classification, elementary soil mechanics theory and practice. Pre: 370.
- 370 Mechanics of Materials I (4) I, II (3L, 1Lb)** **Evans**
Elastic stress-strain relationship and behavior of members under flexural, torsional, axial loading. Pre: 270.
- 371 Mechanics of Materials Laboratory (1) I, II (1Lb)** **Evans**
Introduction to experimental techniques, observation of materials under various loading conditions. Pre: credit or concurrent registration in 370.
- 372 Mechanics of Materials II (3) II** **Mitsuda**
Inelastic behavior, unsymmetrical bending, theories of failure, curved beams, torsion, energy methods, buckling. Pre: 370.
- 405 Engineering Management (3) I, II** **Tinniswood**
Business, legal, economic aspects of engineering. Pre: CE 370, ME 371 or EE 312.
- 411 Applied Probability and Statistics (3) I** **Grace**
Description of sample data; introduction to probability; theoretical frequency distributions; sampling; estimation of population mean and variance; fitting theoretical distributions to data histograms and testing goodness of fit; testing hypotheses; correlation; simple linear regression; discrete time series; introduction to random processes. Pre: consent of instructor.
- 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 Sanitary Engineering (3) I** **Anderson, Tinniswood, Young**
Water resources. Fundamental aspects and design of water works. Pre: 320.
- 432 Sanitary Engineering (3) II** **Tinniswood, Young**
Pollution control. Fundamental aspects and design of wastewater works. Pre: 431 or consent of instructor.
- 450 Soils and Foundation Engineering (4) II (3L, 1Lb)** **Evans**
Application of soil mechanics to highways, airports, dams, foundations. Pre: 350.
- 461 Transportation Engineering (3) I**
Introduction to the economics, administration, planning, design, and operation of transportation carriers, routes, terminals, and systems. Pre: senior standing in engineering, consent of instructor.
- 462 Transportation Engineering (3) II**
Traffic engineering—the operation of open-guidance transportation systems. Pre: 461, 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.
- 481 Structural Analysis (3) I** **Hamada**
Plane frameworks, graphical methods, influence lines, deflection and stress analysis of structures by classical methods. Pre: 370.
- 482 Structural Analysis (3) II** **Chiu, Hamada**
Analysis of indeterminate beams, rigid frames, trusses, arches and space frames by classical methods, moment distribution, introduction to matrix analysis. Pre: 481.
- 485 Structural Design I (4) I (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.
- 624 Flow in Porus 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** **Staff**
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** **Staff**
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** **141**
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.
- 641 Marine Disposal of Wastes (3) II** **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 instructors.
- 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 cast-in-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.

685 Plastic Analysis of Metal Structures (3) I

Theory of limit design. Plastic behavior of structural materials, principles of upper and lower bound, statical method, mechanism method and semi-graphical method. Analysis of continuous beams, rigid frames, multi-story structures. Pre: 681.

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) II**Zundelewich**

Planning and design aspects of structural systems. Design of buildings for lateral forces (frames, shear walls). Computer applications to design problems. Aesthetic considerations in structural design. Feasibility and suitability studies. Emphasis on actual designs. Pre: graduate standing or consent of instructor.

696 Selected Topics in Civil Engineering (3) I, II

Highly specialized topics in structural, soils, hydraulics, sanitary, ocean engineering. Pre: consent of instructor.

697-698 Seminar in Civil Engineering (1-1) Yr.

Discussions and reports on literature, research, developments, and activities in one of these areas: (1) structural engineering; (2) environmental and sanitary engineering; (3) soil and foundation engineering; (4) hydraulic engineering; (5) water resources and hydrosciences. Pre: consent of instructor. Required of all graduate students.

699 Directed Reading or Research (v.) I, II

Pre: consent of instructor.

800 Thesis Research (v.) I, II**Electrical Engineering (EE)**

Professors: Abramson, Hwang, Kinariwala, Kuo, Peterson, Slepian, Yuen. *Associate Professors:* Barna, Fang, Gaarder, Granborg, Koide, Lin, Najita, Roelofs, Weaver, Weldon. *Assistant Professors:* Chattopadhyay, Naqvi, Yen. *Visiting Professor:* Wolf.

200 Electrical Science (3) I, II (3L)

Introduction to electrical science, fields, circuits and electronics. Pre: Phys 272, Math 231, and concurrent registration in Math 232.

304 Electronics Circuits (3) I (3L)

Analysis and synthesis of electrical networks and systems. For non-electrical engineers. Pre: 200.

305 Electrical Science Laboratory (1) I (1Lb)

Application of electric and magnetic field concepts to circuits, machines, electronics. For non-electrical engineers. Pre: registration in 304.

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)

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 (3 L)**Fang**

Theory and design of oscillators, waveforming circuits, modulators, demodulators, logic circuits. Instrumentation. Pre: 323.

327 Electronics II Laboratory (1) I, II (1Lb)**Fang, Najita**

Laboratory for 326. Pre: 324; registration in 326.

331 Energy Conversion (3) II (3L)**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 (1) II (1Lb) Hwang**
Experiments on electromechanical energy conversion using generalized machine, magnetic circuits and transformers. Elementary experiments on direct energy conversion. Pre: 313, registration in 331.
- 371 Fields and Waves I (3) I, II (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 Introduction to System Analysis (3) I (3L) Chattopadhyay**
Basic characteristics and mathematical models of physical systems. Energy space approach to system representation. Impulse response and its relation to energy space representation. Stability of systems. Observability and identification of systems. Attainable regions and other related concepts. Pre: 315; Math 232.
- 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.
- 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.
- 427 Topics in Physical Electronics (3) II (3L) Fang**
Physical principles underlying phenomena and devices based on controlled motion of electric charges in solids and gases. Operational characteristics of microwave, interface, and optoelectronic devices. Current advances in selected areas believed most likely to have impact on electronics in the near future.
- 435 Power System Analysis (3) I (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) 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) Laboratory for 451. Pre: 313, registration in 451.**
- 460 Digital Circuits (3) I, II (3L) Kuo, Weldon**
Boolean algebra, electronic logic circuits, contact networks, minimization methods, symmetric functions, sequential circuits. RS, JK flip-flops, state diagrams, shift registers and counters, races and hazards, adding circuits, threshold logic, introduction to automata theory. Pre: junior standing or consent of instructor.
- 461 Digital Systems and Computer Design (3) I, II (3L) Kuo, 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: 460.
- 462 Digital Techniques Laboratory (1) I, II (1Lb) Laboratory for 461. Pre: registration in 461.**
- 463 Analog Computers (3) II (3L) Granberg**
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) 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 Alogrithmic 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 (1 to 6) I, II (v.)**
Investigation of advanced engineering problems. Pre: senior standing.
- 613 Linear System Analysis (3) I, II (3L) Kinariwala**
Discussion of fundamental concepts. Study of linear graphs, network equations and computational algorithms in linear algebra. Use of state space methods. Fourier transforms, generalized functions. Study of random signals in linear systems. Pre: 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: 411 or 451 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 I.
- 618 System Optimization (3) II (3L)** Chattopadhyay
Mathematical foundations of system optimization. Variational approach. Geometry of optimal processes. Linear and nonlinear programming. Dynamic programming. Pre: 613 or equivalent.
- 623 Advanced Electronic Instrumentation (3) I (3L)**
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)**
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)**
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 Advanced Feedback Control Systems (3) I (3L)** Yen
Analytical and numerical methods for investigation and solution of non-linear control systems, derivation of z-forms, the phase plane, describing function techniques, relay systems, sampled-data systems, non-linear compensation techniques, adaptive control systems. Pre: 451 or equivalent.
- 652 Optimization Techniques in Control Systems (3) II (3L)** Yen
State-space concepts, solution of matrix-differential equations, state vectors and fundamental matrix, development of maximum principle, minimum time and minimum energy problem, generalized performance criteria, effects of inaccuracies of components, optimum design of adaptive control. Pre: 451 or equivalent.
- 654 Concepts of Digital System Control (3) I (3L)**
Characteristics of digitized control signals: digital control components; organization, design, evaluation of digital control systems; command and interelement communication; transducers; error detection and loop compensation; actuation; reliability enhancement; automated design methodology. Pre: 451 or equivalent.
- 655 Sampled-Data Control Systems (3) I (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)** 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.

General Engineering (GE)

Associate Professors: Avery, Hubbard. *Assistant Professors:* Augustus, Takahashi. *Instructors:* Boyd, Smith.

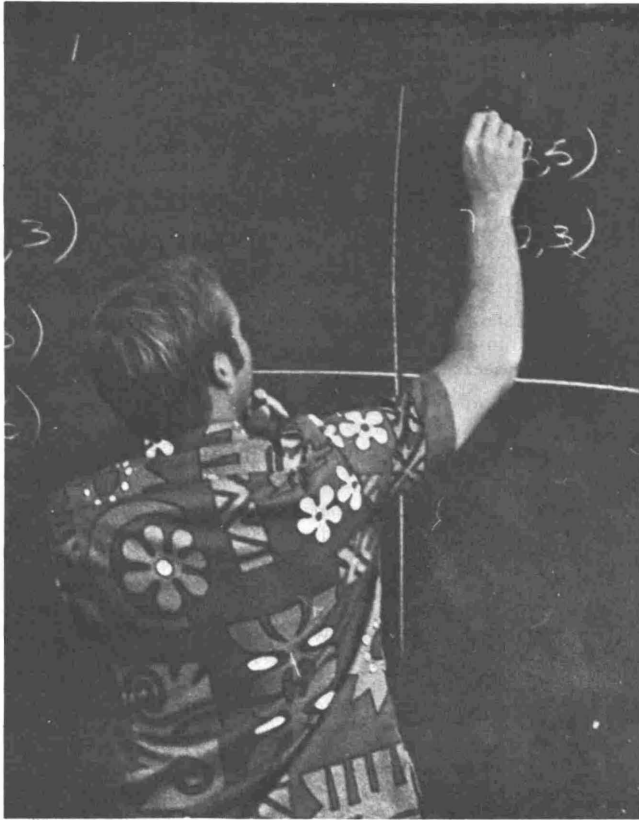
- 61 Graphical Communications (1) I, (2Lb)** Smith
Orthographic and pictorial instrument drawing and sketching, dimensioning, auxiliary and section views. Intended for engineering students who have not had 1 year of high school mechanical drawing.
- 111 Engineering Communication (2) I, II (2L-Lb)** Staff
Sketching, data summarizing and data presentation, report planning and writing, effective information transmittal. Applications to civil, chemical, electrical, general, and mechanical engineering. Pre: 1 year of high school mechanical drawing or 61.
- 113 Graphical Analysis (2) I, II (2L-Lb)** Avery
Basic principles of descriptive geometry. Applications to civil, general, and mechanical engineering. Pre: 1 year of high school mechanical drawing or 61.
- 121 The World of Engineering (2) I, II (1L, 1Lb)** Hubbard
Discussion and outside speakers from the various fields of engineering. The design process, ideation, criteria, optimization, modeling, etc. Basic engineering analysis techniques. Pre: Math 134 or equivalent.
- 203 Technology and Society (3) I, II** Staff
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 in PL/I (2) I, II (2L)** Staff
PL/I programming language for applied math and physical science. Basic numerical methods, program planning, writing, debugging, and running. Intended for students who have not taken 107. Pre: Math 134 or equivalent. (One section to be offered for non-science majors.)

- 253 Computer Programming in FORTRAN (2) I, II (2L) Staff**
FORTRAN programming language for applied math and physical science. Basic numerical methods, program planning, writing, debugging, and running. Intended for students who have not taken 107. Pre: Math 134 or equivalent. (One section to be offered for non-science majors.)
- 301 Architectural Structures "A" (3) I, II Augustus**
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 Hubbard**
Mechanics of materials. Design of simple beams, columns, and trusses in various materials. Pre: 301. (Identical to Arch 302.) Not open to engineering majors.
- 451 Numerical Programming Applications (3) II (3L) Augustus**
Numerical solution of algebraic, transcendental and differential equations using a digital computer. Application to problems in engineering and applied science. Pre: 107 or 251 or 253 and Math 232 or equivalent.
- 491-492 Special Topics in General Engineering (3-3) I, II (3L) Staff**
Specialized topics in engineering sciences reflecting special interests of visiting and permanent faculty. Open to juniors and seniors.

Mechanical Engineering (ME)

Professors: Burgess, Chai, Chou, Fand, Larsen-Badse, Stuver.
Associate Professors: Cheng, Fox, Htun, Munchmeyer. *Assistant Professors:* Johnson, Jones, Kihara.

- 300 Measurements Laboratory (2) II Fox**
Techniques of engineering measurements. Methods, instruments, computation and procedures. Applications to typical problems. Pre: junior standing in ME.
- 311 Thermodynamics (3) I, II Chai, Cheng, Fox**
Basic laws. Work, heat, concept of entropy. Perfect gases, mixtures. Availability, irreversibility, efficiency. Pre: Phys 170.
- 312 Applied Thermodynamics (3) I, II Chou, Kihara**
Thermodynamic principles of reciprocating machines, turbomachinery, jet propulsion. Power and refrigeration cycles. Combustion. 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.
- 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: Phy 274 (174).
- 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 (366).
- 371 Mechanics of Solids (3) I, II Johnson**
Analysis of deformable bodies. Definition of stress and infinitesimal strain. Linear elasticity. Stress, strain and deformation of simple bodies subjected to torsion, bending, and shear force.
- 375 Introduction to System Dynamics (3) I, II Burgess, Stuver**
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 Laboratory (2) I**
Performance analysis and testing of machines, engines, systems. Experiments in automatic control. Special projects. Pre: 300 (234).
- 417 Air Conditioning and Refrigeration Chou**
Refrigeration processes, psychrometrics, solar radiation. Applications to air conditioning design. Physiological aspects of survival. Pre: 312 (232).
- 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 Power Plants (3) I Chou**
Steam generators, prime movers, piping design, plant economy. Solar energy. Introduction to non-electromechanical energy conversion. Pre: 312 (232).
- 422 Heat Transfer (3) I, II Cheng, Kihara**
Steady and transient conduction. Fundamentals of radiation and convection. Heat exchangers. Pre: 311 (231), Math 232.
- 424 Introduction to Gasdynamics (3) II Kihara**
One-dimensional compressible flow involving change of area, normal shock, friction, heat transfer. Pre: 312 (232), 321 (230).
- 431 Electronic Processes in Materials (3) II 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. (Not offered 1971-72.)
- 451 Automatic Control (3) I Burgess, Stuver**
Transient response of electro-mechanical systems with emphasis on the effects of feedback. Transfer functions and their determination by Laplace transform methods. Analysis of transient response using pole-zero maps. Use of Routh's method and the root-locus method for stability analysis. Frequency response methods; Bode charts. Comparison of pole-zero and frequency response methods; application to design of control systems. 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**
Energy conversion systems for marine vehicles. System control. Propulsion devices. Pre: 311. (Not offered 1971-72.)
- 459 Introduction to Space Technology (3) I Stuver**
History of space technology. Manned and unmanned space flight programs. The space environment. Fundamentals of launch vehicle dynamics, orbital mechanics, transfers and rendezvous, interplanetary flight. Spacecraft tracking. Application of satellites in science and technology. Pre: senior standing or consent of instructor. (Not offered 1971-72.)
- 467 Optimum 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: senior standing in ME or consent of instructor.
- 468 Introduction to Engineering Design (4) II (2L, 2Lb) Stuver**
Analysis and synthesis of integrated systems. Feasibility studies, design and decision processes. Techniques of 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 312, or consent of instructor.



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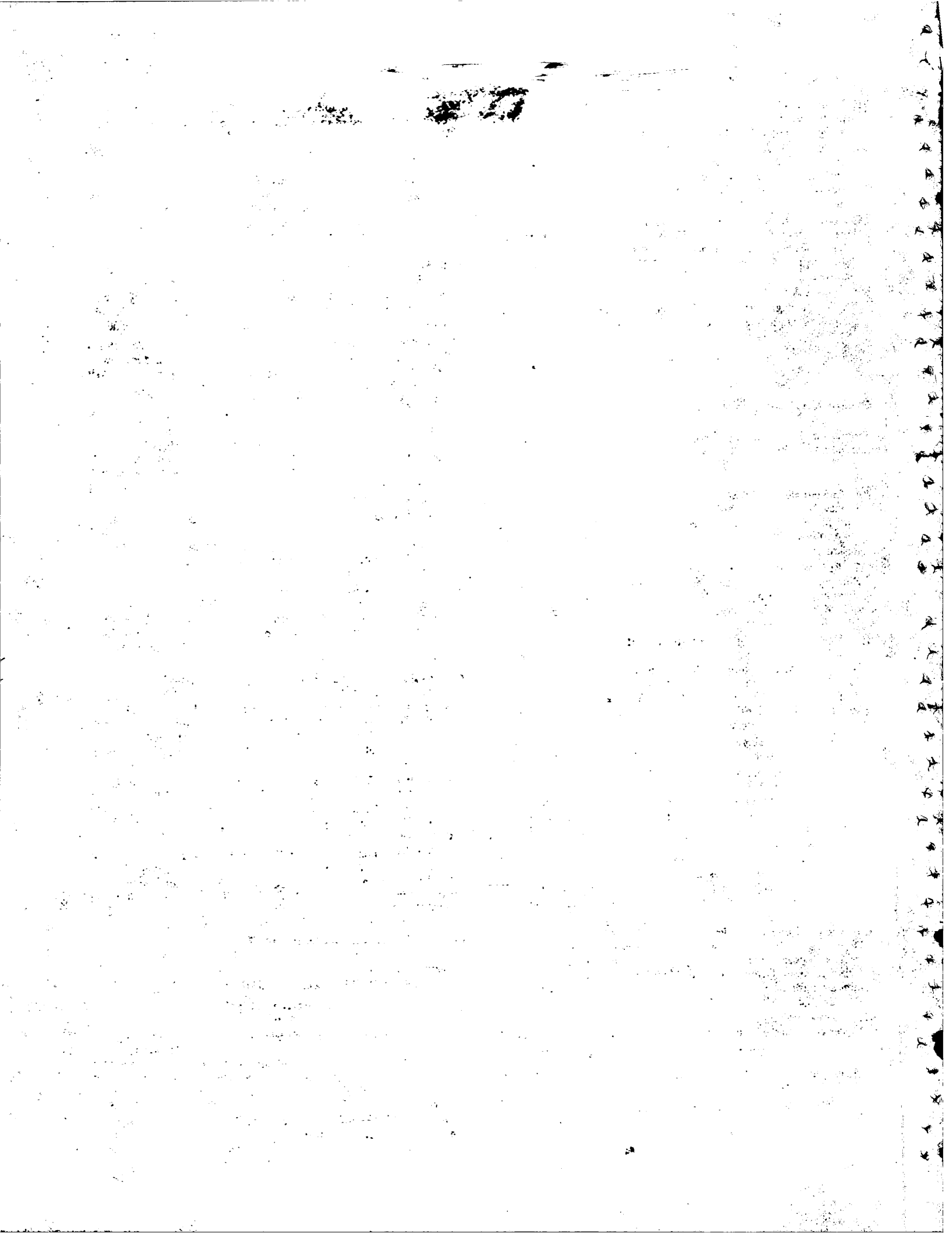
- 496 Mechanical Engineering Topics (v.) I, II**
Specialized topics in thermosciences, mechanics, materials, systems or design. Pre: consent of instructor.
- 499 Project (v.) I, II**
Investigation of advanced problems in mechanical engineering design or development. Pre: senior standing.
- 611 Classical 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. Free convection, evaporation, condensation, mass transfer by diffusion. 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 251, ME 321, ME 422 or equivalent. (Not offered 1971-72.)
- 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. (Not offered 1971-72.)
- 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.
- 657 Methods of Search and Optimization (3) I** Stuiwer
Survey of methods. Classical analysis (extremal points, variational theory, maximum principle) and modern computational procedures (geometric, linear/nonlinear and dynamic programming). Application to performance optimization of mechanical and aerospace systems. Pre: consent of instructor.
- 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** Stuiwer
Three-dimensional motion of particles and systems. Formulations of Newton, Lagrange and Hamilton. Central force motion. Dynamics of rigid bodies. Methods of Lagrange and Euler. Small oscillation theory. Application to space vehicle dynamics. Pre: 375 or consent of instructor.

- 696 Advanced Topics in Mechanical Engineering (v.) I, II**
Highly specialized topics in thermosciences, mechanics, materials, systems or design. Pre: consent of instructor.
- 697 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.
- 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. *Researcher:* O'Brien. *Associate Researcher:* Lee. *Assistant Professors:* Seidl, Venezian.

- 401 Introduction to Ocean Engineering (3) I** **Bretschneider**
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** **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** **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**
Evaluation of ocean environment as it affects ocean engineering operations, design, construction, maintenance problems. Pre: Ocean 620 or equivalent.
- 609 Principles of Ocean Engineering (3) I** **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.
- 610 Viscous Fluid Dynamics (3) II** **Venezian**
Dynamics of real fluids with special emphasis on aspects of interest to ocean engineers. Navier-Stokes equations in inertial and rotating frames. Laminar and turbulent boundary layers. Heat flow, laminar stability and transition to turbulence. Diffusive processes. Pre: CE 322 or ME 321.
- 611 Control of Ships (3) I** **St. Denis**
Linear equations of ship motion and stability indices. Stability and control in horizontal and vertical planes. Theory and design of control surfaces. Experimental and theoretical determination of hydrodynamic derivatives. Influence of ship characteristics on motion stability. Pre: 411, 412 or equivalent course.
- 612 Seakeeping (3) II** **Seidl**
Spectral analysis in seakeeping. Ocean waves. Ship response to wave action. Effects of ship motions and application to design. Hull vibration considerations. Pre: 411, 412, 611 or equivalent course.
- 614 Ocean Hydrodynamics Laboratory (2) II** **Seidl, O'Brien**
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 Design of Ocean Structures I & II (3-3) Yr.** **St. Denis, Seidl**
Design of ocean structures to withstand the hydrostatic and hydrodynamic loading of the sea. Considerations include: type of material, factors of safety, proportioning of scantling by elastic and plastic theories, stress concentrations, and fatigue. Application is made to design of submarine pressure hulls, cargo ships and oceangoing platforms.
- 661-662 Coastal and Harbor Engineering (3-3) Yr.** **Bretschneider, Gerritsen**
Solution of practical problems related to planning, design, construction, and maintenance of beaches, harbors and other coastal structures. Pre: consent of instructor.
- 663 Design of Coastal Structures (3) I** **Gerritsen**
Discussion of boundary conditions near the sea shore such as littoral drift, waves, tides, stormtides, tsunamis, and their effect on coastal structures. Basic concepts of design of coastal structures including jetties, breakwaters, dikes, seawalls, and harbor structures. Pre: 609 or consent of instructor.
- 664 Sediment Transport, Littoral Drift and Dredging Technology (3) II** **Gerritsen**
Sediment transport in rivers, tidal inlets (estuaries), and along 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.
- 671 Submarine Vehicle Naval Architecture (3) II** **St. Denis**
Environmental considerations. Hydrostatic, hydrodynamic and structural mechanics principles pertinent to submarine vehicle system design. Pre-design and preliminary design procedures as applied to these systems.
- 691 Special Topics in Ocean Engineering (v.) I or II** **Craven**
Ocean Systems: 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: graduate standing, consent of instructor.
- 696 Topics in Ocean Engineering (2) II**
Pre: graduate standing, consent of instructor.
- 697-698 Seminar in Ocean Engineering (1-1) Yr.**
Pre: graduate standing, consent of instructor.
- 699 Directed Reading or Research (v.) I, II**
Pre: graduate standing, consent of instructor.
- 707-708 Statistical Dynamics of Ocean Systems I & II (3-3) Yr.** **St. Denis, Venezian**
Waves of the sea, their loading on coastal and ocean structures and the responses of these structures are all characterized as statistical process. Provides a grounding in the fundamentals of time-series and spectral analysis and experience in the application of such statistical methods to actual problems.
- 800 Thesis Research (v.) I, II**
Pre: candidacy for M.S. in ocean engineering.





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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 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 B.S., M.S., or Ph.D. degrees should fulfill the requirements as noted for the specific disciplines, for instance, biochemistry, or medical technology.

Application for admission to any of the departments of the School of Medicine as a candidate for a master's degree or doctor's degree in a specific discipline should

be directed to the Dean of the Graduate Division; for a bachelor's degree it should be directed to the admissions office noted above.

Curriculum for Medical Students

Medical students will follow a two-year curriculum designed to make transfer possible at the end of the second year to the junior class of any mainland medical school. Elective time is provided in both years to allow development of special interests. 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

FIRST SEMESTER	Credits	SECOND SEMESTER	Credits
Cell Structure & Function (Biomd 601)	3	Functional Human Anatomy (Anat 602)	6
Organ Structure & Function (Biomd 603)	7	Neuroscience (Biomd 604)	4
Medical Biochemistry (Bioch 605)	2	Endocrinology & Reproduction (Biomd 602)	3
Biochemistry Laboratory (Bioch 611)	1	Medical Biochemistry (Bioch 606)	2
Human Genetics (Genet 611)	2	Biochemistry Labora- tory (Bioch 612)	1
Introduction to Human Behavior (Psyty 607)	2	History Taking & Physical Examination (Med 602)	2
Community Health Problems (PH 695)	1		
Clinical Correlation (Med 601)	2		
	20		18

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 Medicine (PH 786)	2
	16		19

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)	3	Endocrinology-Reproduction (Biomd 602)	3
Organ Structure & Function (Biomd 603)	7	Neuroscience (Biomd 604)	4
Medical Biochemistry (Bioch 605)	2	Medical Biochemistry (Bioch 606)	2
General Biochemistry Laboratory (Bioch 611) ...	1	General Biochemistry Laboratory (Bioch 612) ...	1
	13		10

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 (P,H, 695)	1	Community Health Concepts & Methods (P.H. 786)	2
Tropical Medicine & Medical Microbiology (TrMed 605)	6		
	13		12

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
	10		15

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)

Professors: Judd, Bushnell

606 Medical History (1) II Judd, Bushnell
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)

Professors: Cutting, Brodsky, Gault. *Associate Clinical Professors:* Mills, Tomita. *Instructor:* McNeil. *Clinical Hospital Administrators:* Davi, Henderson, Sister Maureen.

Division of Medical Technology (MT)

Associate Professor: Bhagavan. *Assistant Professors:* Moikeha, Wulff. *Assistant Clinical Professor:* Ho. *Instructors:* Kagawa, Sonoda, Taylor.

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 registration with the National Registry of Medical Technologists (ASCP) follows graduation and is spent in an American Medical Association approved hospital either on the mainland or here in a hospital affiliated with the University.

For those few students who were enrolled as freshmen before fall 1967 or who, having a degree in one of the biological sciences, wish to earn a second bacca-

laureate degree, the internship course is still available for a total of 28 credits. These courses (MT 466, 467 and 468) will no longer be given for credit after the school year 1971-72.

Degree Requirements

To be entitled to a degree of bachelor of science in medical technology, the student must:

1. Complete the course of subjects specified in the curriculum of medical technology, including at least 31 hours of the major;
2. offer at least 60 hours of credit in other than introductory courses, meeting the University core requirement;
3. acquire an aggregate of 129 hours of credit;
4. earn at least a 2.0 grade point ratio (C average) for all registered courses and a grade of C or higher in each major course and related course required for the degree;
5. submit an application for graduation to the Office of Admissions and Records during the semester preceding the awarding of the degree.

Curriculum for Medical Technology

Freshmen Year

Fall Semester		Spring Semester	
	Credits		Credits
Chem 113-115	4	Chem 114-116	4
Hist 151	3	Hist 152	3
Eng 100	3	Sp 145	3
Math 134	4	Electives	6
MT 151 (Intro. to Med Tech)	2		
Total	16	Total	16

There is an accelerated one semester course in Chemistry for especially well prepared students.

Sophomore Year

Bio 220	5	Bio 250	4
Eng Lit	3	Eng Lit	3
Chem 243-245	4	Chem 244 (lecture only)	3
MT 251 (Intro. to Med Tech)	2	Chem 133-134	4
Electives	3	Electives	3
Total	17	Total	17

Electives: 3 credits in Humanities; 6 credits in Social Sciences

Junior Year

Physl 301	4	Bioch 441 or Ag Bio 402	3
Micro 351	3	Phys 152-154	4
MT 431 (Medical Parasitology or Zoo 340) ..	3	Electives	9
Phys 151-153	4		
Total	14	Total	16

Senior Year

Micro 461-463	4	Micro 462-464	4
MT 451 Hematology	3	MT 464 Immuno-hematology	3
MT 471-473 Clin Bioch	4	MT 472-474 Clin Bioch	4
MT 457 Clin Lab Instruments	2	MT 458 Clin Lab Instruments	2
Electives	3	Electives	3
Total	16	Total	16

151 Introduction to Medical Technology I (2) I, II Wulff
Designed to acquaint student with relationship of medical technology to the medical field.

251 Introduction to Medical Technology II (2) I, II Taylor, Wulff
Designed to acquaint student with basic principles of medical technology.

431 (497) Medical Parasitology (3) I, II
Diagnosis of parasitic diseases by laboratory methods: outstanding features of life cycles, classification and medical significance of parasites.

451 Basic Hematology (3) I Ho, Kagawa
Fundamental study of blood in normal and pathological states: formation, development, and classification of blood cells. Pre: Micro 351, Physl 301.

457-458 Clinical Laboratory Instruments (2-2) Yr. Moikeha
Principles of spectrophotometry, optics, electronic measurement, and use of automated equipment. Pre: college physics, concurrent registration in Clinical Biochemistry.

464 Immunohematology (3) II Taylor
Antigen-antibody relationships in human blood, study of blood groups, clinical problems in transfusion. Pre: Micro 461 or consent of instructor.

466, 467, 468 Internship (4-12-12) SS, I, II Wulff, Taylor
Internship in affiliated hospital. Pre: three years of prescribed courses and at least one semester on U.H. campus.

471-472 Clinical Biochemistry, Lecture (2-2) Yr. Bhagavan
The qualitative and the quantitative changes in the biochemically determinable body constituents in health and disease. Pre: Physl 301, Basic Bioch 441.

473-474 Clinical Biochemistry, Lab (2-2) Yr. Sonoda
The measurement of biochemically determinable values in health and disease. Pre: Physl 301, Basic Bioch 441.

499 Directed Reading and Research (v.) I, II Taylor

Division of Speech Pathology & Audiology (SPA)

Professor: Ansberry. Associate Professor: McPherson. Associate Clinical Professor: Watson. Assistant Professors: Craven, Pang-Ching.

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 programs in speech pathology and audiology. Students in the College of Education who wish to prepare themselves for work in this field will require special programs and should have similar consultations as soon as possible after initial enrollment. Graduate students should refer to the *Graduate Division Bulletin* for additional pertinent information.

UNDERGRADUATE COURSES

- 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) 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) 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.**
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) I** 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.
- 612 Functional Disorders of Speech (3) II**
Diagnostic and therapeutic approaches to disorders of speech which are primarily functional in nature—articulation, voice, rhythm, language.
- 613 Language Development for Children with Hearing Deficiencies (3) II** Pang-Ching
Language acquisition by hard-of-hearing and deaf children; methods of stimulating growth.
- 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 Pathology (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).
- 800 Thesis Research (8) I, II** Ansberry, McPherson, Pang-Ching
(1) Speech Pathology; (2) Audiology. Limited to graduate students enrolled in thesis program (Plan A).

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) II** Kanazawa, Staff
Series of discussions and classical 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

Section of Anesthesiology

Professor: Pearson. *Assistant Clinical Professors:* S.T. Lee, Roberts, 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.

Anatomy (Anat)

Professor: DeFeo. *Associate Professors:* Diamond, Yanagimachi, Kleinfeld, Hoffmann. *Associate Clinical Professor:* Gordon. *Assistant Professor:* Teichman.

Instruction in the department of anatomy is planned primarily to meet the needs of medical and graduate students but, insofar as facilities permit, all of the courses are open to other properly qualified third- and fourth-year undergraduate students. Those who are not registered in medicine but wish to take work in the department should make arrangements in advance with the instructors concerned.

Facilities are available for a limited number of doctors of medicine, or others with equivalent training, who may wish to do special dissections or pursue work on problems within the scope of the department.

The 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 is strongly involved in the following interdisciplinary Biomedical Science (Biomd) courses at the undergraduate and graduate levels.

298 Basic Human Sexuality and Reproduction (3) II

Diamond, Staff
Interdisciplinary course providing basic information on human sexuality and reproduction, including family planning. Course will also aim toward dispelling myths and alleviating some anxieties. Faculty derived from the School of Medicine as well as other departments of the University. No prerequisites.

301-302 Introduction to Human Biology (4-4) Yr.

Hoffmann, Staff
For undergraduates in the Health Sciences and other fields. Integrated presentation of human genetics, biochemistry, embryology, anatomy, and physiology. Pre: 1 yr. biology or zoology, 1 yr. chemistry, or consent of instructor.

601 Cell Structure and Function (3) I Kleinfeld, Staff
Comprehensive course in cell biology for medical students. Pre: admission to medical school or consent of instructor.

602 Endocrinology and Reproduction (3) II DeFeo, Staff
Comprehensive survey of anatomy, physiology and biochemistry of the endocrine glands. Pre: admission to medical school or consent of instructor.

603 Organ Structure and Function (7) I Hong, Staff
Integrated course for medical students, covering the structure and function of the major organ systems. Pre: admission to medical school or consent of instructor.

604 Neuroscience (4) II Rayner, Staff
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.

Biochemistry (Bioch) and Biophysics (Bioph)

Professors: Gibbons, Greenwood, Mandel, Mower, Piette, Yasunobu. *Associate Professors:* Bhagavan, Mann, McKay. *Assistant Professors:* McConn, McConnell, Morton.

The biochemistry and biophysics department offers graduate programs leading to the M.S. and Ph.D. degrees, and provides the requisite courses for medical students.

601-602 (or the equivalent) is prerequisite for all graduate work in this department.

BIOCHEMISTRY

341 Elements of Biochemistry (4) II Bhagavan, Mower
Description of biochemical principles and concepts as they are applied to living systems. Course will include sufficient organic chemistry necessary for an understanding of these principles.

441 Basic Biochemistry (3) I, II Morton, Mower
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) I, 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.

601-602 General Biochemistry (3-3) Yr. Yasunobu, McConn, Mandel
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 General Biochemistry Laboratory (2) Yr. (2Lb)** **McConnell**
Selected physio-chemical and metabolic experiments to illustrate important principles of 601-602.
- 612 General Biochemistry Laboratory (2) Yr. (2Lb)** **McConnell**
Selected physio-chemical and metabolic experiments to illustrate important principles of 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**
Selected detailed discussions on properties and mechanism of several important enzymes. Pre: 601-602. (Alt. yrs., offered 1971-72).
- 713 Advanced Enzyme Kinetics (2) I (2L)** **McConn**
Theory of chemical relaxation. Relaxation methods and their application in the study of enzyme kinetics. Particular emphasis on stopped flow and temperature jump techniques which were used in the kinetics studies on several enzymes. Pre: 601-602.
- 720 Bioenergetics (2) I** **Mower**
Current topics on mechanism of energy production and transformation in living organisms. Photosynthesis, oxidative and substrate level phosphorylation. Pre: 601-602 (Alt. yrs., offered 1970-71).
- 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 1971-72).
- 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.
- 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, McConn**
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** **Mandel, McConn**
Application of physio-chemical techniques to biological systems. Use of analytical ultracentrifuge absorption, optical absorption, electron spin resonance, viscometry, diffusion and light scattering. Pre: 601-602.
- 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 1971-72.)
- 703 Conformational Analysis of Biopolymers (2) I** **McConnell**
Discussion of applications of statistical mechanics to study of

- macromolecules in solution with special emphasis on biopolymers. Calculation of average dimensions of randomly coiling macromolecules, including polyelectrolytes, helixcoil transition in polypeptides and polynucleotides, discussion of protein and nucleic acid denaturation. Pre: 601 and 602.
- 704 The Role of Free Radicals in Biological Systems (2) II** **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.
- 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.
- 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) courses at the undergraduate and graduate levels.

- 602 Endocrinology and Reproduction (3) II** **DeFeo, Staff**
Comprehensive survey of the anatomy, physiology and biochemistry of endocrine glands. Pre: admission to medical school or consent of instructor.

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Courses in Biochemistry Offered by Other Departments

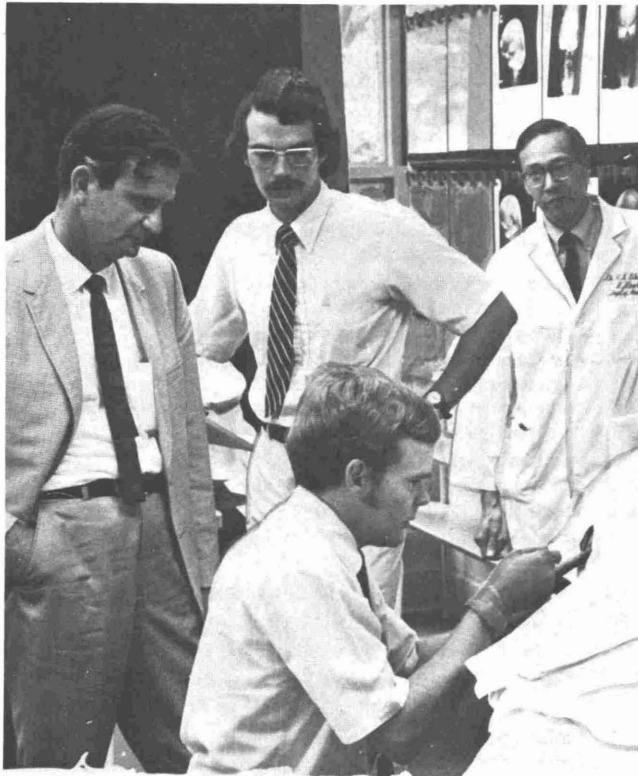
- Biology 401 Molecular Basis of Cell Function**
Medical Technology 471-472 Clinical Biochemistry

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.

- 298 Basic Human Sexuality and Reproduction (3) II** **Diamond, Staff**
An interdisciplinary course providing basic information on human sexuality and reproduction, including family planning. Course will also aim toward dispelling myths and alleviating some anxieties. The faculty will be derived from the School of Medicine as well as other departments of the University.
- 301-302 Introduction to Human Biology (4-4) Yr. (3L, 1 3-hr Lb)** **Hoffman, Staff**
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.



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- 303 Introduction to Medical Science (3) I** **Rogers, Staff**
Primarily for students of Public Health and Social Work whose prior backgrounds are in the social and behavioral sciences. Introduction to the biological basis of medicine. Pre: consent of instructor.
- 601 Cell Structure and Function (3) I** **Kleinfeld, Staff**
A comprehensive course in cell biology for medical students. Pre admission to medical school or consent of instructor.
- 602 Endocrinology and Reproduction (3) II** **DeFeo, Staff**
Comprehensive survey of the anatomy, physiology and biochemistry of the endocrine glands. Pre: Bioch 605-606 in addition to admission to medical school or consent of instructor.
- 603 Organ Structure and Function (7) I** **Hong, Staff**
Integrated course for medical 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** **Rayner, Staff**
Integrated program of lecture and laboratory instruction for medical students in anatomy and physiology of the nervous system. Pre: admission to medical school or consent of instructor.

Community Medicine (PH)

(Affiliate from the School of Public Health)

Professors: Banta, Bennett, Burbank, Chung, Golden, Grossman, Michael, Mytinger, O'Rourke, Park, Schwartz, Voulgaropoulos, Worth. *Associate Professors:* Armstrong, Clark, Conway, Davenport, Dickinson, Furuno, Hankin, Hayakawa, Larkin, Lenzer, Matsumoto, Smith, Wolff, Young. *Assistant Professors:* Bell, Chun, Coffman, Johnson, Stringfellow, Suehiro. *Lecturers:* Wiederholt, Jenney.

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 (1) I** **Gilbert, Staff**
Required first-year medical course, 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**
Enrollment limited to second-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, Paik, Rosenberg. *Clinical Professors:* Halperin, Waxman. *Associate Professors:* Mi, Rashad. *Assistant Professors:* Arakaki, Bintliff, Vann.

The M.S. and Ph.D. in genetics are offered in human genetics, biochemical genetics, cytogenetics, population genetics, and immunogenetics. Intended candidates must have or acquire adequate preparation in biology, biometrics, chemistry through organic chemistry, analytic geometry and calculus, genetics and physics.

- 451 Principles of Genetics (3) I** **Ashton**
Fundamental genetic principles, with examples from microorganisms, plants, animals, man. Pre: one semester of biological science. College algebra and elementary chemistry recommended.
- 452 Genetics Laboratory (1) I** **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. (Not offered, 1971-72)
- 611 Genetics for Medical Students (2) I** **Rashad**
Principles of genetics for medical students. Pre: consent of instructor.
- 618 Cytogenetics (3) II (2L, 1Lb)** **Rashad**
Correlation of genetic and cytological phenomena. Pre: 451, Bot 418 recommended. (Alt. yrs.; offered 1971-72)
- 625 Advanced Topics in Genetics (2) I or II** **Carson**
Advanced treatment of frontiers in genetics. Pre: graduate standing in genetics or consent of instructor. 1971-72: Evolutionary 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.; not offered 1971-72)

654 Genetics Seminar (1) I, II Carson
Research and topical literature reports in genetics. May be repeated. Pre: graduate standing in genetics or consent of instructor.

660 Statistical Methodology in Genetics (3) I Mi
Application of statistics to genetics and human biology, with emphasis on high speed computing methods. Pre: 451 or equivalent, calculus, biometry or statistics. (Alt. yrs.; not offered 1971-72).

671-672 Techniques in Human Genetics (3-3) I, II Arakaki, Ashton, Hunt, Rashad, Vann
Laboratory training in cytogenetics, dermatoglyphics, cell culture, detection of inborn errors of metabolism, and the carrier state.

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

702 Human Polymorphisms and Immunogenetics (4) (2L, 2Lb) II Ashton, Rashad, Vann
Lectures and laboratory sessions on blood groups, immunoglobulins, other serum proteins, enzymes, pharmacogenetics and phenotypic polymorphisms.

712 Genetic Risk Analysis (3) (2L, 1Lb) II 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.

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

Graduate Courses in Genetics Offered by Other Departments

Biochemistry 730 Nucleic Acids and Viruses

Horticulture 666 Radiation Biology

Animal Sciences 645 Quantitative Genetics

Microbiology 671 Microbial Genetics

Medicine (Med)

Professors: Blaisdell, Brodsky, Gardner, Gault. *Clinical Professors:* H.L. Arnold, Jr., Moser. *Associate Professors:* T.K. Lin, Miller, Siemsen. *Associate Clinical Professors:* Allison, A.S. Anderson, Berk, J.H. Davis, Gilbert, Hartwell, R. Jim, Kagan, Korsak, Levin, Nurdyke, Orbison, Palmer, Yim, Yokoyama. *Assistant Professor:* G. Ching. *Assistant Clinical Professors:* Aeling, R.W. Anderson, Ashby, Bart, Beddow, Botticelli, Chesne, H.H. Chun, Durden, Fardel, Fergusson, H. Fong, Fontenot (Samoa), Fryer, Garretson, G.B. Goldstein, N. Goldstein, R.A. Goldstein, Goshi, U. Goto, Helman, R. Ho, Holmes, James, L.F. Johnson, Keller, Kem, R. Kim, W.Y. Lee, Lewis, Long, Miyahira, Morris, Neilson, Y. Oda, Ogata, N. Oishi, Okihiro, Popper, Schroffner, D. Seto, Whitcomb, E. Yamada. *Instructor:* Bristol. *Clinical Instructors:* C. Akina, Altman, Andrew, J. Ball, Burger, W. Chang, S. Cheng, Clemmer, DeJoya, Dewey, Eith, B. Fong, Foti, Gresham, Hirasa, Horio, Kaneshiro, Keenan, J. Kim, Kobashigawa, T. Lau, Limber, C.M. Lum, Mehta, Palma, Scaff, Schneier, R. Smith, Smotkin, G. Suzuki, Uy, C. Wakai, Watt, R. Weiner, Yount, Yun.

The department assumes responsibility for assisting the student in integrating his learning in the humanities, social sciences, and the physical and biological sciences by confrontation with clinical situations. Thus, operational knowledge ranging from the structure and behavior of submolecular particles, through that of the whole human organism, to that of social interactions are correlated and brought to bear on the problems of health and disease and the individual patient.

Early attention is given to the student's acquisition of habits of continuing, critical and disciplined self-

education, and basic clinical skills. These skills include collection and evaluation of data, systematic reasoning in case problem-solving, and consideration and perceptiveness in dealing with patients, their families, and other members of the health team.

The department also participates in internship and residency training programs in affiliated hospitals. The close association of the student with graduate physicians in these programs also affords valuable learning experiences.

Research in selected clinical fields, for which facilities are available, is fostered.

601 Clinical Correlation (2) I Blaisdell
Correlation of anatomy, biochemistry, genetics, physiology and public health with natural history of health and illness. Focus each week on patient cases demonstrating principles or application of material covered during the same week in non-clinical courses. Students guided by clinical tutors, with participation by clinical sub-specialists as appropriate. For first-year students. Pre: consent of instructor.

602 History-Taking and Physical Examination (2) II Blaisdell
Instruction through student participation with clinical tutors, and use of patients in the clinics and hospitals with emphasis on modern techniques and pathophysiologic basis of symptoms and signs. For first-year students. Pre: consent of instructor.

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; subspecialty sessions. Instruction coordinated with concurrent courses. For second-year students. Pre: consent of instructor, 602.

671-672 Clinical Conference (1-1) Yr. Mamiya, Nishijima, McDermott, Gault
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: consent of instructor, 602.

681 Selected Topics (1) I, II
Advances in the frontiers of biomedicine, with participation of local and visiting authorities. Pre: 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, Tom. *Associate Clinical Professors:* G. Goto, McCallin, Ohtani, Sakimoto, Vaughn, T.S. Wong. *Assistant Professors:* Krieger, McCorriston, Natoli, Odom, M. Seto, Terada. *Assistant Clinical Professors:* Berger, Crim (Samoa), Fleming, Hunter, Li, Matsuoka, Mundt, Nakagawa, Nakata, Ogami, Oshiro, Saiki, Tseu, Valpey. *Instructors:* Davi, Hale, Hindle. *Clinical Instructors:* Brock, Lee, Shimomura, Takemoto, Teruya, Vu, Winn. *Clinical Teaching Assistants:* Aiu, Chongsiriwatana, Cote, F.C. Li, Mitchell.

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: Hartroft, Hokama, Nishimura, Skinsnes. *Associate Professors:* Haber, Lumeng. *Associate Clinical Professors:* Stemmerman, Will, Uemura. *Assistant Professor:* Yang. *Assistant Clinical Professors:* Kelley, McCarthy, Namiki, Paik. *Clinical Instructor:* Plumbo.

Instruction in pathology is given to second-year medical students. The emphasis in the first semester will be general pathology which underscores important biologic events leading to reaction patterns of injury resulting from a variety of exogenous and endogenous etiologic factors. Systemic pathology, which is primarily concerned with the classification, causation and clinical correlation of diseases, will be taught in the second semester.

Elective courses in immunopathology and research are offered for advanced students and residents (M.D.) in specialty training (Pathology).

601-602 Human Pathology (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 clinico-pathologic correlation of diseases. Pre: consent of instructor; gross human anatomy and histology; human physiology and biochemistry.

649 Laboratory Diagnosis (2) I Haber, Staff

Theory and practical application of indications for and significance of laboratory examinations, with special reference towards interpretation of results. Clinical case material will be utilized for instruction of basic techniques and demonstrations in hematology, immunohematology, clinical chemistry, serology, and microbiology. Pre: consent of instructor.

670 Immunopathology Seminar (1) II Hokama

Autoimmune diseases and transplantation immunity. Pre: Micro 361 or 625 and Path 601.

699 Directed Research (v.) I, II**700 Research in Pathology Residency Program (v.) I, II Staff**

Selected topics. Pre: M.D. degree and residency in pathology in affiliated hospital.

Section of Pediatrics

Professors: D. Char, Shirkey. *Clinical Professors:* Marshall, Waxman. *Associate Clinical Professors:* Bass, Bond, Choy, L.T. Chun, Eckles, Ewing, Hasegawa, Kometani, Nance, Peyton, Roth, Sia. *Assistant Professors:* Bintliff, Osher, Philip, Starbuck. *Assistant Clinical Professors:* Bart, Cashman, J. Chang, Cook (Samoa), Hagino, R. Ho, Nagao, Nakamura, Oren, Reddy, Sakamaki, Sexton, Steele, M. Tottori, Watt. *Instructor:* Jacang. *Clinical Instructors:* Y. Ching, Choan, W. Fisher, Kagihara, Kaye, Mertz, Nakata, Natino-Badua, Nekonishi, Soo, Tenby, H. Tottori, R.J.C. Wong, Yamaoka, A.B. Yee, H.I. Yim.

The section of pediatrics provides teaching in pediatrics, particularly for the introductory clinical courses and assists hospitals and others in continuing medical and paramedical education. It cooperates with other departments in fellowship training.

Pharmacology (Pharm)

Professors: Cutting, Furusawa, Lum, Norton, Shibata, Shirkey. *Clinical Professor:* Anderson. *Associate Professors:* Casarett, Chou, Lenney. *Associate Clinical Professors:* Palmer, Tabrah. *Assistant Professors:* Ramanathan, Read. *Assistant Clinical Professors:* Cashman, Lee. *Junior Pharmacologists:* Casarett, Kashiwagi. *Clinical Instructor:* Reichert.

The department of pharmacology offers the requisite work for medical students, and for the M.S. and Ph.D. degrees.

Intended candidates for the M.S. or Ph.D. in pharmacology must have or acquire adequate preparation in biology, chemistry, physics and mathematics. The course work required includes basic courses in related sciences, or demonstrated competence in these fields, plus other courses adapted to the needs of the particular students as determined by the major professor and the thesis committee. Most students will be expected to take graduate courses in biochemistry, physiology and pharmacology. Elective courses in pathology, microbiology, anatomy, chemistry and clinical medicine will be recommended.

600 Pharmacology: Actions and Uses of Drugs (7) II (3L, 2Lb) 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.

613-614 Seminar in Pharmacology (1-1) Yr. Lenney

Reporting and discussion of current research in pharmacology.

615 Toxicology (4) I or II (3L, 1Lb) 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., offered 1971-72.)

631-632 Medicinal Chemistry & Structure-Activity Relations (3-3) Yr. Norton

Organic chemistry of substances of medicinal value based on chemical classification. Chemical and physical properties will be related to pharmacological action. Pre: Organic chemistry, Pharm 600. (Alt. yrs., offered 1971-72.)

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., offered 1971-72.)

635 Experimental Chemotherapy (1) I or II 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 Lum

Course will emphasize recent advances in field of autonomic physiology and pharmacology. The drug receptor concept, agonist-antagonist interactions, chemical transmission as well as the pharmacodynamic effects of autonomic agents stressed. Pre: consent of instructor. (Alt. yrs., not offered 1971-72.)

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., not offered 1971-72.)

699 Directed Research (v.) I, II

800 Thesis Research (v.) I, II

Physiology (Physl)

Professors: Bernauer, Hong, Rogers, Whittow. *Associate Professor:* Rayner. *Assistant Professors:* Gillary, Hampton, Lin, Moore. *Junior Physiologist:* 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.

89 Introduction to Human Physiology (5) I (3L, 2Lb) Hampton
Primarily for associate degree candidates in the School of Nursing.

603-604 Seminar in Physiology (1-1) Yr.
Discussion of current research in one or more areas.

605 Physiology of Nerve and Muscle (3) I Gillary, Rayner
Advanced course in the electrophysiology of nerve and muscle with emphasis on research techniques. Pre: Biomd 601, 603, Psych 634, or consent of instructor. (Alt. yrs; offered 1971-72.)

606 Comparative Physiology of Thermoregulation (3) II
(2L, 1Lb) Hampton, 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 equivalent. (Alt. yrs; offered 1971-72.)

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.; not offered 1971-72.)

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 the role of the kidney in maintaining homeostasis. Pre: Biomd 601, 603, or equivalent. (Alt. yrs.; not offered 1971-72.)

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.; offered 1971-72.)

610 Advanced Physiology Laboratory (2) II (2Lb) Staff
Selected physiology experiments for graduate students to illustrate important principles of Biomd 601 & 603. Pre: consent of instructor.

699 Directed Research (v.) I, II

701 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

In addition to the specific courses above, the department is involved in the following interdisciplinary Bio-medical Science (Biomd) courses at the undergraduate and graduate levels.

301-302 Introduction to Human Biology (4) Yr. (3L, 1 3-hrLb) Hoffman, Staff
For undergraduates in the health sciences and other fields. An integrated presentation of human genetics, biochemistry, embryology, anatomy, and physiology. Pre: 1 yr. Biol. or Zool., 1 yr. Chem., or consent of instructor.

303 Introduction to Medical Science (3) I Rogers, Staff
Primarily for students of Public Health and Social Work whose prior backgrounds are in the social and behavioral sciences. Introduction to the biological basis of medicine. Pre: consent of instructor.

601 Cell Structure and Function (3) I Kleinfeld, Staff
Comprehensive course in cell biology for medical students. Pre: admission to medical school or consent of instructor.

602 Endocrinology and Reproduction (3) II De Feo, Staff
Comprehensive survey of the anatomy, physiology and biochemistry of endocrine glands. Pre: Bioch 605-606 in addition to admission to medical schools or consent of instructor.

603 Organ Structure and Function (5) I Hong, Staff
Integrated course for medical 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 Rayner, Staff
Integrated program of lecture and laboratory instructional for medical students in the anatomy and physiology of the nervous system. Pre: admission to medical school or consent of instructor.

Section of Psychiatry (Psyty)

Professors: Bolman, W. Char, Marezki, McDermott. *Associate Professors:* Bolian. *Associate Clinical Professors:* Cody, Cottington, Hannum, K.Y. Lum, Markoff. *Assistant Professors:* Stewart, Marsella. *Assistant Clinical Professors:* Devereux, Eliashof, M. Ferree, Florine, Gramlich, Haertig, Kemble, Lombard, M. Moulun, Pope, Roat, Rock, Sakamaki, Schnack, Stojanovich, Weaver. *Clinical Instructors:* Amjadi, Boyar, De Tata, H. Ferree, Fisher, Golden, Golosow, Hinson, Kostiuik, Lum, Marvit, Schramel, Taylor, Tillich, Trockman, Watanabe.

This section 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 Char, 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 students. Pre: consent of instructor.

- 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 students. Pre: consent of instructor.
- 681 Cross-Cultural Psychiatry (2) II** **Marsella, Maretzki**
 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 Drug Abuse (1) II** **Char, Staff**
 Comprehensive, clinically oriented course on the problem of drug abuse, including alcoholism for medical students. Pre: medical students or other eligible students with consent of instructor.
- 699 Directed Research (v.) I, II** **Staff**

Section of Surgery (Surg)

Professors: Batkin, Hong, Judd, Mamiya, McNamara. *Clinical Professors:* F. McDowell, L.Q. Pang, Waite, Whelan. *Associate Professors:* Kokame, Tanoue. *Associate Clinical Professors:* Ceccarelli, Chinn, Cloward, Freeman, Gordon, Larsen, Nelson, O.D. Pinkerton, Watson. *Assistant Clinical Professors:* Burkhalter, Gullledge, Hata, Iritani, E. Jim, Koike, E.K. Lau, S.T. Lee, Lowrey, C. H. Lum, Matson, A. McDowell, Mookini, Morgan, H. Pang, Pavel, Peyton, Roberts, Sannan, Scully, Shim, Stoneback, Strachley, R.T. Wong. *Clinical Instructors:* Bacon, Balfour, Bergmanis, Brault, Chalmers, C. Chang, W. Chang, Chun-Hoon, Davis, Faulkner, Fernandez, Goebert, Hattori, Hay-Roe, Ing, Izawa, V. Jim, Kistner, Kong, R.C. Lee, Ma, Mori, Oda, R. Oishi, Omura, H. Oshiro, R. Pang, Richardson, Sakai, Simmons, J. Smith, Sprague, Tom, Turner, (Samoa), Won, L. Wong, Young, Yun.

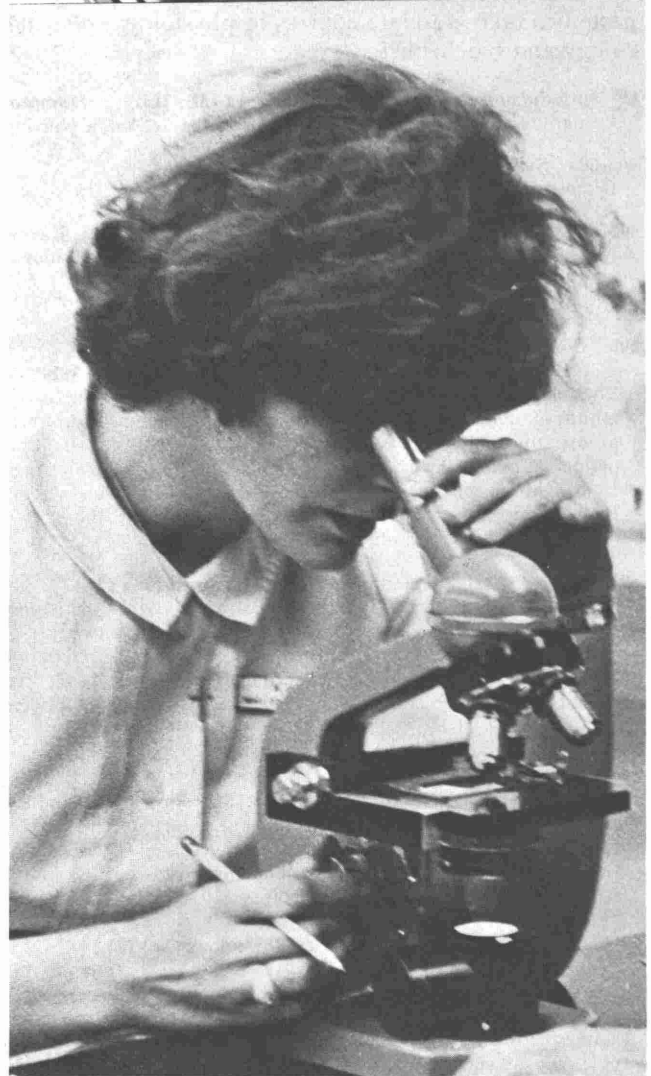
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The section of surgery provides teaching in surgery and the surgical specialties for the introductory courses in the department of medicine. Also, it provides surgical representation on medical school committees, facilitates research in surgery by the clinical faculty, and assists hospitals and others in programs of continuing medical and paramedical education.

Section of Tropical Medicine and Medical Microbiology (TrMed)

Professors: Desowitz, Halstead. *Clinical Professor:* Rosen. *Associate Professors:* Marchette, Siddiqui. *Associate Clinical Professor:* Hathaway. *Assistant Professors:* Diwan, Gubler, Schnell. *Assistant Clinical Professors:* Beales (Samoa), Cutting, Wallace. *Instructor:* Chow.

- 605 Tropical Medicine and Medical Microbiology (6) I** **Halstead, Desowitz, Staff**
 Instruction in laboratory and principles of medical bacteriology, virology, immunology, mycology, parasitology for second-year medical students. Pre: consent of instructor.



SCHOOL OF NURSING

The School of Nursing offers programs to prepare students for professional nursing, technical nursing, and dental hygiene. The baccalaureate program in nursing began in September 1952 and the 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 131 credits with a grade-point average of at least 2.0 (C) and a grade of C or higher in each major course.

Associate of Science Degree in Nursing. Complete curriculum requirements and earn at least 64 credits with a grade-point ratio of at least 2.0 and C or higher in each major course.

Certificate in Dental Hygiene. Complete curriculum requirements and earn at least 70 credits with a grade-point ratio of 2.0, and a minimum of C in each major course.

Academic Advising

The instructional staff of the School of Nursing and the personnel in the office of student services, Webster 415, are readily available for students to talk about any matter impinging on educational progress.

In the 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 63 credits in the liberal arts, including the following:

PRE-NURSING REQUIREMENTS

<i>General</i> (All courses in Group I)	15
I English 100	
Speech Communication 200	
History 151-152, 161-162, 351-352	
Mathematics or Philosophy 210	
<i>Electives</i>	6
<i>Humanities</i> (Two courses in Group I; one course in Group II)	9
I English 251, 252, 253, 254, 255, 256 (any two)	
II Phil 100, 200	
Rel 150, 151	
Art 101	
Music 160, 170, 265, 266	
I.S. 131, 132	
<i>Social Sciences</i> (All courses in Group I)	12
I Human Dvlpmt 231-232	
Psych 100	
Soc 151 or 201	
<i>Natural Sciences</i> (All courses in Group I)	21
I Biochem 341, Biol 220 (offered 1st semester only)	
Chem 113-115, 114-116 or 117-118	
Micro 130, 140	
Total	63

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. Natural Sciences	11
Required: Biomedical Science 301-302 (4-4)	
Food & Nutrition 385 (3)	
II. Social Sciences	3
Required: Psych 113, Ed EP 429 or	14
Elective from anthropology, psychology, sociology, economics, geography, political science.	
III Nursing	48
Nursing 301-302 (5-5)	
Nursing 305-306 (5-5)	
Nursing 415-416 (8-8)	
Nursing 453-454 (3-3)	
Nursing 456 (6)	48
IV. Electives	6
	<hr/> 68

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FIRST YEAR

First Semester		Second Semester	
	Credits		Credits
English 100	3	Speech Communication 200 ...	3
History 151, 161, or 351	3	History 152, 162 or 352	3
Math/Phil 210	3	Chemistry 114-116	4
Chemistry 113-115	4	Sociology 151	3
Psy 100	3	Elective—Humanities	3
	<hr/> 16		<hr/> 16

SECOND YEAR

Eng 251, 253 or 255	3	Biochem 341	4
Biology 220	5	Eng 252, 254 or 256	3
Human Development 231	3	Human Development 232	3
Micro 130, 140	4	Electives	6
	<hr/> 15		<hr/> 16

THIRD YEAR

Nursing 301	5	Nursing 302	5
Nursing 305	5	Nursing 306	5
Biomed Science 301	4	Food & Nutrition 385	3
Upper Division Elective	3	Biomedical Science 302	4
	<hr/> 17		<hr/> 17

FOURTH YEAR

Nursing 415	8	Nursing 416	8
Nursing 453	3	Nursing 454	3
Statistics Course	3	Nursing 456	6
Upper Division Elective/ Area requirement	3		
	<hr/> 17		<hr/> 17

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

First Semester		Second Semester	
	Credits		Credits
Microbiology 130	3	English 100 or Elective	3
Physiology 89	5	Psychology 320	3
Psychology 100	3	Sociology 151	3
Technical Nursing 53 (Nursing I)	5	Technical Nursing 54 (Nursing II)	7
Total	<hr/> 16	Total	<hr/> 16

SECOND YEAR

Third Semester		Fourth Semester	
	Credits		Credits
History	3	History	3
Speech 145	3	Technical Nursing 56 (Nursing IV)	8
Technical Nursing 55 (Nursing III)	7	Technical Nursing 58 (Nursing V)	2
English 100 or Elective	3	Elective	3
Total	<hr/> 16	Total	<hr/> 16

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

First Semester	Second Semester
Credits	Credits
Chemistry 113 3	Chemistry 141 3
Chemistry 115 1	Chemistry 142 1
Dental Hygiene 121 2	Dental Hygiene 140 2
Dental Hygiene 131 3	Dental Hygiene 150 1
English 100 or equiv..... 3	Dental Hygiene 166 1
Physiology 89 5	Food & Nutrition 285 3
	Speech 145 3
	Elective 3
Total 17	Total 17

SUMMER SESSION*

Credits
Psychology 100 3

SECOND YEAR

Microbiology 130 3	Dental Hygiene 270 3
Microbiology 140 1	Dental Hygiene 272 3
Dental Hygiene 251 2	Dental Hygiene 280 5
Dental Hygiene 267 2	Dental Hygiene 282 2
Dental Hygiene 269 2	Sociology 151 3
Dental Hygiene 279 5	
Dental Hygiene 281 2	
Total 17	Total 16

*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, Tanaka.
Instructor: Godfrey. *Assistant in Dental Hygiene:* Cromley.

121 and 131 prerequisite to all dental hygiene courses numbered over 131, and subsequent dental hygiene courses must be taken in sequential offering, except by special permission.

121 Introduction to Dental and Oral Hygiene (2) I

Orientation to profession; relationship of dental hygienist to dental hygiene and dentistry; role of hygienist in preventive dentistry.

131 Oral Anatomy and Tooth Morphology (3) I (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 89 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 89.

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, 13-HrLb)

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.

282 Pharmacology (2) II

Principles of pharmacology; considerations of drug groups; clinical therapeutics for dental hygienist.

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Nursing (Nurs)

Professor: Anderson. *Associate Professors:* Bermosk, Gross. *Assistant Professors:* Chase, Felton, Iwata (on leave), Kim (on leave), Waters.
Instructors: Affonso, Carino, Choy,
Dunwell, Fong, Kubo (on leave), Shimamoto, Tillerson.
Assistant Professors: Love, Norby.

Registration is restricted to students preparing for nursing except by special permission.

301-302 Pathophysiological Basis of Nursing Practice (5-5) I, II

Broad overview of major functional and structural changes which occur in health and illness. Content includes pharmacology, professional and technical nursing skills, and specific pathophysiological conditions. Laboratory study in hospital and varied community resources. Pre: acceptance in department of professional nursing or consent of instructor.

305-306 Basic Nursing Science (5-5) I, II

Fong, Dunwell

Overview derived from behavioral sciences of the basic concepts and theoretical basis of nursing practice. Synthesis of knowledge from biological, natural and social sciences and humanities in understanding the individual as a bio-psycho-social being. Introduction of beginning skills in communication, interviewing, observation and problem solving in relation to individual patient. Laboratory study in hospital and varied community resources. Pre: acceptance in department of professional nursing or consent of instructor.

399 Directed Reading or Research (v.) I, II

Limited to juniors and seniors in nursing.

415-416 Clinical Nursing Science (8-8) I, II

Carino, Love,
Shimamoto

Orientation to analytical process for understanding, identification, solution of nursing problems; 4 hours lecture and 12 hours laboratory weekly. Pre: 305-306 or consent of instructor.

- 453 Nursing in the Changing Social Order (3) I** Waters
Study of social foundations of nursing practice. Focus on historical base, interpersonal, moral and legal ramifications of formal and informal components of social systems in which nursing is practiced.
- 454 Study of the Nursing Profession (3) II** Waters
Study of institutional, associational, societal aspects of professional nursing practice with emphasis on rights and obligations of professional status within nursing, between professionals and in relation to community. Pre: 453.
- 456 Nursing Leadership (6) I**
Study of theoretical concepts basic to planning, organizing, implementing, and evaluating nursing care of individual and groups of patients and for understanding the role of the professional nurse on the nursing and health teams. Pre: 415-416 or consent of instructor.
- 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.
- 611 Socio-Cultural Influences on Health and Health Services (3) I, II**
Examination of socio-cultural influences on concepts of health and illness and on the nature of health practices.
- 615 Interaction Processes (3) I, II** Bermosk, 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: N615, 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 Spring 1972)
- 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 Fall 1971)
- 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 1971-72)
- 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.
- 746 Seminar and Practicum in Nursing Service Administration (4) II** Norby
Designed to prepare the student to coordinate theory and its application to function as a beginning nursing service administrator. Pre: fulfillment of prior requirements for the administration minor.
- 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 (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.

Summer Study and Work Experience

During the summer an opportunity is provided for one or two second-year graduate students to participate in the Rural Community Mental Health Demonstration Project on the island of Maui as mental health-psychiatric nursing clinical specialists. Other opportunities for independent study and/or course work are provided in Honolulu as deemed appropriate for an area of concentration.

Technical Nursing (TN)

Associate Professor: Aiu. *Assistant Professors:* Johnson, Lo, Najita. *Instructors:* Bishop, Goo, Grant, Grippin, Horton, Laursen, Uyehara.

- 53 Nursing I (5) I**
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**
Development of nursing and future trends, including socio-economic influences. To be taken concurrently with 56. 2 hours lecture per week.

SCHOOL OF PUBLIC HEALTH

The School of Public Health, one of 16 accredited U.S. schools of public health, received its accreditation in October 1965. It was established in July 1962 as a department of public health within the graduate school. The School is concerned primarily with maintaining and improving the general health of the community, and accordingly, offers graduate programs designed to prepare individuals who will contribute to knowledge in the sciences pertinent to public health, or perform public health services in the community. The School offers a wide range of programs designed to meet the needs of a varied student body. In addition to basic work in public health common to all students in the School, candidates are expected to pursue intensive work in a selected area of emphasis within the public health field. The broad areas of program emphasis offered include: administration (including comprehensive health planning, health services administration and public health administration), biostatistics, environmental health (including sanitation and public health engineering), epidemiology (including public health laboratory), international health, maternal and child health (including mental retardation), mental health population and family planning studies, public health education, and public health nutrition. Program content may combine more than one area of emphasis for eligible students. Such expanded programs will usually require an additional semester of study.

A limited number of traineeships may be available for qualified students who can demonstrate a career interest in public health practice. Traineeships are awarded on a competitive basis from available funds. In many cases traineeship funds are for specially designated areas of emphasis. The status of traineeship availability varies greatly from year to year.

Master of Public Health Degree

The M.P.H. program is designed to prepare persons for a variety of careers in the broad field of public health at local, state, national, and international levels. The degree candidate must meet the minimum admission requirements of the Graduate Division and present a minimum of 18 semester credits in the physical and social sciences. Depending upon the area of emphasis selected, different undergraduate preparation may be required; in some cases, at least two years of health or related work experience is also required. A candidate's total curriculum is developed with the approval of his program committee. All candidates must complete 30 or more semester hours, including courses PH 609-610 and PH 791. A final examination or other final requirement as determined by the student's program committee must be completed before graduation. In some cases, degree requirements may involve up to two years of residence. (Refer to *School of Public Health Bulletin*.)

Master of Science Degree

The M.S. program is intended to provide preparation for individuals who require more concentrated work in a specific area of emphasis. The program may require up to 24 months; both Plan A and B are available. In Plan A the minimum course requirement is 30 semester hours, including PH 609-610 and 6 credits for thesis research. A final oral examination on the thesis and related subjects is required. In Plan B, 30 or more semester hours, including PH 609-610 and PH 791, are required; a final examination or other final requirement as determined by the student's Program Committee must be completed before graduation. (Refer to *School of Public Health Bulletin*.)

Public Health (PH)

Professors: Banta, Burbank, Chung, Desowitz, Gilbert, Golden, Grossman, Halstead, Lee, Michael, Mytinger, O'Rourke, Park, Schwartz, Voulgaropoulos, Worth. *Associate Professors:* Alexander, Armstrong, Clark, Conway, Davenport, Dickinson, Furuno, Hankin, Hayakawa, Lenzer, Lim, Matsumoto, Smith, Wolff, Young. *Assistant Professors:* Bell, Chun, Coffman, Earickson, Johnson, Stringfellow, Suehiro. *Visiting Faculty:* Pion, Larkin, Marvit, Yatsushiro. *Lecturers:* Bertelotti, Goto, Jenney, Kau, Tokuyama, Wiederholt.

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- 601 Medical Care Systems (3) I** **Staff**
Consideration of forms in which medical care services organized; interpretation of need and demand for medical care; types, numbers, nature, relationships of medical institutions and manpower; financing medical care; national plans for medical care.
- 602 Supervision and Leadership in Health Services (1) I** **Conway**
Methods of personnel supervision and leadership modes of specific applicability of health and medical programs; work scheduling and personnel practices.
- 603 Legal Basis for Health Services (1) I** **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** **Conway, Staff**
Development, deployment and utilization of health manpower; personnel management practices including recruitment, placement, and retention; labor relations; staff and executive development.
- 606 Economics of Health Service (3) II** **Coffman**
Economic analysis as a basis for individual and social decision-making; supply and demand aspects of health and medical activities; health aspects of economic development. Pre: consent of instructor.
- 607 Seminar in Health Services Administration (1) II**
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.

609-610 Public Health Organization and Administration (3-3) Yr.

609: Development of modern health movement: current organizational patterns and programs for developing and industrial countries. Interdisciplinary perspective introduces basic concepts of administration, biostatistics, epidemiology, environmental health, international health. Utilization of community resources in problem solving. 610: Continuation of 609, featuring chronic disease, nutrition, mental health, maternal health, family planning, child health, the crippled child, mental retardation, social sciences as applied to public health. Further examples of use of community resources for a realistic solution to current public health problems.

611 Information Systems and Planning (3) II

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) II

Armstrong

Concepts of human ecology as bases for environmental management planning with emphasis on comprehensive health planning. Pre: consent of instructor.

613 Seminar in Comprehensive Health Planning (3) I, II

Wiederholt

Advanced study of health system as community sub-system. (1) Examination of goals and objectives, measurement and evaluation of results, priority determination in programming, policy formulation, resource allocation. (2) Examination of relationship of health system to total community systems. Pre: consent of instructor. May be repeated for credit.

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, II

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.

624 Community Mental health (2) I, II

Schwartz

Review of nature of community and individual mental health and of social and cultural forces influential in the incidence, prevention, or alleviation of community and individual mental illness.

629 Dental Public Health (2) II

Kau

Principles of conservation of oral structures and prevention of dental diseases through dental health programs. Pre: consent of instructor.

631-632 Public Health Nutrition (2-2) Yr.

Hankin

Methods of assessing dietary intakes and nutritional status of populations and of identifying nutrition problems. Nutrition programs for selected age groups and persons with special needs, living in various socio-cultural and economic conditions. Concurrent observations of nutrition activities in Hawaii and development of community nutrition project during second semester. Course is for students who will be directing public health nutrition programs. Pre: Majors or consent of instructor.

633 Seminar in Public Health Nutrition (2) I, II

Hankin

Selected nutrition problems in preventive medicine and public health in Southeast Asia and the Pacific Basin. Pre: PH majors or consent of instructor.

634 Nutrition Problems and Applied Programs (2) I

Hankin

Review of major health and social welfare problems with nutrition components and practical methods for solving them. Designed for public 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.

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

Smith

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 (2) I, II SS

Jenney

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, analysis of projected trends. Pre: consent of instructor.

651 Fertility and Reproduction (2) II

Historical and contemporary methods of control of fertility. Pre: consent of instructor.

652 Staff Seminar in Population Dynamics (2) I, II

Matsumoto

Ecological considerations of factors involved in human population dynamics. Pre: consent of instructor.

654 Vital and Health Statistics (3) I

Park

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 655 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 655 and 656. Further treatment of estimation and tests of hypothesis, analysis of variance and covariance, multiple regression and correlation as related to public health problems. Pre: 654 or 655 or consent of instructor.

658 Seminar in Biostatistics (1) I, II

Chung

Discussion of specific problems in biostatistics as related to public health.

659 Techniques in Demographic Analysis (3) II

Park

Statistical methods of analysis of population data including construction of life tables, adjustment of rates, evaluation of census and vital statistics data, migrations, population projections, survey methods. Concurrent registration in 650 recommended. Pre: 654 or 655.

663 Principles of Epidemiology (v.) I

Worth, Dickinson

Epidemiological principles and methods. Basic research methodology course of School of Public Health.

665 Epidemiological Management of Chronic Diseases (2) I, II**Banta**

Epidemiological factors which must be considered in designing programs for early detection, treatment, control and rehabilitation of the 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: 655 or 656 or consent of instructor.

667 Laboratory Aspects of Infectious Diseases in the Pacific**Area (2) II****Halstead, Desowitz**

Lectures and practical training in public health aspects of laboratory techniques relating to infectious diseases of the Pacific Basin. Pre: 666 or consent of instructor.

670 Socio-Cultural Aspects of Health and Illness (3) I, II**Wolff**

Public health practices and orientation in socio-cultural perspective. Pre: consent of instructor.

673 Educational Approach to Public Health (2) I**Clark, Grossman**

Consideration of socio-cultural and psychological factors involved in health education of the public; role of health worker as agent of planned change; principles, concepts, methods of public health education; theoretical considerations in development of educational activity.

674 Community Health Education Laboratory I (2) I**Hayakawa**

Field laboratory experiences correlated with content of 673. Emphasis on community study and analysis, particular attention to diagnosis of community health education problems, opportunities.

675 Group Methods in Public Health (2) I**Grossman**

Consideration of theory and practice of group development as educational component of community public health efforts. Lectures on theory of group processes and relevance to public health. Laboratory on group process analysis and application of theory to group problem solving.

676 Health Information Processes in Public Health—**Theory and Practice (2) II****Davenport**

Philosophy and practices in health information aspects of public health program development; theoretical considerations from communication theory and research. Analysis and field testing of information media.

677 Educational Program Evaluation in Public Health (2) I**Grossman, Clark**

Unique aspects of educational evaluation in public health, consideration of evaluation as educational process; development of procedures for adequate educational data collection; function of evaluative efforts in program development.

678 In-Service Training and Staff Development in Public Health (2) I, II**Bertellotti**

Theory and practice of training program development in health fields; analysis of training needs and methodologies; consideration of new approaches to manpower development in public health; design and testing of training materials and programs, special emphasis on public health and medical care settings.

681 Environmental Health (2) I, II**Johnson**

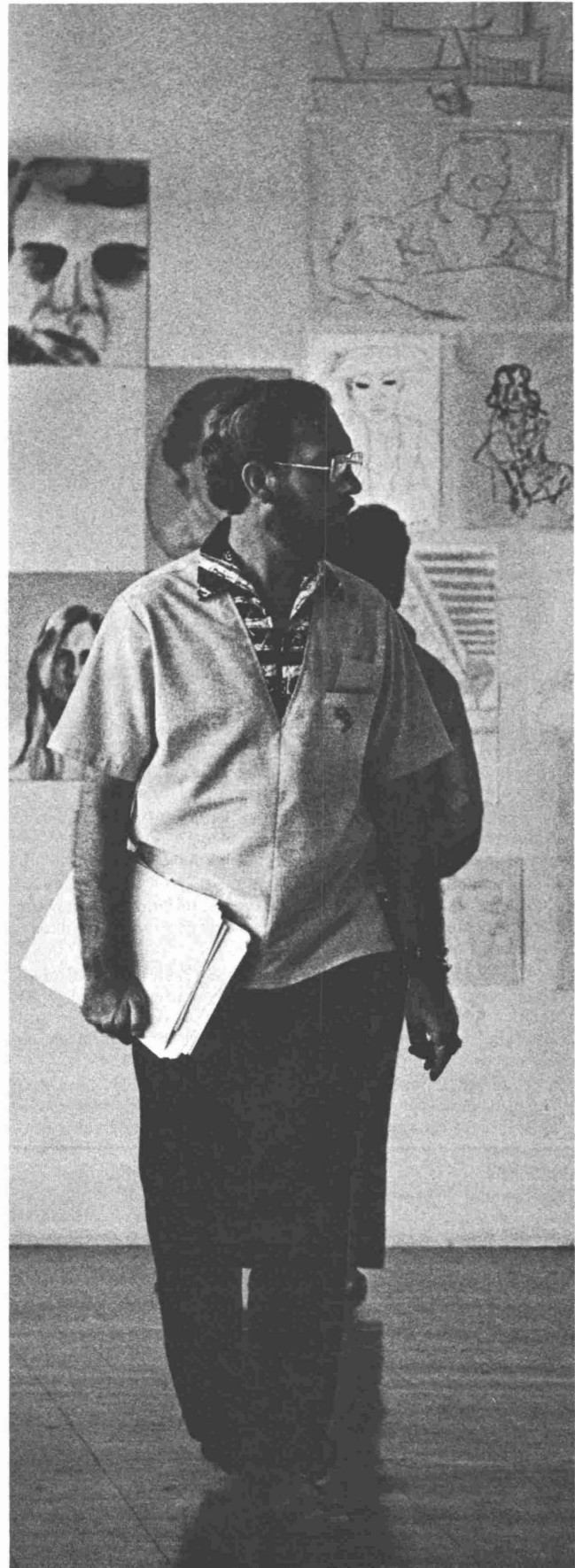
Characteristics of disease associated with environmental factors, means of transmission, principles of control of such communicable disease.

682 Vector Control in Environmental Health (3) II**Johnson**

Organization, administration, application of vector control methods in the control of diseases of environmental significance. Pre: 681 and consent of instructor.

683 Occupational Health I (2) II**Burbank**

Historical development of occupational health; occupational diseases and accidents; control of hazards in occupational environment; study of selected occupations and specific problems. Pre: consent of instructor.



685-686 Solid Waste Management and Control (3-3) Yr.**Burbank**

Organization and operation of solid waste programs at federal, state, and local government levels. Reviews laws, ordinances, and regulations as well as relationship of solid waste disposal to air and water pollution control. Pre: completion of or concurrent registration in 681, CE 638, or consent of instructor.

687 Sampling and Analysis of Solid Wastes (4) I**Young**

Methods of sampling and analyzing solid wastes to determine their physical, chemical and bacteriological characteristics. Pre: concurrent enrollment in 685, consent of instructor.

688 Design of Solid Waste Disposal Facilities (4) II**Burbank**

Design of storage, collection, transfer and disposal facilities for solid wastes. Pre: 685 and concurrent enrollment in 686 or consent of instructor.

695 Community Health Problems (1) I**Gilbert, Staff**

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 field work of small interdisciplinary groups.

697 Gerontology (3) II**Lenzer**

Interdisciplinary consideration of aging process, problems of aged, and 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.

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) II**Conway, 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 sub-systems and facilities.

704 Institutional Health Care Facilities (3) II**Conway**

Principles and practices relating to the organization and function of general and special hospitals, extended care facilities, nursing homes and other health facilities.

705 Non-Institutional Health Care Facilities (2) II**Conway**

Organization and function of ambulatory care services including clinics, group practices, home care services, disease detection programs, laboratory and pharmaceutical services. Pre: concurrent enrollment in 604.

706 Case Studies in Health Service Administration (2) I**Staff**

Detailed analysis of selected administrative cases with a view toward applying a wide spectrum of general principles and concepts of management to the diagnosis and solution of administrative problems.

736 Seminar on Health of the School-Age Child (2) II**Furuno, Davenport**

Health needs of school-age child with particular emphasis on health problems which may present obstacles to learning process; role and responsibility of health personnel in working with these problems.

747 Statistical Methods in Epidemiological Research (3) II**Chung**

Introduction to design, data processing, analysis of epidemiological studies of non-infectious diseases with emphasis on computer applications.

763 Advanced Community Health Education (2) II**Grossman, Clark**

Program planning and development in community health education; theoretical considerations; current studies and research; educational dimensions of selected programs; local, state, national, international trends in planning and development.

764 Advanced Community Health Education Laboratory II (2) II**Hayakawa**

Field laboratory correlated with content of 763. Students participate in problem-solving activities related to planning, development, evaluation of educational components of community health action programs.

765 Advanced Seminar in Special Public Health Education**Problems (2) I****Grossman, Clark**

Current research implications for educational activity in newly emerging fields of public health interest such as family planning, community mental health, accidental injury prevention, home care. Content varies with students' needs and interests and status of available literature. May be repeated for credit.

771 Environmental Control of Disease Through Food**Protection (2) II****Johnson**

Organization, administration, application of sanitary methods used to investigate and control food-borne diseases of environmental significance.

772 Environmental Factors in Health Problems (3) II**Johnson**

Introduction to air pollution, occupational diseases, industrial hygiene; particular reference to common industrial processes, presence and recognition of hazards associated with them, evaluation of hazards; methods of determination of effectiveness of control measures. Pre: 681 and consent of instructor.

773 Measurement of Environmental Factors (3) II**Young**

Use of instrumentation for collection, identification and measurement of air pollutants and environmental hazards. Techniques for sampling and analysis of industrial atmosphere for dusts, mists, gases, fumes; interpretation of other physical measurements such as radiation, light, sound, noise. Pre: completion of or concurrent registration in 772 and consent of instructor.

786 Community Health Concepts and Methods (2) II**Gilbert, Staff**

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) Yr.

Observation, study and additional practical work in student's area of emphasis. Limited to public health degree candidates only.

792 Seminar in Public Health (v.) Yr.

Advanced seminar in selected public health topics. Pre: consent of instructor. May be repeated for credit.

799 Directed Reading (v.) Yr.

Pre: consent of instructor.

800 Thesis Research (v.) Yr.

Pre: consent of instructor.

SCHOOL OF SOCIAL WORK

The School of Social Work offers a two-year graduate program leading to the M.S.W. degree. It also offers courses on the undergraduate and preprofessional levels for juniors and seniors. Each student is assigned a faculty adviser. The function of the adviser is to help the student plan his program to bring about maximum coordination in use of class and field curriculum in order to enhance the student's total educational experience.

The School operates the Social Welfare Development and Research Center (see "Research and Service Operations"). The School was started in 1940 and received accreditation from the Commission on Accreditation of the Council on Social Work Education in 1950. For specific information on admission and degree requirements write: School of Social Work, 1395 Lower Campus Road, Honolulu, Hawaii 96822.



Social Work (SW)

Professors: Aptekar, Fisher, Kurren, Polemis, Sikkema, Takasaki, Walsh. *Associate Professors:* Fisher, Hartman, Krisberg, Kumabe, Lister, Merritt, Nagoshi. *Assistant Professors:* Asato, Caulfield, Chung, Ishimoto, Kunioka, Masuda, Morris, Oda, Rosen, Shimomura, Takase, Verdeyen, Wong, Woodruff, Young. *Instructors:* Chamberlin, Erhart, Ibrahim, Okazaki.

GRADUATE PROGRAM

603-604 General Social Work Practice (3-3) Yr.

Designed to give the student a basic understanding of all forms of social work practice. 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. An 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 inter-relationships.

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 utilization of 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 with Director of Field Work and Advisers (1-1) Yr.

Designed to enable the student to see the inter-relationships 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.

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 inter-relationships 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 (3-3) 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 (3)

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. 32);
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 counselors 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.

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 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: Ag Eng 331, Agron 201, An Sc 241, Ento 372, 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 327, 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, 327, 427; Ag Eng 332, 435; Fd Sc 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, 327, 425, 427, 430; Ag Eng 332, 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 Ag Bio 402, 403; Ag Econ 327; Ag Eng 331; Agron 201, 413; An Sc 444, 445, 451-452, 453; Chem 133; Econ 150; Ento 372; 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, 372; one year of a foreign language approved by advisor; 15 credits from Ag Eng 331; 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; Ag Eng 331, 435; An Sc 444; Bot 160, 201, 410, 412, 430, 454, 461, 470; Chem 133, 134, 351, 352, 422; Geog 101, 300, 314, 400, 406; Geo Sc 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; and 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 331, 435; Agron 310, 402, 412; Biol 220, 250, 401, 440; Bot 105, 160, 201, 399, 410, 412, 430, 435, 436, 440, 450, 454, 461, 470, 480; Chem 133; Ento 372; 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 advisor.

3. Agricultural Economics

(a) Econ 150, 151, 300, 301; Ag Econ 321, 322, 428, 410, 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 380, 427, 429, 430, 433, 470, 480.

(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 331, 332, 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 372; 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 Professors: S. Goto, R. Green.

- 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** **Staff**
Advanced individual work in field, laboratory, library, government service practicum.
- 700 Seminar: Pesticide Use, Regulation, and Environmental Interactions (1) II, SS** **Green**
Current research findings on use, dissipation, and analysis of pesticides; environmental aspects; pesticide regulation and legislation.

Agricultural Biochemistry (AgBio)

Professors: Hylin, Matsumoto. Associate Professor: Bevenue. Assistant Professor: Tang.

- 402 Principles of Metabolism (3) I, II** **Hylin**
Study of fundamental processes common to all living organisms. Pre: Chem 117-118 or 113-115, 114-116, and 241-242, or consent of instructor. Approved for graduate credit.
- 403 Principles of Metabolism-Laboratory (1) I, II** **Hylin**
This laboratory course may not be taken without lectures (402).

Agricultural Economics (AgEc)

Professors: Davidson, Ishida, Larson, Luykx, Philipp, Scott, Spielmann. Associate Professors: Gopalakrishnan, Holderness, Keeler, Renaud. Assistant Professors: Anderson, Yamauchi. Lecturers: Baker, Gertel, Wallrabenstein.

- 220 Agricultural Economics (3) I, II** **Ishida**
Introduction to economics of agricultural production, marketing, prices, income, policy. Includes government policy and program related to agriculture, land use, farm tenancy, socio-economic problems of farmers in nation and world.

- 321 Price Theory 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.
- 380 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.
- 399 Directed Study (v.) I, II** **Spielmann**
Limited to exceptional undergraduate students qualified to carry on advanced study. Pre: consent of instructor.
- 410 Introduction to Quantitative Methods in Agricultural Economics (3) I** **Larson**
Mathematics applied to economics. College algebra, analytical geometry, calculus; introduction to matrix algebra. Examples drawn from agricultural economics. Pre: Math 134 or consent of instructor.
- 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.; offered 1971-72.)
- 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 1971-72.)
- 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** **Larson**
Principles and methods of statistical analysis. Frequency distributions, probability, tests of significance, confidence intervals, regression and correlation, analysis of variance. Applications to agricultural economic research.
- 470 Regional Economic Analysis (3) I** **Renaud**
Introduction to location theory and regional economic analysis. Included are studies in regional structure location theory and land use, regional accounts and income analysis, input-output and related models, etc. Pre: 321 or Econ 300.
- 480 Computer Programming in Agricultural Economics Research (3) II** **Larson**
Computer programming: Fortran. Prepared programs. Basic concepts of matrix algebra, regression analysis, linear programming. No prerequisite.

- 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 intracountry marketing problems, institutions affecting agricultural economy. Pre: Ag Econ 220 or consent of instructor.
- 626 **Collection of Economic Data in Agriculture (3) II** Wallrabenstein
Methods of collection of agricultural data for regular programs and for special purposes. Pre: 434 or consent of instructor.
- 629 **Advanced Production Economics (3) II** Davidson
Economics of resource allocation at firm and industry levels. Advanced analytical techniques of analysis: linear programming; synthesis; budgeting; statistical analysis. Pre: 428, 480 or consent of instructor.
- 630 **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: 434, 480 or basic course in statistics.
- 635 **Seminar: Agricultural Price Analysis and Statistics (3) I** Larson
Selected topics in application of statistics to research in agricultural production and marketing. Pre: 634 or consent of instructor.
- 636 **Seminar: Agricultural, Resources, and Ecological Policy (3) II** Spielmann
Economic analysis of agricultural policy at state, national and international levels. Examination of resources (especially water and land) policies as they pertain to conservation and efficient usage. Examination of policies affecting ecological problems (e.g., usage of insecticides, herbicides, etc.). 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** Gertel
Role of land use pattern on agricultural economic development and welfare of rural people in emerging agricultural nations. Pre: 432 or consent of instructor.
- 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** Spielmann
Pre: consent of instructor.
- 701 **Seminar in Agricultural Economics (v.) I, II** Staff
Topics of current interest and current research related to agricultural production, marketing, statistics, rural sociology, development and policy.

Agricultural Engineering (AgEng)

Professors: Kinch, Wang. *Associate Professors:* Gitlin, Hundtoft, Smith. *Assistant Professors:* Liang, Wu.

- 331 **Mechanizing Food Production (3) I** Kinch
Significance of mechanization in the growth of food production industries. Importance and application of power units and machines in modern agriculture. Pre: Math 134.
- 332 **Engineering Application in Food Production (3) II** Kinch
Introduction to principles and applications of farm structures, crop processing, surveying and irrigation in the production and handling of agricultural products. Pre: 331.
- 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.
- 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: 332.
- 432 **Agricultural Implements (3) II** Kinch
Fundamentals of operation of agricultural machinery. Integration of power and equipment on plantation, ranch, farm; methods of evaluating capacity, efficiency, cost. Pre: 431.
- 435 **Irrigation Principles and Practices (3) II** Wu
Basic principles of irrigation science with applications to irrigation methods: water conveyance, distribution, measurement; water requirements of crops; irrigation efficiency and cost. Pre: 331 or consent of instructor.
- 499 **Directed Research (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.
- 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.
- 648 **Post-Harvest Process Engineering (3) II** Wang
Advanced topics in heat transfer; forced convection, condensing vapor, boiling liquid; physical properties of agricultural products; design of pre-cooling systems. Pre: ME 422, Math 402.
- 699 **Directed Research (v.) I, II** Wang
- 700 **Seminar (1) I, II** Smith
Review of recent literature. Pre: consent of instructor. May be repeated once.

Agronomy and Soil Science

Professors: Ekern, Fox, Kanehiro, Sanford, Swindale, Uehara. *Associate Professors:* El-Swaify, Green, Rotar, Young. *Assistant Professors:* Bartholomew, Ikawa, Koch, Jones, Silva, Urata.

Agronomy (Agron)

201 Principles of Tropical Agronomy (3) I (2L, 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.

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., not offered 1971-72.)

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., not offered 1971-72.)

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., not offered 1971-72.)

651 Advanced-Techniques in Plant and Soil Analysis (3) SS (3L, Lb)

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., offered 1971-72.)

799 Directed Research (v.) I, II

Pre: candidacy for Ph.D. degree, consent of instructor.

800 Thesis Research (v.) I, II

utilized; importance of key physical, chemical, and biological properties of soils to crop production, pesticide and fertilizer use, water quality, and urban development. Pre: I 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 microorganisms 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.; not offered 1971-72.)

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) I

Ekern

Physical properties of soil which influence erodibility; energy sources and mechanics of water and wind erosion; principles of vegetative and mechanical controls; survey of development and spread of conservation movement. Pre: consent of instructor. (Alt. yrs.; not offered 1971-72.)

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 1970-71.)

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.; offered 1971-72.)

650 Advanced Soil Fertility (4) I (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.; not offered 71-72.)

661 Meteorology in Agriculture (3) II

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.; offered 1971-72.)

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.

671 Soil and Clay Mineralogy (3) II (2L, 1Lb)

Jones

Identification of soil secondary minerals with emphasis on clay. Pre: consent of instructor.

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

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

Animal Sciences (AnSc)

Professors: Brooks, Hugh, Koshi, Ross, Stanley, Wayman. *Associate Professors:* Herrick, Miyahara, Nakamura, Nolan, Vogt. *Assistant Professor:* Palafox. *Lecturers:* Ishizaki, Smith.

- 141 Animals and Man (3) I, II** Herrick
Study of major farm animals and poultry and their contribution to man, origin of species, distribution and economic importance.
- 241 Feeds and Feeding (3) I (2L, 1Lb)** Stanley
Basic principles of feeding farm animals; composition and nutritional value of feeds; nutritional requirements of beef cattle, dairy cattle, horses, poultry, swine; balancing rations for specific productive purposes. Pre: Chem 114, 116.
- 341 Livestock Management Laboratory (3) SS**
(5L, Lb for 6 weeks)
Assigned problems and practical experience in management of livestock; evaluating, feeding, housing beef cattle, dairy cattle, poultry, swine. Recommended for Animal sciences majors during summer between junior and senior years. May be taken by other students with adequate background. Pre: consent of chairman.
- 342 Beef Production (3) II** Nolan
World beef production problems, resources and opportunities; selection of breeding stock, principles of handling and feeding on range and in feedlot. Pre: 141.
- 351 Swine Production (3) I** Hugh
Principles of efficient pork production including breeds, breeding, feeding, management, marketing. Pre: 141.
- 352 Tropical Dairying (3) II** Koshi
Principles involved in economical milk production in the tropics; breeds of dairy cattle, selection, raising young animals; care, housing, management of milking herd; factors affecting quantity and quality of milk produced. Pre: 141.
- 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** 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.; not offered 1971-72)
- 445 Animal Breeding (3) I** Vogt
Application of genetic principles to improvement of livestock, including poultry. Pre: one semester of Introductory Genetics.
- 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.; offered 1971-72)
- 453 Animal Diseases and Their Control (3) I (3L)** Miyahara
Disease problems of livestock and poultry; prevention, control, eradication. 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) I, II**
Topics of current interest and current research related to nutrition, genetics, physiology. Pre: consent of instructor.
- 642 Ruminant Nutrition (2) II** Stanley
Physiology and nutrition of ruminant, including microbiology of rumen, carbohydrate utilization, production of volatile fatty acids,

protein metabolism, absorption of nutrients, metabolic processes, normal and abnormal functions within rumen. Pre: consent of instructor. (Alt. yrs.; not offered 1971-72)

- 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.; not offered 1971-72)
- 652 Quantitative Genetics (3) II (2L, 1Lb)** Vogt
Concepts relating to genetic properties of populations and to inheritance of quantitative traits. Pre: Genet 451. (Alt. yrs.; not offered 1971-72.)
- 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**

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.
- 372 Economic Entomology (4) II (3L, 1Lb)** Sherman
Insect pests; principles of chemical, biological, cultural control. Laboratories on Hawaiian insects of households, plants, animals. Pre: 261; Chem 113-114.
- 641 Insect Physiology (4) I (2L, 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.
- 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. (Not offered 1971-72.)
- 671 Insect Ecology (3) II (2L, 1Lb)** Bess, Nishida
Insects as living units in an environment of physical and biotic factors. Pre: 362, 372; desirable Zool 631, 632. (Alt. yrs.; offered 1971-72.)
- 672 Acarology (3) II (2L, 2Lb)** Haramoto
Taxonomy, biology, ecology of mites. Emphasis on medically and agriculturally important species. Pre: 362. (Alt. yrs.; offered 1971-72.)
- 673 Insect Pathology (3) I (2L, 1Lb)** Tamashiro
Diseases of insects; histopathology; microbial agents and biological control. Pre: 372.
- 675 Biological Control of Pests (3) II (2L, 1Lb)** Nishida
Fundamental concepts. Critical study of major biological control projects. Pre: 362 and 372; desirable Zool 631, 632. (Alt. yrs.; not offered 1971-72.)

- 680 Insect Toxicology (4) I (3L, 1Lb)** **Sherman**
Mode of action and metabolism of insecticides by insects, plants, and the higher animals. Pre: 372; Chem 243, 244, 245, 246. (Alt. yrs.; offered 1971-72.)
- 686 Insect Transmission of Plant Pathogens (3) II (2L-1Lb)** **Namba**
Problems of insect transmission of plant pathogens. Pre: 261 and PPath 410. (Alt. yrs.; offered 1971-72.)
- 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.)** **Staff**
- irradiation. Practical means for reducing or eliminating health hazards also considered. Pre: consent of instructor.
- 699 Directed Research (v.) I, II** **Moser**
Pre: Consent of department chairman.
- 701 Seminar in Recent Advances in Food Research (1) II** **Frank**
Reports and discussions from current literature in food science and technology.
- 730 Biochemical Aspects of Food Science (3) I** **Yamamoto**
Properties of natural compounds of importance to food processing including application and control for selected enzyme systems. Pre: consent of instructor. (Alt. yrs.; not offered 1971-72.)
- 800 Thesis Research (v.) I, II** **Staff**

Food Science and Technology (FdSc)

Professors: Frank, Moser, Nakayama, Yamamoto. *Associate Professor:* Hing. *Assistant Professors:* Moy, Cavaletto.

- 201 Man's Food (2) I** **Cavaletto**
Relationship of man to his food. Man's role in the food chain in production, processing, and consumption.
- 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, fish, meat, nuts and bakery products. Pre: Chem 116 and Phys 161 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 and consent of instructor.
- 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**
The chemical properties of food constituents will be discussed in relation to their effect on processing, nutrition, and spoilage.
- 601 Principles in Food Science and Technology (3) II**
Integration of physical, chemical, biological concepts to formulate basic principles in food science and technology; scientific basis of food preservation. Pre: general physics, biochemistry, microbiology. (Alt. yrs.; offered 1971-72.)
- 604 Special Topics in Food Microbiology (v.) I, II** **Frank**
Selected laboratory problems dealing with various aspects of food micro-organisms.
- 610 Advanced Food Processing (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.
- 620 Seminar in Food Science (1) I** **Frank**
Special topics, reports, informal discussion of graduate student research. Pre: consent of instructor.
- 630 Food Fermentation (3) I** **Nakayama**
The application of microbiological, biochemical, and engineering principles in the fermentation industry.
- 640 Food Safety (2) II** **Yamamoto**
Discussion of potential hazards in foods, e.g., natural, bacterial, and fungal toxins, pesticide residues, food additives, and food

Horticulture (Hort)

Professors: Akamine, Brewbaker, Gilbert, Hamilton, Kamemoto, Nakasone, Sagawa, Warner, Watson. *Associate Professor:* Hartmann. *Assistant Professors:* Criley, Murdoch, Nishimoto, Rauch.

- 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 agricultural 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.
- 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, breeding 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) II (2L, 1Lb)** **Akamine**
Handling and storage of horticultural crops. Pre: 262 or consent of instructor. (Alt. yrs.; offered 1971-72.)
- 481 Weed Science (3) I (2L, 1Lb)** **Nishimoto**
Weed classification and principles of control. Pre: 262 or Agron 201. (Alt. yrs.; not offered 1971-72.)
- 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 Crop 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.; offered 1971-72.)

- 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.: not offered 1971-72.)
- 618 **Cytogenetics (3) II (2L, 1Lb)** Sagawa
Correlation of genetic and cytological phenomena. Pre: Genet 451. Bot 618. (Alt. yrs.; offered 1971-72.)
- 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.: not offered 1971-72.)
- 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.; offered 1971-72.)
- 664 **Orchidology (3) II (2L, 1Lb)** Kamemoto
Classification, culture, cytogenetics, breeding of orchids. Pre: Bot 101; Genet 451. (Alt. yrs.: not offered 1971-72.)
- 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 1971-72.)
- 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 sub-tropical crops; instrumentation and data interpretation. Pre: 450 or consent of instructor. (Alt. yrs.; offered 1971-72.)
- 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**
- 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.; offered 1971-72)
- 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.; not offered 1971-72)
- 621 **Plant Pathology Techniques (3) I (2L-Lb)** Trujillo
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.; not offered 1971-72)
- 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.; not offered 1971-72)
- 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.; not offered 1971-72)
- 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.; offered 1971-72)
- 800 **Thesis Research (v.) I, II** Staff

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Plant Pathology (PPath)

Professor: Buddenhagen. *Associate Professors:* Aragaki, Holtzmann, Ishii, Martinez, Meredith, Patil, Trujillo. *Assistant Professors:* Berquist, Hunter, Ko, Laemmlen.

- 411 **Principles of Plant Pathology (4) I (2L, 2Lb)** Holtzmann
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 Diseases (3) II (2L, 1Lb)** Ko
Concepts of soil microorganisms and their relations to crop culture and plant diseases. Pre: Micro 351, Soils 304 and PPath 411; or consent of instructor. (Alt. yrs.; offered 1971-72)
- 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.; offered 1971-72)

Plant Physiology

Professors: Akamine, Clements, Cooil, Friend, Kefford, S.M. Siegel. *Associate Professors:* Nakata, Putman. *Lecturer:* Krauss. *Instructor:* Gay.

For course descriptions, see the following listings under the department of botany.

BOTANY

- 440 **Environmental and Space Biology I (2) I (2L)**
- 470 **Principles of Plant Physiology (4) II (3L, 1Lb)**
- 612 **Advanced Botanical Problems (v.) I, II**
- 640 **Environmental and Space Biology II (2) I (1L, 1Lb) Alt. Yrs.**
- 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

The Human Resources Development programs are designed to provide, through the facilities of the departments and the University, a liberal education integrating the social and natural sciences, the humanities and the arts, and to provide specialized instruction based upon these disciplines as preparation for careers in which the interest and well-being of the individual, the family, and the community are paramount.

As the functions of the family are being shifted increasingly to the larger community, there are expanded opportunities for related careers for men and women in educational and social agencies, government, business and industry, research laboratories, public and private institutions and services.

In addition, the departments offer interdisciplinary courses designed to serve other professional schools and as electives for members of the general student body who wish to relate knowledge to social use.

The four departments within this division are:

- Fashion Design, Textiles & Merchandising
- Food and Nutritional Sciences
- Home Economics: Management and Family Economics
- Human Development

Admission and Degree Requirements

Admission requirements are the same as those for the University. To be entitled to a bachelor's degree a student must:

1. Complete the University's general education requirements;
2. complete, in addition to the general education requirements, 60 hours or more of non-introductory courses;
3. offer the prescribed requirement for one of the curricula in Human Resources Development (may overlap 1 and 2);
4. earn at least a 2.0 grade-point ratio (C average) for all registered credits.

Fashion Design, Textiles and Merchandising (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.

A semester or a year in New York at the Fashion Institute of Technology may be arranged during the junior year for students in both options.

FASHION DESIGN (FDM)

First Year			
First Semester		Second Semester	
	Credits		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	*Humanities	3
FDM 215 or 216	3	HE 255	3
FDM 213		FDM 216 or 215	3
(Natural Science)	3	Elective (Art Studio	
Elective (Art Studio		recommended)	3
recommended)	3		
Total	15	Total	15
Third Year			
*Natural Science	3 or 4	*Natural Science	3 or 4
FDM 315	3	FDM 316	3
FDM 417 or 418	3	FDM 416 or 417	3
HD 345	3	FDM 327	3
Elective (Art Studio		*FDM 324	1
recommended)	3	FDM 415	3
Total	15 or 16	Total	16 or 17
Fourth Year			
FDM 419	4	FDM 420	4
Soc Sci (FDM 401		HRD Elective (Not	
recommended)	3	FDM)	3
Eng 309, 310, or 315	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		Second Semester	
	Credits		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 Studio or History.....	3	*Natural Science.....	3 or 4
*World Civilization.....	3	Mkt 300.....	3
FDM 216.....	3	*World Civilization.....	3
FDM 213 (Natural Science).....	3	Sociology 100.....	3
Acct 201.....	3	Acct 202.....	3
Total	15	Total	15 or 16

Third Year

*Natural Science.....	3 or 4	*Humanities.....	3
Elective.....	3	FDM 328.....	3
*Written Communications.....	3	Mkt 397.....	3
FDM 327.....	3	HD 345.....	3
HE 255.....	3	*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 416 or 417.....	3
FDM 417 or 418.....	3	Mkt 341.....	3
Electives.....	3 or 4		
FDM 403 (Optional).....	3		
Total	15 or 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.

Professor: Umbel. Associate Professors: Herrick, Troxell. Assistant Professors: Furer, McOmber, Sankey, Walker. Lecturers: Aikman, Des Jarlais.

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 (1L, 1L-Lb, 1Lb) Des Jarlais
Principles of basic clothing construction with emphasis on standards, techniques and related fabric testing.

125 Fashion Analysis (3) I, II (3L) 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) Aikman
Development of apparel design through sketching the fashion figure. Pre: 111.

315 Draping (3) I, II (3-2 Hr-Lb) Umbel
Principles of pattern making through draping muslin models on professional dress forms. Pre: 215.

316 Advanced Pattern Designing (3) II (2-3 Hr-Lb) Furer
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. FDM juniors and seniors only.

327 Fashion Merchandising (3) I, II (3L) 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.

328 Fashion Merchandise Planning and Control (3) I, II (3L-Lb) Troxell
Theories, problems and procedures relating to financial and assortment planning and control of retail fashion inventories. Pre: 327, Acct 201-202.

329 Field Experience (2) SS only Troxell
Minimum of eight weeks' full time supervised internship in the fashion industry; comprehensive terminal report required. Pre: consent of instructor.

401 Man and Clothing (3) I (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.

415 Advanced Materials and Methods for Clothing Construction (3) I, II (2L-Lb) Sankey
Principles of advanced techniques for garment construction with emphasis on new and difficult to handle fabrics. Pre: 113 or consent of instructor.

416 Costumes of Northeast Asia (3) II (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 (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) I (3L) Umbel
Historical development and characteristic features of traditional and folk costumes and fabrics of India, Pakistan, Thailand, Cambodia, Malaysia, Indonesia, the Philippines. Relation to customs and culture; impact of Western influence on contemporary dress. Pre: 6 credits World Civilization (FDM 216—F.D. majors only).

419-420 Apparel Design Studio (4-4) Yr. (v.) Furer
Designing and constructing ready-to-wear collection of spring showing. Develop fashion design portfolio. Pre: 316, 415, 416, 417 or 418.

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		Second Semester	
	Credits		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
		*SocSci	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

*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.

COMMUNITY NUTRITION

First Year

First Semester		Second Semester	
	Credits		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		
†*Biol 220.....5	FN 375.....3 or 4		
††*Micro 130.....3	*Humanities.....3		
††*Micro 140.....1	*Soc Sci.....3		
	*Soc Sci.....3		
Total	16	Total	16 or 17

Third Year

††Ag Bio 402 or	††Ag Bio 403 or	††Biomed 301.....4	†Mgt 301.....3	†FSA 383.....3	†FN 476.....3	Ed EC 314.....2	†HD 232, Psy 320, or	Psy 322.....3	†Acc 201 or	FSA 384.....3	*Humanities.....3	Elective.....3
Bioch 441.....3	Bioch 442.....1											
Total	14	Total	17									

Fourth Year

††FN 485.....3	††FN 477.....3	HD 345.....3	HD 300 or	400 levels.....3	Ag Ec 434 or	Psy 113.....3	††FN 486.....3	†FN 490.....3	†FN 499.....2	HD 343.....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

Second Year

†Acc 201.....3	*Biol 220.....5	††FSA 181 or	FN 275.....3	††Micro 130.....3	††Micro 140.....1	*Humanities.....3	††FSA 387.....3	*World Civil.....3	††FN 285.....3	Elective.....3
Total	15	Total	15							

Third Year

††FSA 383.....3	†Mgt 301.....3	FN 375 or Phys 100.....3	††Biomed 301.....4	*World Civil.....3	†FSA 384.....3	FN 376 or Fd Sc 401.....3	FSA 483.....3	††Ag Bio 402 or	Bioch 441.....3	††Ag Bio 403 or	Bioch 442.....1	*World Civil.....3	††FN 490.....3
Total	16	Total	19										

Fourth Year

††FN 485.....3	HD 345.....3	†Mgt 341.....3	*Humanities.....3	Elective.....4	†FN 486.....3	FSA 482.....3	†FN 476.....3	†Ed Psy 311.....3	Elective.....3
Total	16	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	Credits	Second Semester	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 FdSc 401.....3		FN 275.....3	
Total	16	Total	16

Second Year

†Chem 133.....2	†Chem 134.....2	*World Civil.....3	*Soc Sci.....3	*Micro 130.....3	†Micro 140.....1	†Chem 241.....3	†Chem 242.....1	*Humanities.....3	†FN 285.....3	*World Civil.....3	*Communications.....3
Total	14	Total	16								

Third Year

†Ag Ec 434.....3	*Biol 220.....5	HE 357.....3	Elective.....5	*Soc Sci.....3	Mkt 300.....3	†FSA 387.....3	†FdSc 401.....3	Elective.....4
Total	16	Total	16					

FOOD SERVICE MANAGEMENT

Fourth Year

†FN 477 3	†FN 476 3
†FN 492 3	†FN 499 2
Elective 10	Elective 10
Total	Total
16	15

First Year

First Semester		Second Semester	
	Credits		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	
Elective 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
†Acc 201 3	Elective 3
††FSA 387 3	
Total	Total
16	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	Total
17	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	Total
15	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: Lichton, Orr, Van Reen. *Associate Professors:* Hilker, Standal, Weddle, Young. *Assistant Professors:* Ching, Hotchkin, Maretzki, Wenkam. *Instructor:* Helber.
Lecturers: Drake, Ohata.

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.

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	Total
16	15

Third Year

*Biology 220, Micro 130, 140, or Zool 101 4 or 5	†FN 376 or FdSc 401 3
Mkt 300 3	†Mkt 397 3
Mkt 321 3	Journ 325 3
*Soc Sci 201 3	Art 266 3
Art 265 3	Ed EC 314 2
	Sp 262 3
Total	Total
16 or 17	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	Total
15	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.

- 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.
- 385 Principles of Human Nutrition in Health and Disease (3) II (3L)** Maretzki
 Basic physiological and metabolic aspects of nutrition. The application of nutritional principles in the selection of normal and therapeutic diets. Designed for students in the allied health professions. Pre: Chem 113-114, Biol 220, Biomd 301.
- 476 Cultural Aspects of Food (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; Biomd 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.
- 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 1971-72)
- 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.; not offered 1971-72)
- 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 1971-72)
- 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 1971-72)

- 684 Lipids in Health and Disease (2) I (2L)** Young
 Lipid metabolism and nutrition with particular emphasis on cardiovascular diseases. Pre: 485-486 or consent of instructor. (Alt. yrs.; offered 1971-72)
- 685-686 Advanced Human Nutrition (1-1) I, II (Yr.)** Lichten
 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.; not offered in 1971-72)
- 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** Hotchkin
 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)** Hotchkin
 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** Hotchkin
 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** Hotchkin
 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 an option in this department may choose one of several educational approaches in which a knowledge of family life in our society and a general home economics background prepares them for teaching persons of various age levels in different organizations and agencies.

Option I. Preparation to meet certification requirements for teaching home economics in the secondary school. This option requires transfer to the College of Education beginning with the junior year with a GPA of 2.5. Bachelor of Education Degree—130 credits.

Option II. Preparation for home economics positions with the Cooperative Extension Service.

Option III. Preparation for positions in consumer services relating to housing, equipment, foods and clothing and textiles.

Option IV. Preparation for positions in community service organizations.

Requirements for options II, III & IV are worked out for each student in consultation with an advisor after careful exploration of the student's aptitudes, interests and professional goals.

OPTION I

**HOME ECONOMICS EDUCATION:
SECONDARY SCHOOL TEACHING**

First Year

First Semester		Second Semester	
	Credits		Credits
*Math 100	3	*Art 101	3
*Chem 113	3	*Chem 114	3
*Chem 115	1	*Chem 116	1
*Eng 100	3	*Econ 120	3
*Sp 145	3	*Psy 100 or 111	3
FDM 113 or FN 275	3	FDM 113 or FN 275	3
Total	16	Total	16

Second Year

*Zool 101	4	*Phys 100	3
*Eng 251 or 253 or 255	3	Phys 101	1
*Hist 151 or 161 or 351	3	FDM 213	3
*Anthro 150 or 200	3	*Eng 252 or 254 or 256	3
HD 231	3	*Hist 152 or 162 or 352	3
		*Soc 151 or 201	3
Total	16	Total	16

Third Year

HE 255	3	HE 253	3
FN 375	4	HE 251	3
*Micro 130	3	Ed CI 312	3
*Micro 140	1	HE 357	3
Ed EF 310	3	Ed CI 371	3
Ed EP 311	3	Elective	3
Elective	1		
Total	18	Total	18

Fourth Year

HE 359	3	Ed CI 390	12
HD 341	3		
FN 285	3		
Elective (FDM)	3		
Elective	6		
Total	18	Total	12

*UH Core.

Professor: Dale. Lecturer: Kimura.

251 Household Equipment (3) I, II **Kimura**
Selection, optimum use, upkeep of household equipment. Emphasis on design, construction, materials, consumer use.

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253 Management of Family Resources (3) I, II **Dale**
Management problems and processes involving human and material resources important for the effective functioning of the family. Emphasis on decision-making as effected by family variables including goals, values, resources, and general economic conditions.

255 Family Housing and Home Furnishings (3) I, II **Kimura**
Socio-psychological, economical, legal, cultural and aesthetic factors involved in housing today's family. Selection, arrangement and coordination of furnishings, backgrounds, accessories, color and lighting for family living.

357 Consumer Economics (3) I, II **Staff**
Role of family as consumer unit in the economy. Pre: Econ 120.

359 Home Management Seminar (3) I, II **Dale, Kimura**
Readings, group discussion and application of managerial concepts such as decision-making, resource allocation and work simplification as they relate to the students' living situation and families in the community. Experiences in group decision making. Pre: 253.

461 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 (3) I, II **Staff**
Field experience carried out in connection with Cooperative Extension Service and other community projects dealing with family living. Readings, conferences, reports required. Pre: consent of instructor.

499 Directed Reading and Research (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 satisfy degree requirements in human development with emphasis on either Child Development or Family and Community Service. The child development option orients the students toward work with preschool children and their parents in group centers. Family and community service orients the students toward adult education, college student personnel, business, and work in various types of community agencies. Admission to upper division major status requires a minimum grade-point average of 2.0, successful completion of HD 231-232 and HD 345, and interview with the departmental Faculty-Student Council. It is the purpose of the council to insure that applicants fully understand the objectives of the department as well as the nature and scope of required academic and practical work.

Students wishing to be considered for admission should apply through the department chairman. Freshmen may be admitted provisionally to the department and are encouraged to take part in its affairs. Others should apply as early as possible in their sophomore year. Those applying after the beginning of the Fall semester in their junior year may need to attend an additional semester.

Professors: Allen, Chantiny, Kraemer, Lampard, Weeks. *Associate Professors:* Lenzer, Wittermans. *Assistant Professors:* Fargo, Meredith, Schwitters. *Lecturer:* Rauch.

207 Shifting Sex-Roles in Contemporary Societies (3) I, II Staff
Biological and cultural bases of sex-role differentiation; political, economic, and professional implications; 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. HD 231 and HD 232 need not be taken in sequence.

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 pre-requisite 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.

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 Adolescence and Youth in 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.

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 HD 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.

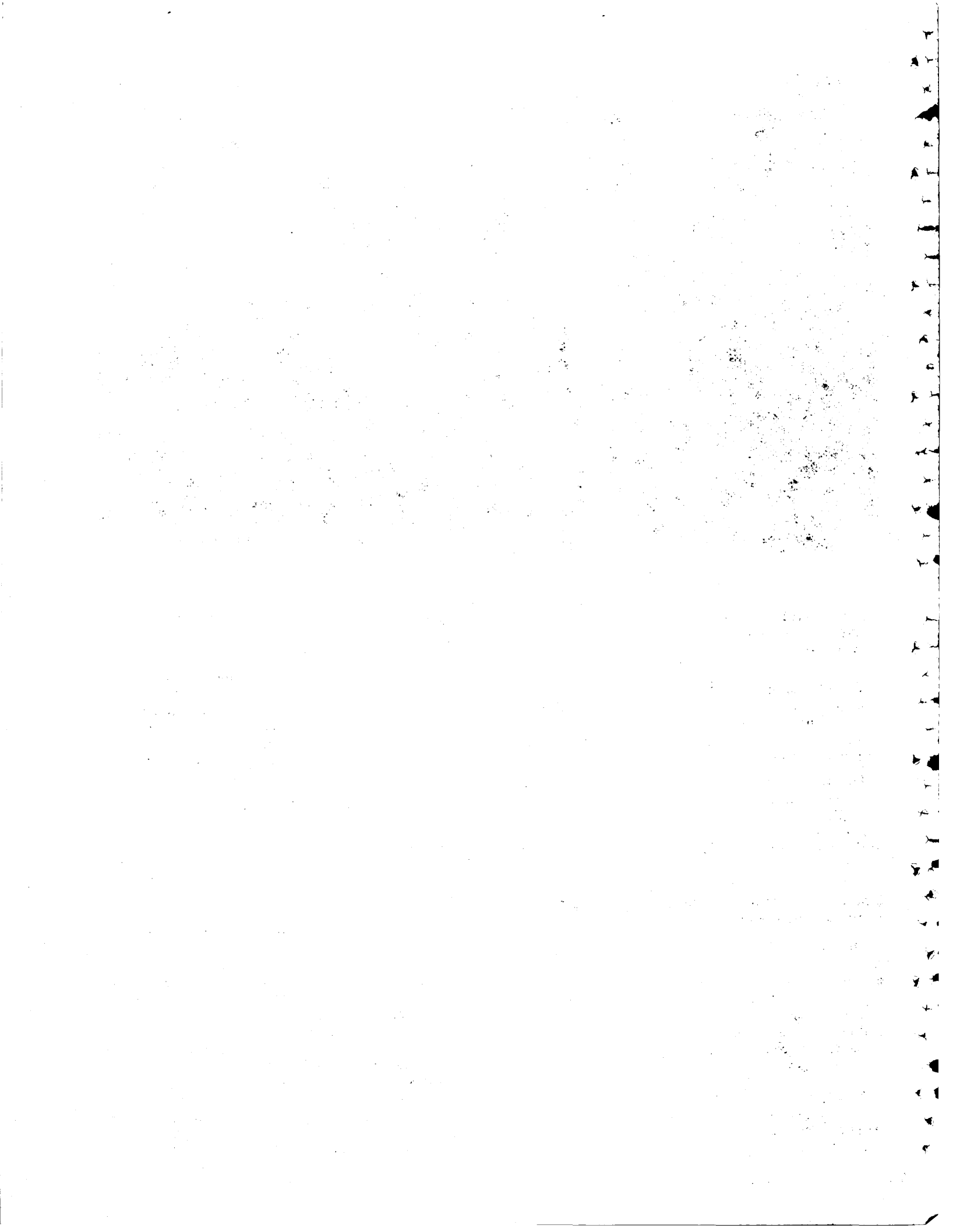
An important phase of extension work is to demonstrate in a practical manner the results of scientific experiments conducted by the Hawaii Agricultural Experiment Station, by state stations, and by the USDA.

HAWAII AGRICULTURAL EXPERIMENT STATION

The facilities of the station, including the research staff and the field laboratories, are available in part for undergraduate and graduate instruction. Students are able to study the latest methods and results of agricultural research. Close collaboration is maintained with the stations of the Hawaiian Sugar Planters' Association and the Pineapple Research Institute of Hawaii.

The function of the station is "to promote scientific investigation and experiments respecting the principles and applications of agricultural science" (Hatch Act of 1887). Investigations cover the physiology of plants and animals; diseases, insects, and parasites; agronomy, soils, food science, food processing, agricultural engineering, biochemistry, human and animal nutrition; breeding and genetics; as well as 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 Research Center at Waialeale, 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, geosciences, history, horticulture, linguistics, mathematics, 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 communications, educational foundations, educational psychology, electrical engineering, elementary education, English, English as a second language, entomology, food science, French, genetics, geography, geosciences, German, history, horticulture, information sciences, library studies, linguistics, mathematics, mechanical engineering, microbiology, music, nursing, nutrition, ocean engineering, oceanography, Pacific islands studies, pharmacology, philosophy, physics, physiology, political science, psychology, public health,* 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 1971-72 issue of the Graduate Bulletin, 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—\$1.00 surface mail; \$1.75 airmail. Foreign countries within these areas: Africa and Asia—\$2.25; Europe and South America—\$2.00; Central America and Caribbean—\$1.50. Available July 1971.

*For these programs see the *Graduate Bulletin* or bulletins of the respective schools.

School of Library Studies

The Graduate School of Library Studies exists to prepare professional personnel for academic, public, school and special libraries, and to promote library service in general through research and field study. The School was established in 1965 and was accredited by the American Library Association in 1967.

Academic and placement advising is available in the office of the dean.

Requirements for Admission*

1. Graduation from an approved institution of higher learning with a bachelor's degree representing a broad cultural background plus a field of specialization.

2. Evidence in the college record of above-average scholastic ability and promise for successful graduate study, usually shown by graduation with a *B* average, or by a Graduate Record Examination Aptitude Test score 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.

*For application forms or for more information write to: The Graduate School of Library Studies, University of Hawaii, Honolulu, Hawaii 96822.

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.

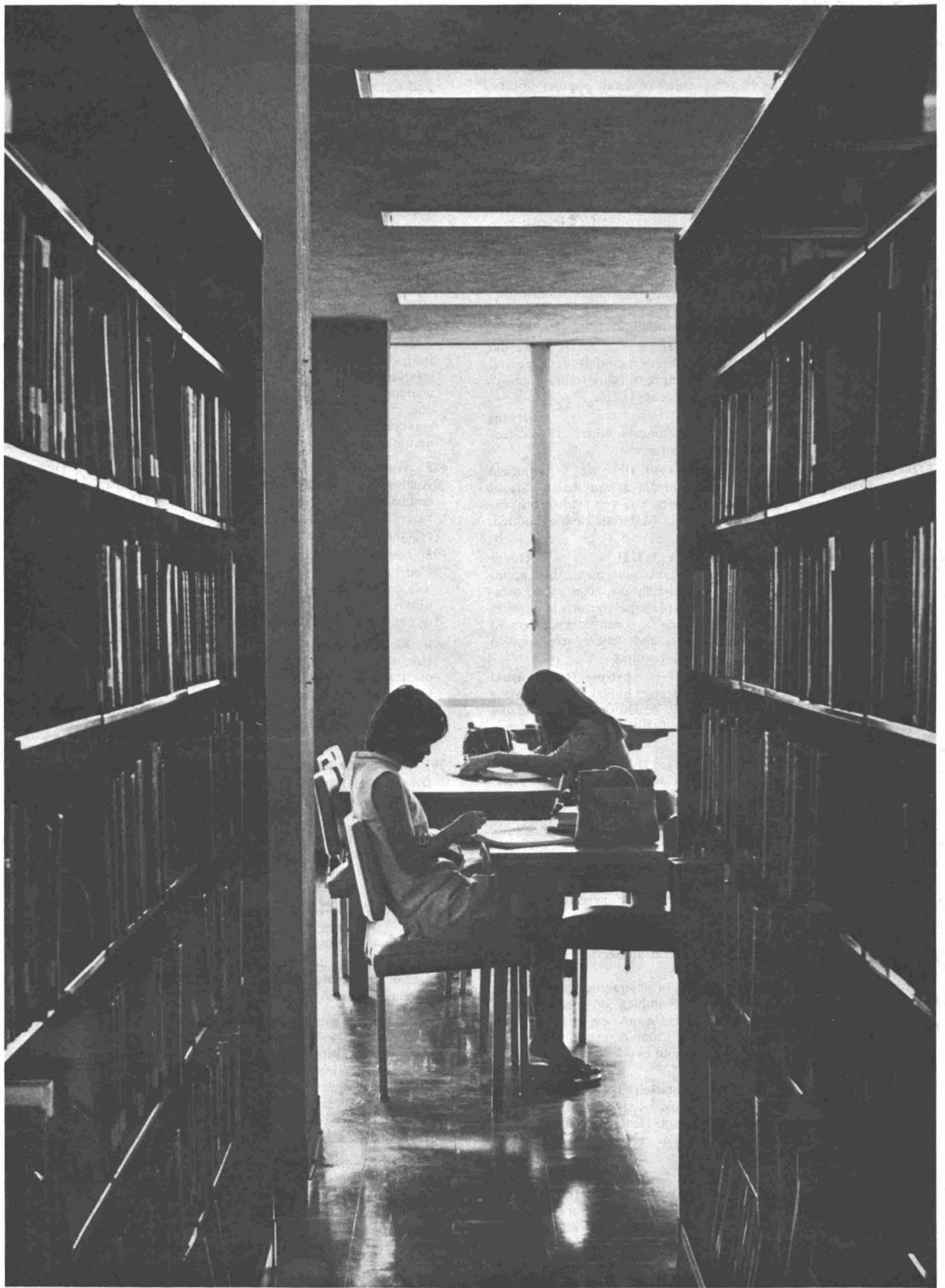
Academic Advisory Service. The office of the dean provides academic advice and placement counseling.

Library Studies (LS)

Professors: Ayrault, DeAngelo, Schofield, Stevens, Suzuki, Vann. *Associate Professor:* Harris. *Assistant Professors:* Abrera, Haas. *Lecturers:* Adams, Fristoe, Hunt, Kamida, Kane, McAlister, Nunn, Saito, Taylor, Tsui, West, Wheelwright.

601 Bibliography and Reference Sources (3) I, II Taylor, Tsui
Analysis of means by which availability and content of graphic materials recorded; characteristics and problems of national and subject bibliography; function of librarian as bibliographer. Introduction to materials and methods for locating information in general reference sets, specific fact sources, periodical indexes, abstract series; analytical and searching procedures for simple inquires.

602 Advanced Reference Sources (3) I, II 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** **Abrera, Ayrault, McAlister, Kamida**
Introduction to cataloging in research or large general library, terminal course in cataloging for school or small popular library. Principles and practice of descriptive cataloging, structure, application of Dewey Decimal Classification and Sears' List of Subject Headings; use of printed cards.
- 606 Advanced Cataloging and Classification (3) I, II** **Ayrault**
Continue 605, using especially Library of Congress scheme to illustrate principles and practices of organization of materials and subject analysis in research and large general libraries. Considers problems peculiar to handling of certain forms of materials; provides opportunity for study of cataloging in collections specialized by subject. Pre: 605.
- 610 Social Functions of Libraries (3) 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**
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**
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, Hunt, 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.
- 662 Business and Economic Literature (3) I** **Wheelwright**
Bibliographic structure and sources used in building and servicing collections and providing information in commercial fields: for students and librarians interested in business and social science services in public, university, company libraries.
- 664 Abstracting and Indexing for Information Services (3) I, II** **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. Analyzes various types of abstracts, their organization and uses, and develops skill in preparation of abstracts and indexes.
- 670 Literature Searching and Documentation (3) II** **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.
- 678 Reader Services (3) I, II** **Harris, Haas**
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**
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** **DeAngelo, 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.
- 685 Traditional Literature and Oral Narration (3) I** **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) I** **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 (4) 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 inter-relations 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.
- 705 Asian Reference Sources (3) I, II** **Suzuki, Nunn**
Bibliographical and reference tools and services in Asian countries with special attention to source materials in other than Western languages.
- 706 Technical Services for Far Eastern Collections (3) I, II** **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, II** **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

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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, 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 campus. Degree credit courses for these persons are scheduled in the evening 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.

In addition the College administers the academic affairs of students who have been admitted to the University, but are not candidates for a degree at this institution. These students may attend full or part time in the day or evening. Inasmuch as they have no required program of study such students have great latitude in the selection of their courses. They must, however, comply with other requirements and regulations of the University and must have completed any prerequisites required for the 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. Admission is governed by general University requirements, and regular residence credit is given, including graduate credit where applicable.

On-campus accelerated evening courses are scheduled four times a year. Off-campus accelerated programs are also offered four times a year at 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 semester at public schools on Oahu, Hawaii, Maui, Kauai, Molokai, and Lanai. Advanced education courses and courses designed to upgrade the teachers' subject-area com-

petence are offered. On Oahu these classes usually meet in the late afternoon; on other islands, they often meet on weekends with faculty members commuting from the Manoa campus.

In addition to its program within the state, the College operates overseas centers at 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.

Under federal contracts the College schedules credit courses in the Navy's PACE program for shipboard personnel, and noncredit courses at Air Force installations in the Far East.

Individual course offerings at times and places suited to special groups of students can be arranged, either on a credit or noncredit basis.

Special and Professional Programs

Included are a wide range of noncredit university continuing education programs, often co-sponsored by University or other professional groups.

Special Programs provide special interest groups in the community educational opportunities to gain understanding of current issues and problems in our society. Discussion groups are organized on international affairs and on ideas and values that are being challenged today.

Professional Programs offer post-graduate professional education activities for a variety of professions. These programs are offered in cooperation with professional organizations and University departments. Current programs include Summer Teacher Institutes, which offer teachers in the State Department of Education an opportunity to study new teaching methods and recent developments in content areas; Small Business Extension Service Continuing Education Series; and continuing education for ministers, health professions, and lawyers.

Conference Center 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; pro-

urement of resource persons, arrangements of travel, living accommodations and facilities; preparation of final financial and proceeding reports.

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.

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.

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 inservice training, scholarships, internships and other means to aid in the development of government officers and employees. The center presents and coordinates courses, workshops, seminars and programs in public administration and serves as a clearing house for information and training in government-management practices, techniques and new technologies.

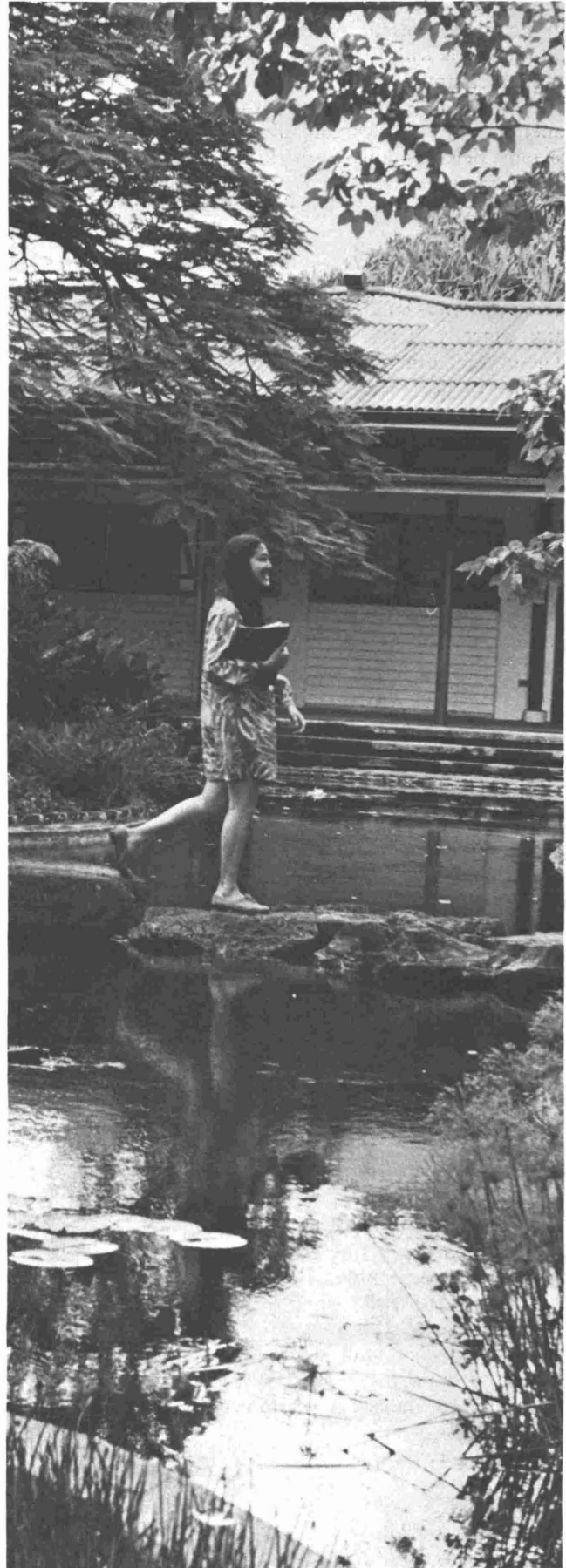
Center for Labor-Management Education

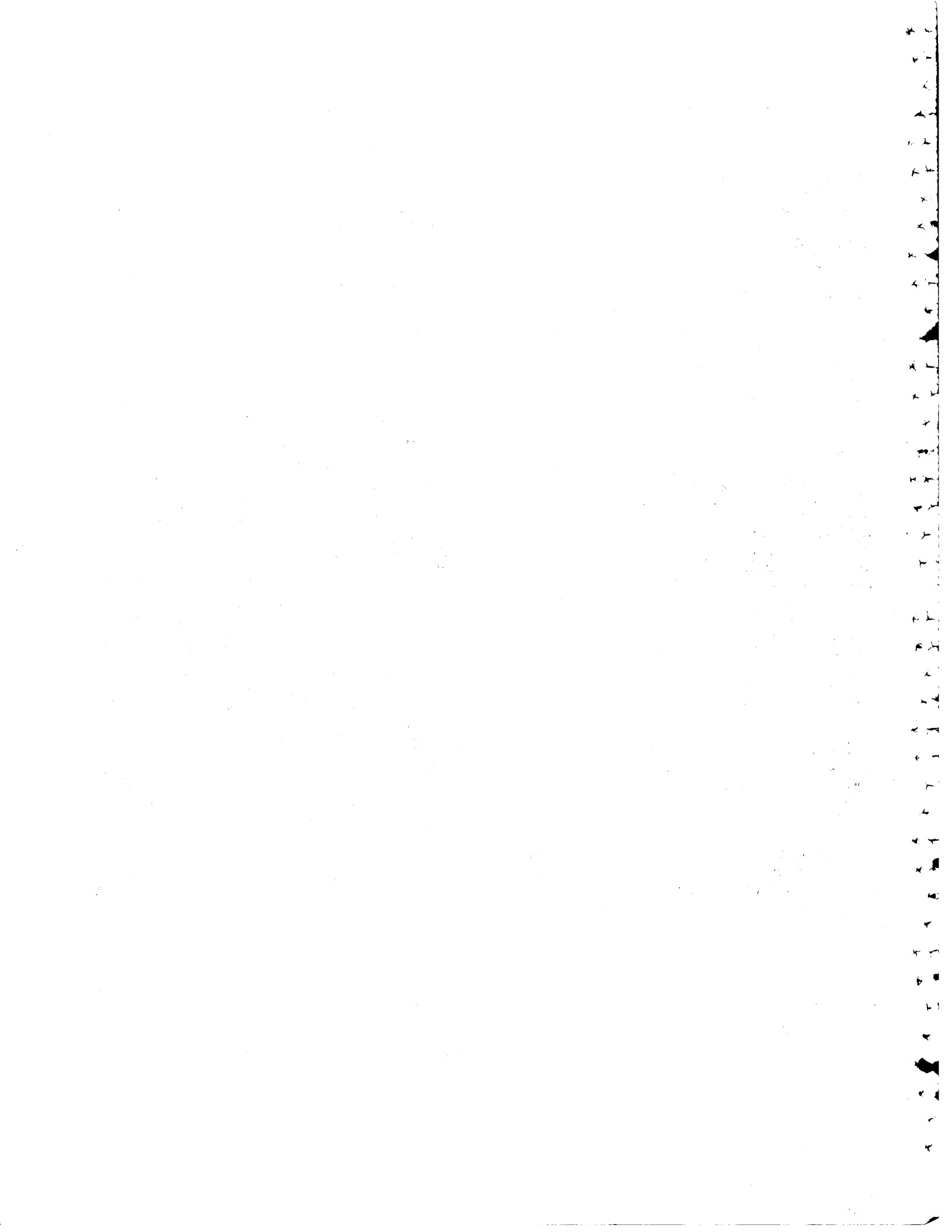
The center, instituted in 1965, provides basic leadership training for those associated with management and labor, to promote (1) understanding by both groups of the fundamental problems of mutual interest with which they deal; (2) knowledge of the factors which are essential to productive relations 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 week-end institutes, conferences and staff training programs.

Study Abroad Office

In Fall, 1971, the College will accept responsibility for various student exchanges, work study, touring study groups and other programs which involve school attendance or independent study of University students on the mainland or in foreign countries.

Announcements and other information concerning these varied programs will be made available by the College upon request.





East-West Center

The East-West Center—formally known as The Center for Cultural and Technical Interchange Between East and West—was established by the U.S. Congress in 1960. The goal of the Center, as mandated by Congress which provides annual appropriations for its support, is to promote better understanding and relations among the peoples of Asia, the Pacific area and the United States through cooperative study, training and research.

In cooperation with Asian/Pacific countries and the University of Hawaii, the Center aims at the free interchange of information, ideas and beliefs in cultural and technological fields.

Each year about 1,000 students, fellows, and technical training participants from more than 35 countries and territories come to the Center under federal scholarships and grants, supplemented in some fields by contributions from foreign governments and private foundations. Academic instruction is provided, and degrees are awarded to students in degree programs, by the University of Hawaii under a grant-in-aid agreement with the Department of State for operation of the Center. Nondegree programs and projects involving education, research and technological training are conducted by the Center in cooperation with the University, U.S. mainland and Asian/Pacific institutions, federal and state agencies, and private organizations.

Experience at the Center in its first decade has led to the conviction that deeper cultural interchange and mutual respect is fostered when men and women of diverse nationalities study and work together on seeking and testing alternative solutions to common problems affecting the quality of life. Accordingly, academic study, research and training is coordinated in problem-oriented institutes which carry out most of the Center's programs.

Problem-Oriented Programs

East-West Communication Institute. Communication problems involved in social and economic change provide the focus for study, research and training in the institute. Seminars, workshops and special activities provide the more generalized students and scholars in the social sciences and humanities with a specialization in the communications process. Scholarships for M.A. and Ph.D. studies are awarded through the institute for study at the University in such fields as Asian studies, American studies, art, economics, educational communications, educational psychology, English, history, information sciences, library studies, linguistics, political science, psychology, sociology, speech-communication and related disciplines. Institute students and Fellows also participate in nondegree training programs in such fields as population information and agricultural communication. The institute, under a grant from the Agency for International Development, is carrying out a three-year study of information, education and communication support for family and population planning programs in developing countries. Other resource material on the use of communication in social and economic development is collected for research purposes at the institute, which also issues a periodic *Newsletter*. Jefferson Fellowships are awarded by the institute annually to mid-career Asian and Pacific journalists in print and broadcast media for a semester of non-credit study at the University of Hawaii. The 1971-72 Jefferson Fellowships are scheduled for the spring semester, January-May, 1972, for editors, writers and broadcasters with particular interest and experience in developmental communication.

East-West Culture Learning Institute is concerned with study and research on how another culture can be learned without losing the identity of one's own culture. Two major elements, the Culture Learning Program and the Language Learning Improvement Program, are designed to foster the Center's goals of interchange and mutual understanding by coordinated programs of study, research and training. Included in institute programs is the learning of other cultures by different means such as study of language, literature, arts, music, drama, history and philosophy. In addition to classroom work, advanced graduate students may receive practical research training experience as interns in the institute. Institute programs provide Culture Learning scholarships for M.A. and Ph.D. study in such University departments as Asian studies, American studies, anthropology, art, drama and theatre, educational administration, educational foundations, educational psychology, geography, history, music, Pacific islands studies, philosophy, political science, psychology, public health, social work and sociology. Language Learning Improvement scholarships are awarded for University study in such fields as Asian/Pacific languages, education, English, linguistics, teaching of English as a second language (TESL), psycholinguistics and speech-communication. The institute also provides nondegree training and aims at the development of instructional material and new curricula based on research.

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East-West Food Institute deals with an integrated interpretation of the multi-faceted human, economic and technical concerns with food. Research and training are aimed at contributing toward the solution or relief of problems related to food which range from policy making in national capitals to cultural values, and involve proper distribution and nutrition as well as pro-

duction. Scholarships are awarded through the institute for M.A. and Ph.D. study at the University in a wide range of disciplines in the humanities and social and natural sciences as well as in fields directly associated with agriculture, fisheries, nutrition, food technology and economic analysis. Advanced degree students affiliated with the institute are expected to take at least one course in the tropical application of a food-related field outside the primary subject-matter area of interest; take a course in "Agriculture and Rural Development Administration"; and participate in one semester of the institute's seminar on "The Food Systems of Asia and the Pacific." Outstanding scholars and authorities are invited in small numbers as senior fellows and fellows to undertake research, discussion, consultation, teaching, program development and writing. Fellowship research activity in 1971-72 is directed toward such fields as multiple cropping, agricultural diversification program technique, agricultural finance and capital formation, resource inventory through photo interpretation, agribusiness, agricultural administration, weed biology and control, soil and water management and the role of foreign capital in development. Aquiculture, nutrition, the social and political impact of technical change, and regional analysis are also among areas of interest.

East-West Population Institute, established within the Center in 1969, offers scholarships to qualified candidates for advanced degrees in various fields such as anthropology, economics, geography, sociology and public health, who also wish to specialize in population studies. The objective of the degree program is to enable students to acquire a thorough understanding of demographic structures and processes—fertility, mortality and migration—and their causes and consequences.



The program emphasizes the social and economic aspects of population trends and examines the rationale and the ways by which societies attempt to modify these trends. Special attention is paid to training in techniques of demographic analysis appropriate for deficient and erroneous data. The institute's geographic focus is the Asian and Pacific area, reflecting Hawaii's unique position at the crossroads of the Pacific and utilizing the University's extensive research and library facilities in Asian and Pacific studies. The institute is active in population research with an emphasis on Asian and Pacific populations. Under supervision of faculty members who hold joint appointments with the East-West Center while also offering population studies courses in various University units, and under the supervision of other Center staff in population, graduate students have opportunities to participate in research projects conducted at the institute. For more advanced students, particularly at the Ph.D. level, field work outside Hawaii is arranged and supported by the institute on a team or an individual basis. The institute also conducts a variety of short-term nondegree training programs, maintains a specialized collection of books and reference materials, and engages in various research- and service-related activities.

East-West Technology and Development Institute.

Programs of the institute are designed to increase the knowledge and capabilities of scholars, students and practitioners in the areas of science and technology, and in development policy, planning and administration. Finding solutions to problems posed by rapid technological change and development is of utmost concern to countries of both East and West and research programs emphasize the generation of new ideas based on Asian and Pacific developmental experiences. Adaptation of new technologies and developmental processes is not seen as a unilateral function from the East-West Center to other institutions, but rather in the form of student, faculty, and staff exchanges, and collaborative programs. Academic fields in which the institute awards scholarships and fellowships include engineering, ocean and geo-sciences, economics, political science, sociology, health, education, social work, business and public administration, urban and regional planning. Degree-seeking students are expected to participate in team projects with institute staff and fellows in research and training to prepare them for their future roles in planning and managing developmental change.

Promising areas of scientific and technological research include "technological leapfrogging" and applied "intermediate" technology. "Technological leapfrogging" bypasses steps in the development process by introducing new ideas and new technologies. "Intermediate" technology modifies and adapts technological advances to meet specific needs of individual countries. One major institute development program is micro-planning for the areas of health, tourism, education, manpower, housing and small industries. Programs in the development policy field include agrarian reform, tax and fiscal policy, and regional cooperation and integration. Development administration programs in-

clude new enterprises, project management and administrative reform.

Open Grants

The East-West Center also awards scholarships, fellowships and grants embracing projects and study opportunities not directly associated with its problem-oriented programs. Open Grants provides scope for educational and research innovation in areas of mutual East-West concern and the planning for new Center programs.

Planning involving Center staff, students, fellows and University faculty began in 1970-71 to determine how best to provide a programmatic focus for contributions from various fields in the humanities and the arts.

Scholarships and Grants

Scholarships for study at the University of Hawaii, mainly at the graduate level, generally include round-trip air fare from the student's home, housing in the Center residence halls, tuition and books, medical insurance and a modest stipend for food and incidental expenses. If the student meets Center requirements, a grant may provide field education on the United States mainland for Asian/Pacific students and in Asia or the Pacific for American students.

Candidates for degrees must meet the academic standards of the University of Hawaii and at the same time must give evidence of interest and ability in contributing to intercultural communication. Scholarships are initially awarded for 17 or 19 months with provisions for extension to those who qualify. All degree program scholarships for Americans are at the graduate level. Some undergraduate scholarships are awarded to those students who come from countries where there are a limited number of higher educational institutions.

Senior Fellows and Fellows. Grants, usually ranging from four to ten months in residence, are made to experienced, professional level persons—such as professors, government administrators and authors—for participation in Center programs and seminars and for individual research and writing.

Training Grants. Housing, living expenses and training costs are provided, sometimes in cooperation with other cooperating agencies, on the same basis as provided in academic student grants. The cost of international transportation is usually paid by governments or agencies sponsoring participants. Training projects usually run from three to twelve months.

Language Requirements. Because the medium of instruction at the University of Hawaii is English, student grantees from Asia and the Pacific area are tested for English proficiency by the University's English Language Institute. Those requiring extra help are assigned to full-time or part-time training in English until they are ready for a full academic program. American students are required to complete at least two years of Asian or Pacific language study before the end of their grants.

Intercultural Activities. To help promote cultural interchange, academic scholarships are awarded to approximately two Asian/Pacific students for each American at the Center. Center-wide activities embracing all participants—students, senior fellows and fellows and technical trainees—are designed to develop intercultural understanding recognized as one of the basic goals of the Center.

Supporting Services

The East-West Center Press issues new publications originating in the Center, at the University of Hawaii and other East-West institutions. It has developed an import and export book program to promote cultural and technical interchange.

The Conferences and Seminars Office supports international meetings of senior-level experts dealing with problems of mutual concerns to East and West, with emphasis on those involving Center programs.

The Office of Participant Services administers conferences and seminars, 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. The Office of Public Affairs disseminates information on Center programs and activities. The Office of Administrative Services supports all Center participants and programs.

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 and the East-West Center Press; John F. Kennedy Hall, a theater-auditorium; Hale Manoa and Hale Kuahine, residence halls for men and women participants. East-West Center funds were used for the construction of Edmondson Hall and a wing of Moore Hall, University classroom buildings. A Japanese garden is adjacent to the administration building and a traditionally-styled Thai pavilion, dedicated by King Bhumibol Adulyadej in 1967, lies between Jefferson and Lincoln halls.

The chancellor of the East-West Center, through a grant-in-aid agreement which channels federal funds to the University, is responsible to the board of regents through the president of the University. The National Review Board, appointed by the U.S. Secretary of State and headed by the governor of Hawaii, represents the national interest in the Center and advises the Secretary of State.

Further information concerning scholarships and grants may be obtained by writing to the Office of Admissions, East-West Center, 1777 East-West Road, Honolulu, Hawaii 96822.



Hilo College

Hilo College of the University of Hawaii is a four-year college, offering courses in the liberal arts and two-year programs in tropical agriculture, business administration, and engineering. It began in 1947 as a part of the Extension Division of the University and functioned under the College of General Studies. In 1951 it was put under the dean of faculties and two years later it was given a new campus of some 58 acres by the legislature. A third year was begun in 1969, a fourth in 1970. The College graduated its first class in May 1971.

The campus commands a view of the Pacific Ocean to the east and of the majestic, snow-capped peak of Mauna Kea (13,796 feet high) to the west. Its extensive grounds on the south side of Hilo, a quiet city of 28,800, provides an ideal location for serious study. With completion of a new dormitory in 1970, there are living accommodations for a total of 180 students. Also located on the campus are the facilities of the Cloud Physics Observatory and the East Hawaii Agricultural Station.

Hilo College presently has an enrollment of over 1,200 students. Most of the students are from the state of Hawaii, but there are significant numbers from the U.S. mainland and eleven foreign countries. Located midway between the East and the West, Hilo College welcomes students of all races and colors: "Above all nations is humanity."

Facilities

The campus consists of some 58 acres with an additional 170 acres designated for expansion. There are eleven existing buildings, the latest being a major addition to the library, a new life science building, a second dormitory, and a new auditorium. New buildings in the planning stage include: administration, fine arts, social science, campus center and more dormitories. Also on campus are the laboratories and offices for the Cloud Physics Observatory, the Agricultural Experiment Station and the Mauna Kea Observatory.

Fields of Study

Freshmen may elect either courses required by the general education core or may choose the experimental, integrated freshman program, an interdisciplinary, problem-oriented approach to topics of special contemporary significance.

After completing the core requirements, students may choose among composite academic majors in the social sciences, language arts, or biological sciences; or single subject majors in English, speech, history, anthropology, and mathematics. New majors are being planned in psychology, sociology, chemistry, and philosophy/religion. Students who wish to enter the teaching profession may pursue provisional teaching certification, while also taking courses leading to a bachelor's degree in academic areas.

In addition Hilo College also offers two-year programs in business administration, engineering, tropical agriculture, and nursing. During the summer Hilo College offers study tours with academic credit to Sweden and Japan.

Library Facilities

The Hilo College Library, built in 1962 and expanded in 1969, has a capacity of 101,000 volumes and provides seating for 265 students in reading rooms, individual carrels, and small group study rooms. Presently the library contains 55,000 books, subscribes to 750 periodicals, and is a federal documents depository. Trained librarians assist students in making effective, independent use of the library's resources.

Housing

The Hale Kanilehua dormitory provides housing for 28 women and 24 men students. Built in 1962, it has two major wings and a large central lounge. Hale Kauanoe provides housing for an additional 128 students.

Applications for dorm space must be accompanied by a \$10 deposit. The dorm rate for a semi-private room is \$165 per semester at Hale Kanilehua and \$185 in Hale Kauanoe and is payable at the beginning of each semester. Christmas and Easter recesses are not included in the rental fee. Students are furnished with a bed, pillow, blanket, bedspread, desk, study chair, study lamp, lounge chair and wastebasket. Each student has his own built-in closet, built-in dresser, tackboard, bookshelf and draperies. Meals are provided five days per week in the college cafetorium. Students average \$2.50 a day for meals.

Off Campus Housing

Additional housing is available off campus in accommodations listed at the office of student services. All possible assistance is offered in locating suitable accommodations.

Applications and correspondence should be directed to:

Office of Student Services
University of Hawaii at Hilo
P.O. Box 1357
Hilo, Hawaii 96720

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

Community Colleges

A statewide system of community colleges is administered by the University of Hawaii. Authorized by the state legislature in 1964 and commencing operation in 1965, the community college system is comprised of six public community colleges:

Honolulu Community College, originally established in 1920 as the Territorial Trade School, located at 874 Dillingham Boulevard, Honolulu, Hawaii 96817.

Kapiolani Community College, established in 1957 as Kapiolani Technical School, located at 620 Pensacola Street, Honolulu, Hawaii 96814.

Leeward Community College, established in 1968, occupying a newly developed campus at 96-045 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 1970 the colleges enrolled 10,853 credit and 3,116 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 Tech-

nology, 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.

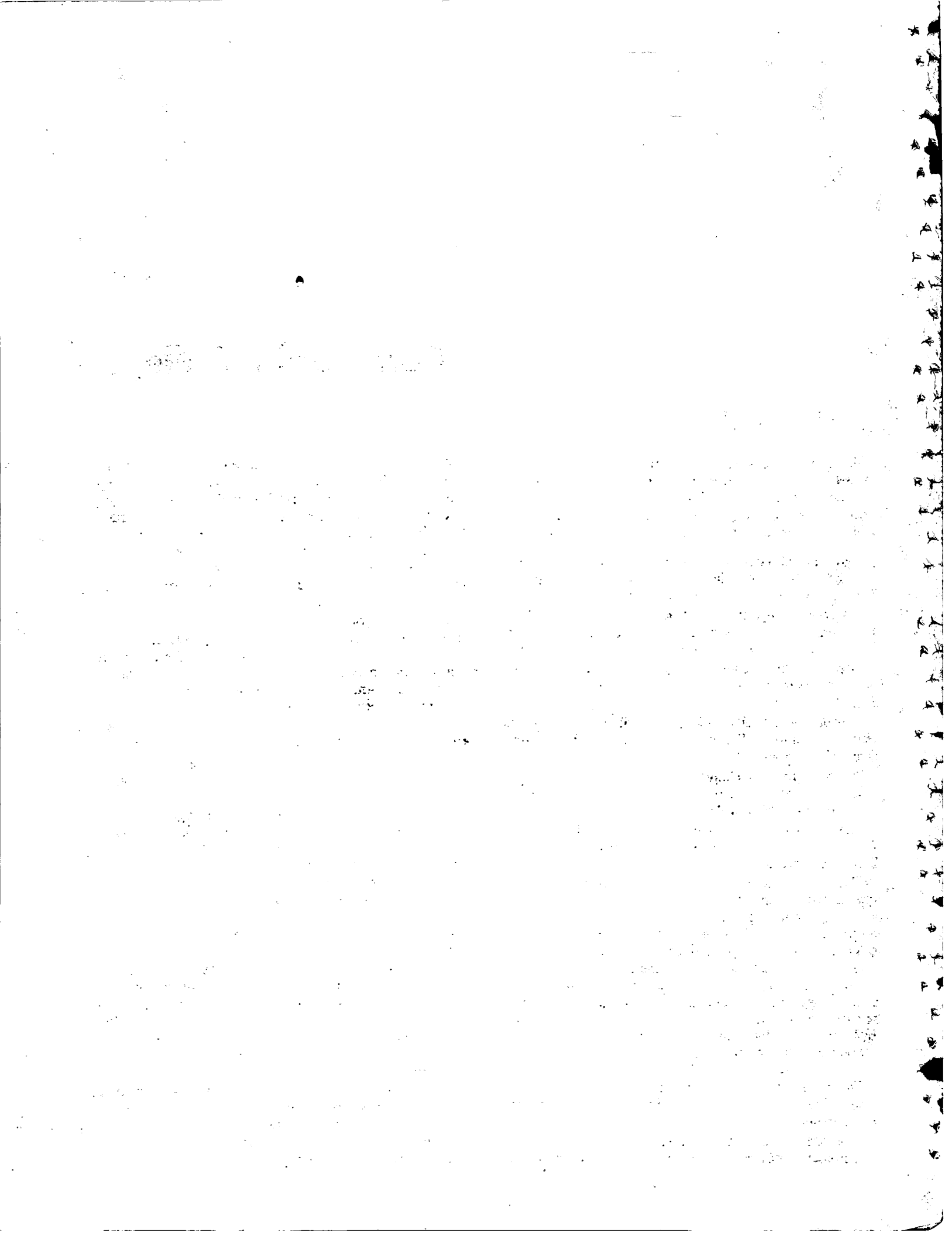
Kapiolani Community College: Accounting, Commercial Food Service, Data Processing, Dental Assisting, Food Service Management, General Clerical, General Education, Medical Assisting, Hotel and Merchandising Mid-Management, Practical Nursing, Radiologic Technician, Secretarial Science, Transfer.

Leeward Community College: Accounting, Architectural Drafting, Automotive Mechanics, Computer Science, General Education, Library Technology, Management, Marine Technology, Recreational Instruction, Secretarial Science, Transfer.

Hawaii Community College: Accounting, Auto Body Repair and Painting, Automotive Mechanics, Carpentry, Clerk-Typist, Diesel Mechanics, Drafting and Engineering Aid, Electricity, Electronics Technology, Fashion Arts, Front Office Hotel Training, General Education, Machine Technology, Practical Nursing, Restaurant and Hotel Trade, Sales and Mid-Management, Salesmanship, Secretarial Science, Waiter-Waitress, Welding and Sheet Metal.

Maui Community College: Accounting, Architectural Drafting, Auto Body Repair and Painting, Automotive Mechanics, Carpentry Technology, Fashion Arts, General Education, General Office Training, Hotel Mid-Management, Industrial Technology, Machine Technology, 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, Secretarial Science, Transfer, Welding.







Faculty and Staff

(March 1, 1971)

BOARD OF REGENTS

	Term Expires
Charles S. Ota, <i>Chairman, Kula, Maui</i>	1973
Robert L. Cushing, <i>Vice-Chairman, Honolulu</i>	1972
Clarence F. Chang, M.D., <i>Honolulu</i>	1972
Patrick M. Cockett, M.D., <i>Lihue, Kauai</i>	1971
Harold C. Eichelberger, <i>Honolulu</i>	1974
John Farias, Jr., <i>Hilo, Hawaii</i>	1973
Edward H. Nakamura, <i>Honolulu</i>	1971
Herbert M. Richards, Jr., <i>Kamuela, Hawaii</i>	1974

Note: one vacancy 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, A.B., LL.D., L.H.D., D.C.L., Litt.D. *President*
 Douglas R. Price, *Special Assistant to President*
 B.A. 1961, Valparaiso
 Simeon R. Acoba, Jr., *Staff Assistant to President*
 B.A. 1966, Hawaii; J.D. 1969, Northwestern
 *Richard S. Takasaki, B.S., M.A., M.P.A. ... *Executive Vice-President*
 *Stuart M. Brown, Jr., B.S., Ph.D. *Vice-President for Academic Affairs*
 Dewey H. Kim, *Assistant Vice-President for Systems Development*; 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, A.B., M.A., Ph.D. *Vice-President for Community Colleges*
 Walter P.S. Chun, *Director of Community College Services*
 B.A. 1950, Michigan State; M.S.W., 1954, Michigan
 Alfred L. Ellingson *Dean of Students*
 B.S. 1948, Oregon
 Donald R. Fukuda, *Associate Dean of Students*
 B.Ed. 1956, M.Ed., 1964, Hawaii
 Paul M. Miwa *Chancellor, University of Hawaii at Hilo*
 B.A. 1952, M.P.A. 1954, Ph.D. 1961, Syracuse
 *Richard H. Kosaki, B.A., M.A., Ph.D. *Chancellor, New Campus*
 *Kenneth K. Lau, B.A., J.D., LL.M. *Secretary of University*
 Roy Y. Takeyama *Secretary to Board of Regents*
 B.S. 1951, Bradley; M.S. 1952, Illinois; LL.B. 1962, Michigan

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MANOA CAMPUS ADMINISTRATION

Academic Affairs

*Stuart M. Brown, Jr. *Vice-President for Academic Affairs*

Office of Academic Development

*Robert M. Kamins, B.A., M.A., Ph.D. *Dean for 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*
 *Morton M. Rosenberg, B.S., M.S., Ph.D., *Associate Dean, Research, Fellowships, and Special Training Programs*
 *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."

College 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., *Assistant Dean*

Business Administration

- *Ralph C. Hook, Jr., B.A., M.A., Ph.D. *Dean*
- *David Bess, B.S., M.B.A., Ph.D., *Assistant Dean*
- *Robert E. Baird, B.S., M.B.A., Ph.D., *Assistant to 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"
- Jeffrey A. Fleece, B.A., M.A., Ph.D., *Assistant Dean*; see "Continuing Education"

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*
- *Frederick P. Haehnen, Jr., B.A., M.Ed., 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*

Health Sciences and Social Welfare

School of Medicine

- *Windsor C. Cutting, B.A., M.D. *Dean*
- *Kenneth D. Gardner, Jr., B.M.S., M.D., *Associate Dean*
- *N.L. Gault, Jr., B.A., M.B., M.D., *Associate Dean*
- *Terence A. Rogers, B.S., Ph.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*

Library Studies

- *Robert D. Stevens, A.B., B.S., M.A., Ph.D. *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

- *Shunzo Sakamaki, B.A., M.A., Ph.D. *Dean*
- Takeshi Moriwaki, *Assistant Dean*; B.A. 1951, M.A. 1952, Ph.D. 1962, Indiana State College

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

- A.L. Ellingson *Dean of Students*
- Donald Fukuda, *Associate Dean of Students*

- Amjadi, Hormoz, *Spec. (Psychiatrist)*
- M.D. 1959, Tehran
- Annon, Jack, *Assoc. Spec., Counseling & Testing*; B.A. 1966, M.A. 1968, Hawaii
- Barnes, Bruce E., Jr. *Spec., Inter. 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, Neb.
- Burgoyne, James M., *Assoc. Spec., Housing*; B.S. 1948, M.B.A. 1949, Wisconsin
- Chambliss, Randolph L., *Spec. 2, Housing*; B.A. 1965, Linfield C.
- *Char, Donald F.B., *Director, Student Health Service*

- Cross, John A., *Director, Campus Center*
- B.P.E. 1959, British Columbia; M.S. 1960, Ed.D. 1968, Oregon
- Denny, James M., *Assoc. Spec., Counseling & Testing*; A.B. 1951, Oberlin; Ph.D. 1958, Western Reserve
- Doi, Ruth N., *Spec. 3, Admissions & Records*; B.A. 1949, Hawaii
- Dunne, Willis E., Jr. *Spec., Student Affairs*; 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. 1954, M.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
- Heu, Janice S., *Spec. 2, Admissions & Records*; B.Ed. 1969, Hawaii
- Higa, George, Jr. *Spec., Financial Aids*
- B.A. 1965, M.S. 1968, Hawaii
- Higashi, Sylvia, Jr. *Spec., Admissions & Records*; B.A. 1967, M.Ed. 1968, Hawaii

- Holt, Clifford, *Spec.3, Student Act.*
B.S. 1964, Oregon; M.P.A. 1966,
Arizona
- Iams, Ruth W., *Assoc.Spec., Counseling
& Testing*; Ph.B. 1933, Chicago; M.A.
1952, Hawaii
- Jones, Jane H., *Assoc.Spec., Counseling
& Testing*; B.A. 1947, Colorado;
M.Ed. 1965, Ed.D. 1967, Auburn
- Kameda, Stephen K., *Spec.2, Admissions
& Records*; B.A. 1967, Michigan State
- Kaneshige, Edward S., *Assoc. Spec.,
Counseling & Testing*; B.A. 1950,
Hawaii; M.A. 1954, Ed.D. 1959,
Columbia
- Kappenberg, Richard, Jr. *Spec.,
Counseling & Testing*; A.B. 1965,
M.A. 1966, Fairfield
- King, Leroy J., *Director, Financial Aids*
B.A. 1963, Nebraska; M.A. 1968,
Hawaii
- Koch, Noni, *Spec., Student Health Serv.*
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
- Matsuo, Dorothy, *Assoc. Spec., Student
Health*; B.S. 1950, M.P.H. 1970,
Hawaii
- McAleenan, Andrea, Jr. *Spec.,
Admissions & Records*; B.A. 1966,
M.A. 1967, Michigan State
- McArdle, H. Roy, *Director, Placement &
Career Plng.*; B.S. 1941, Columbia;
M.B.A. 1962, Hawaii
- McPherson, Mary Lou, *Asst. Spec.,
Student Affairs*; B.S. 1933, Kansas
State; M.A. 1955, Missouri, M.P.H.
1970, Hawaii
- Michel, John, *Spec., Student Affairs*
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., Inter.
Student*; 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, Phyllis, *Spec.2, Admissions &
Records*; B.A. 1968, Hawaii
- Sherman, Ruth, *Asst. Spec., Counseling
& Testing*; B.A. 1942, Douglass;
M.A. 1964, Hawaii
- Shibuya, Gary, *Spec.1, Admissions &
Records*; B.B.A. 1969, Hawaii
- Slaybaugh, Jack, *Head Resident,
Gateway*; B.A. 1961, Calif. State;
M.A. 1969, Hawaii
- Takagi, Kikue, Jr. *Spec., Student
Activities*; Ed.B. 1942, Hawaii
- Taniguchi, Shirley, Jr. *Spec., Housing*
B.B.A. 1949, Hawaii
- Ushijima, Earl, *Spec.3, Special Hsg.*
B.B.A. 1964, Hawaii
- Uyeda, Bette, Jr. *Spec., Financial Aids*
B.A. 1965, Hawaii; M.A. 1967, Colgate
- Valencia, Juanita, *Head Resident,
Johnson*; B.A. 1965, Boston; M.A.
1970, Hawaii
- Wang, Cynthia, *Spec.2, Housing*
B.B.A. 1966, Hawaii
- Wang, Farouk, *Head Resident, Hale
Laulima*; B.A. 1967, Hawaii
- Wery, Katherine, *Asst. Spec., Fin. Aids*
B.A. 1944, Westhampton
- Williams, Kathryn, *University Physician*
B.S. 1953, Pittsburgh; M.D. 1956,
George Washington
- Wong, Carolina D., *University Physician*
M.D. 1941, Santo Tomas
- Wong, Lawrence Y.W., *University
Physician*; B.S. 1951, M.S. 1953, M.D.
1958, Michigan
- Woodin, Theodore, *Director, Inter.
Student*; B.A. 1953, Colorado; M.A.
1963, Hawaii
- Woodruff, Rosemarie, *Spec.1,
Counseling & Testing*; B.Ed. 1970,
Hawaii
- Yanagihara, Susan, *Head Resident,
Frear*; B.F.A. 1970, Hawaii

Business Affairs

William W. Parsons *Vice-President for Business Affairs*

William B. Chapman, *Assistant Vice-President for Business Affairs*

Muraoka, Walter K., *Director of Physical Planning
and Construction*; B.S. 1955, Detroit

- Arnett, Thomas N., *Director of Personnel*
B.S. 1933, Florence State; J.D. 1939,
LL.M. 1942, Georgetown
- Prahler, Robert H., *Assistant Director of
Personnel*; B.A. 1962, Maryland
- Yamasaki, Wayne J., *Personnel Officer*
B.A. 1965, Hawaii; M.A.O.M. 1970,
So. Calif.
- Smith, Esther M., *Personnel Officer*
B.A. 1948, M.A. 1962, Hawaii
- Bloede, V. Carl, *Contracts Officer*
A.B. 1940, Dartmouth; LL.B. 1950,
Baltimore; LL.M. 1967, Georgetown
- Izumi, Takaaki, *Special Assistant to V-P
for Business Affairs*; B.A. 1957, M.A.
1960, Hawaii
- Koehler, Philip W., *Director of Facilities
Management*; B.A. 1942,
Northwestern C.
- Hee, Annette H., *Head, Fiscal Section*
B.B.A. 1953, Hawaii; M.B.A. 1956,
Indiana
- Nakasone, Carole T., *Space Manager*
B.A. 1964, Hawaii
- Wong, Philip K.C., *Head, Design Section*
- Mashima, Edward K., *Administrative
Assistant to V-P for Business Aff.*;
B.A. 1952, Hawaii
- Moriyasu, Henry M., *Director of
Auxiliary Services*; B.A. 1947, Hawaii
- Snyder, Keith S., *Comptroller*
B.A. 1942, Carleton C.
- Alexander, Woodrow E., *Director of
Procurement & Property Mgmt*; B.S.
1957, M.B.A. 1959, Maryland
- Arre, Geminiano Q., Jr., *General Mgr.,
Bookstores*; B.B.A. 1956, Philippines;
M.A. 1960, Hawaii
- Balmores, Jose D., *Treasury Officer*
B.S. 1951, Ohio State
- Cason, Alan R., *Program and Service
Officer*; B.A. 1941, Carleton C.
- Morihara, Morio, *Business Management
Officer*; CPA
- Pollom, DeVere B., *Director of Systems
& Disbursing*; B.B.A. 1960,
Washington
- Tanabe, George K., *Comptroller,
Contracts & Grants*; B.B.A. 1941,
Armstrong; CPA
- Sumida, Kenji, *Coordinator, Budget and
Planning*; B.B.A. 1953, M.B.A. 1970,
Hawaii
- Awaya, Raleigh S., *Director of
Management Systems*; B.B.A. 1966,
Hawaii
- Ohta, Kenneth H., *Director of Fiscal
Analysis*; B.A. 1942, Hawaii
- Ono, Susumu, *Budget Director*
B.B.A. 1952, Hawaii; M.A. 1956,
Illinois
- Yamada, Allen H., *Internal Auditor*
B.S.B.A. 1948; M.B.A. 1949, Denver; CPA

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.
- The Hawaiian Telephone Company Chair in Science—Georg von Bekesy.*
- The Pacific Islands Chair in Anthropology, funded by the Hawaii State Legislature—Douglas L. Oliver.*
- The Gerrit Parmile Wilder Chair in Botany, established by the will of the late Lillian Kimball Wilder (in memory of her husband).

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- Abbott, Agatin T., *Professor of Geology*; B.A. 1939, Minnesota; Ph.D. 1952, Washington
- Abramson, Joan E., *Instructor in English* A.B. 1954, M.A. 1955, California
- Abramson, Norman, *Professor of Information & Computer Sciences and Electrical Engineering*; A.B. 1953, Harvard; M.A. 1955, UCLA; Ph.D. 1958, Stanford
- Abrera, Josefa B., *Assistant Professor of Library Studies*; B.S.E. 1953, Philippines; A.M. 1958, Ph.D. 1970, Indiana
- Ackerman, Charles D., *Associate Professor of Sociology*; A.B. 1961, UCLA; Ph.D. 1965, Harvard
- Adachi, Mitsuo, *Assistant Professor of Education*; Ed.B. 1949, Ed.M. 1964, Hawaii; Ed.D. 1971, Arizona State
- Adams, Bruce G., *Assistant Professor of Microbiology*; B.A. 1964, Whitman C.; Ph.D. 1968, Oregon State
- Adams, Carl W., *Associate Professor of Geosciences and Public Health*; B.S. 1940, Naval Academy; M.S. 1951, Naval Postgraduate School
- Adams, Charles M., *Lecturer in Library Studies*; A.B. 1931, Amherst; B.S.L.S. 1933, M.A. 1942, Columbia
- Adams, William M., *Professor of Geophysics* A.B. 1951, Chicago; B.A. 1953, California (Berkeley); M.S. 1955, Ph.D. 1957, St. Louis; M.B.A. 1964, Santa Clara
- Adkins, Dorothy C., *Professor of Education* B.S. 1931, Ph.D. 1937, Ohio
- Adler, Jacob, *Professor of Accounting and Finance*; B.S. 1933, Chicago; M.S. 1956 Ph.D. 1959, Columbia; CPA 1950
- Affonso, Dyanne D., *Instructor of Nursing* B.S. 1966, Hawaii; M.S. 1967, Washington
- Ahlstrom, Carl Mark, *Instructor in English* B.A. 1968, Michigan; M.A. 1969, Wisconsin
- AhMoo, Earl W., *Associate Professor in Dental Hygiene*; D.D.S. 1961, M.S. 1964, Marquette
- Aiu, Cynthia B., *Associate Professor of Nursing*; B.S. 1956, M.S. 1961, UCLA
- Akamine, Ernest K., *Professor of Plant Physiology*; B.S. 1935, M.S. 1941, Hawaii
- Akita, George, *Professor of History* B.A. 1951, Hawaii; M.A. 1953, Ph.D. 1960, Harvard
- Alcantara, Ruben, *Instructor in American Studies*; B.A. 1961, Philippines; M.A. 1965, Hawaii
- Alexander, John, *Associate Professor of Public Health*; B.A. 1934, North Carolina; M.S. 1936, LL.B. 1941, Columbia
- Allday, Christopher J., *Assistant Professor of Mathematics*; B.A. 1965, M.A. 1969, Christ's C.; Ph.D. 1970, California (Berkeley)
- Allen, Deborah Lou, *Instructor in English* B.A. 1968, Principia; M.A.T.E. 1969, Illinois
- Allen, James G., *Professor of Human Development*; B.S. 1949, Wisconsin; M.S. 1954, Ph.D. 1960, Iowa State
- Allen, Leslie R., *Assistant Professor of Education*; B.Sc. 1946, M.Sc. 1947, New Zealand; Ph.D. 1967, California (Berkeley)
- Allen, Richard D., *Associate Professor of Microbiology*; B.A. 1957, Greenville C.; M.S. 1960, Illinois; Ph.D. 1964, Iowa State
- Allton, Donald W., *Lecturer in Music* B.M. 1936, M.M. 1938, Eastman School of Music (Rochester)
- Alm Julia N., *Associate Professor of Education*; B.S. 1943, M.A. 1947, Minnesota
- Alm, Richard S., *Professor of Education* B.S. 1942, M.A. 1948, Ph.D. 1954, Minnesota
- Alschuler, Lawrence R., *Assistant Professor of Political Science*; B.A. 1963, Wesleyan; M.A. 1965, Ph.D. 1967, Northwestern
- Alter, Jason B., *Assistant Professor of English as Second Language*; B.A. 1952, Harvard C.; M.A. 1956, Michigan
- Amioka, Shiro, *Professor of Education* B.Ed. 1949, M.Ed. 1952, Hawaii; Ph.D. 1959, Illinois
- Andermann, George, *Associate Professor of Chemistry*; B.S. 1949, UCLA; M.S. 1961, Ph.D. 1965, Southern California
- Anderson, C. Webster, *Professor of Art* B.A. 1933, California; M.A. 1953, UCLA
- Anderson, Edith H., *Professor of Nursing* B.S. 1951, Manhattan; M.A. 1958, Ph.D. 1968, New York
- Anderson, George K., *Associate Professor of Civil Engineering*; B.Sc. 1961, Durham; Ph.D. 1964, Newcastle-upon-Tyne
- Anderson, George L., *Professor of English* A.B. 1946, M.A. 1948, Ph.D. 1953, Pennsylvania
- Anderson, Robert N., *Assistant Professor of Agricultural Economics*; B.S. 1965, M.A. 1966, Adams State; Ph.D. 1969, Colorado State
- Anderson, Ronald S., *Professor of Education* B.A. 1929, M.A. 1946, Stanford; Ph.D. 1956, California
- Andrews, James E., *Assistant Professor of Oceanography*; B.A. 1963, Amherst; Ph.D. 1967, Miami
- Ansberry, Merle, *Professor of Speech Pathology and Audiology*; B.A. 1929, M.A. 1931, California; Ph.D. 1937, Wisconsin
- Aoki, Mitsuo, *Professor of Religion* B.A. 1940, Drury; B.D. 1943, Chicago Theological Seminary; D.D. (Hon) 1968, Pacific School of Religion
- Apffel, James A., *Assistant Professor of Education*; B.S. 1963, Maryland; M.Ed. 1967, Hawaii; Ed.D. 1969, George Peabody C. for Teachers
- Aptekar, Herbert H., *Professor of Social Work*; B.S., 1937, Columbia; M.S.W. 1939, D.S.W., 1955, Pennsylvania
- Aragaki, Minoru, *Associate Professor of Plant Pathology*; B.S. 1950, M.S. 1954, Ph.D. 1963, Hawaii
- Arai, Sueko, *Lecturer in Music* Natori Diploma 1949, Hanayagi (Japan)
- Arai, Teruo, *Lecturer in Music* Natori Diploma 1955, Nishikawa (Japan)
- Arakaki, David T., *Assistant Professor of Genetics*; B.S. 1958, M.S. 1961, Hawaii; D.Sc. 1969, Hokkaido
- Araki, James T., *Professor of Japanese* B.A. 1954, UCLA; M.A. 1958, Ph.D. 1961, California (Berkeley)
- Arkoff, Abe, *Professor of Psychology* B.A. 1964, M.A. 1948, Ph.D. 1951, Iowa
- Armstrong, R. Warwick, *Associate Professor of Geography and Public Health*; B.A. 1957, M.A. 1959, Auckland; Ph.D. 1963, Illinois; M.P.H. 1964, Michigan
- Asato, Herbert M., *Associate Professor of Dental Hygiene*; D.D.S. 1961, Marquette; M.S.D. 1969, Pittsburgh
- Asato, James K., *Assistant Professor of Health and Physical Education*; B.S. 1952, Hawaii; M.S. 1956, Illinois
- Asato, Katherine H., *Assistant Professor of Social Work*; B.A. 1955, M.S.S.A. 1960, Western Reserve
- Ashby, David, *Assistant Professor of Economics*, B.A. 1962, Ph.D. 1968, Oregon
- Ashton, Geoffrey C., *Professor of Genetics* B.Sc. 1945, Ph.D. 1958, D.Sc. 1967, Liverpool
- Ashworth, David E., *Acting Assistant Professor of Japanese*; B.A. 1964, George Washington; M.A. 1967, American
- Aspinwall, Dorothy B., *Professor of European Languages*; B.A. 1933, M.A. 1939, Alberta; Ph.D. 1948, Washington
- Aten, Donald G., *Associate Professor of Education*; B.Ed. 1956, B.A. 1961, Hawaii; M.A. 1957, Ed. D. 1969, Columbia
- Augustus K. Joseph, *Assistant Professor of General Engineering*; B.S. 1953, Kerala, (India); B.S.M.E. 1963, Texas; M.S. 1965, New Mexico State
- Austin, Mary C., *Professor of Education* B.S. 1944, M.S. 1945, Ed.D. 1949, Syracuse
- Avery, Don E., *Associate Professor of Engineering*; B.S. 1937, M.E. 1950, Washington
- Ayabe, Harold I., *Assistant Professor of Education*; B.A. 1957, Fort Wayne Bible C.; M.S. Ed. 1968, Ph.D. 1969, Indiana
- Ayrault, Margaret W., *Professor of Library Studies*; A.B. 1933, Oberlin; B.S.L.S. 1934, Drexel; M.S.L.S. 1941, Columbia

B

- Babbie, Earl R., *Associate Professor of Sociology*; A.B. 1960, Harvard; M.A. 1966, Ph.D. 1969, California
- Baber, Asa J., Jr., *Instructor in English* B.A. 1958, Princeton; M.A. 1963, Northwestern; M.F.A. 1967, Iowa
- Bach, Wilfrid, *Associate Professor of Geography*; Staatsexamen 1961, Marburg; Ph.D. 1965, Sheffield (England)
- Bachman, Lyle F., *Assistant Professor of English*; A.B. 1965, M.A. 1969, Ph.D. 1970, Indiana
- Baciu, Mira, *Assistant Professor of French* Fac. of Pharmacy 1943, Bucharest; Pharm. Permit 1948, Berne; M.A. 1967, Middlebury; Doc.d'Universite 1970, Strasbourg
- Baciu, Stefan, *Professor of Spanish* B.A. 1937, Liceu Andrei Saguna; M.A. 1941, Law Faculty, Bucharest
- Backus, Joseph M., *Associate Professor of English*; B.A. 1949, Allegheny; M.S. 1954, Columbia; M.A. 1957, Ph.D. 1961, California (Berkeley)
- Bail, Frederick T., *Assistant Professor of Education*; A.B. 1965, Bowdoin, Ph.D. 1970, Cornell
- Bailey, Joseph K., *Professor of Management* B.A., B.S. 1934, Salem; M.B.A. 1948, Ph.D. 1955, Texas
- Baird, Robert E., *Professor of Management and Travel Industry Management*; B.S. 1940, Wichita; M.B.A. 1941, Northwestern; Ph.D. 1957, Cornell
- Baker, Gladys E., *Professor of Botany* B.A. 1930, M.S. 1932, Iowa; Ph.D. 1935, Washington
- Baker, Harold L., *Lecturer in Agricultural Economics*; B.S. 1939, Utah State; M.S. 1942, Ph.D. 1965, California (Berkeley)
- Ball, Harry V., *Professor of Sociology* B.A. 1949, M.A. 1950, Washington; Ph.D. 1956, Minnesota
- Banner, Albert H., *Professor of Zoology* B.S. 1935, Washington; M.S. 1940, Hawaii; Ph.D. 1943, Washington
- Banta, James E., *Professor of Public Health* M.D. 1950, Marquette M.P.H. 1954, Johns Hopkins
- Barna, Arpad A., *Associate Professor of Electrical Engineering*; Degree of Electrical Engineering 1956, Technical U. of Budapest; Ph.D. 1968, Stanford
- Barnet, Edward M., *Professor of Marketing and Management*; S.B. 1934, M.B.A. 1936, Harvard; Ph.D. 1954, Columbia
- Barringer, Herbert R., *Associate Professor of Sociology*; A.B. 1959, San Diego State C.; M.A. 1961; Ph.D. 1963, Northwestern
- Bartolomew, Duane P., *Assistant Professor of Agronomy*; B.S. 1961, California Polytech.; Ph.D. 1965, Iowa State
- Batkin, Stanley, *Professor of Surgery and Physiology*; B.S. 1933, New York; M.D. 1944, Royal C. (Scotland)
- Bauman, Richard D., *Associate Professor of Civil Engineering*; B.S.C.E. 1960, Iowa State; M.S.C.E. 1964, Utah; Ph.D. 1967, Arizona State
- Baumann, Paul, *Assistant Professor of Microbiology*; B.A. 1961, M.A. 1963, Ph.D. 1966, California
- Baumer, Jack F., *Assistant Professor of Asian Languages*; B.A. 1953, Bowdoin; M.A. 1959, Madras
- Baumer, Rachel, *Associate Professor of Bengali*; M.A. 1962, Ph.D. 1964, Pennsylvania
- Beamer, Martha F., *Assistant Professor of Health and Physical Education*; B.Ed. 1952, M.Ed. 1960, Hawaii
- Bear, Herbert S., Jr., *Professor of Mathematics*; B.A. 1950, Ph.D. 1957, California (Berkeley)
- Beardsley, John W., *Professor of Entomology*; B.S. 1950, California; M.S. 1952, Ph.D. 1963, Hawaii
- Beauchamp, Edward R., *Acting Assistant Professor of Education*; B.S. Ed. 1959, M.Ed. 1961, Worcester (Mass.) State C.
- Beaver, Susan, *Instructor in Nursing* B.S. 1963, Washington; M.S. 1965, Colorado
- Becker, Theodore L., *Associate Professor of Political Science*; B.A. 1954, LL.B. 1956, Rutgers; M.A. 1960, Maryland; Ph.D. 1964, Northwestern
- Beechert, Edward D., Jr., *Associate Professor of History*; B.A. 1047, M.A. 1949, Ph.D. 1957, California (Berkeley)
- Bell, Donald W., *Assistant Professor of Real Estate*; B.S. 1943, Montana State
- Bell, Theodore L., *Assistant Professor of Public Health*; B.A. 1958, Millikin; M.S.P.H. 1962, Ph.D. 1968, N. Carolina
- Belshe, Mirella M., *Assistant Professor of Education*; B.A. 1964, M.A. 1967, M.F.A. 1967, Hawaii
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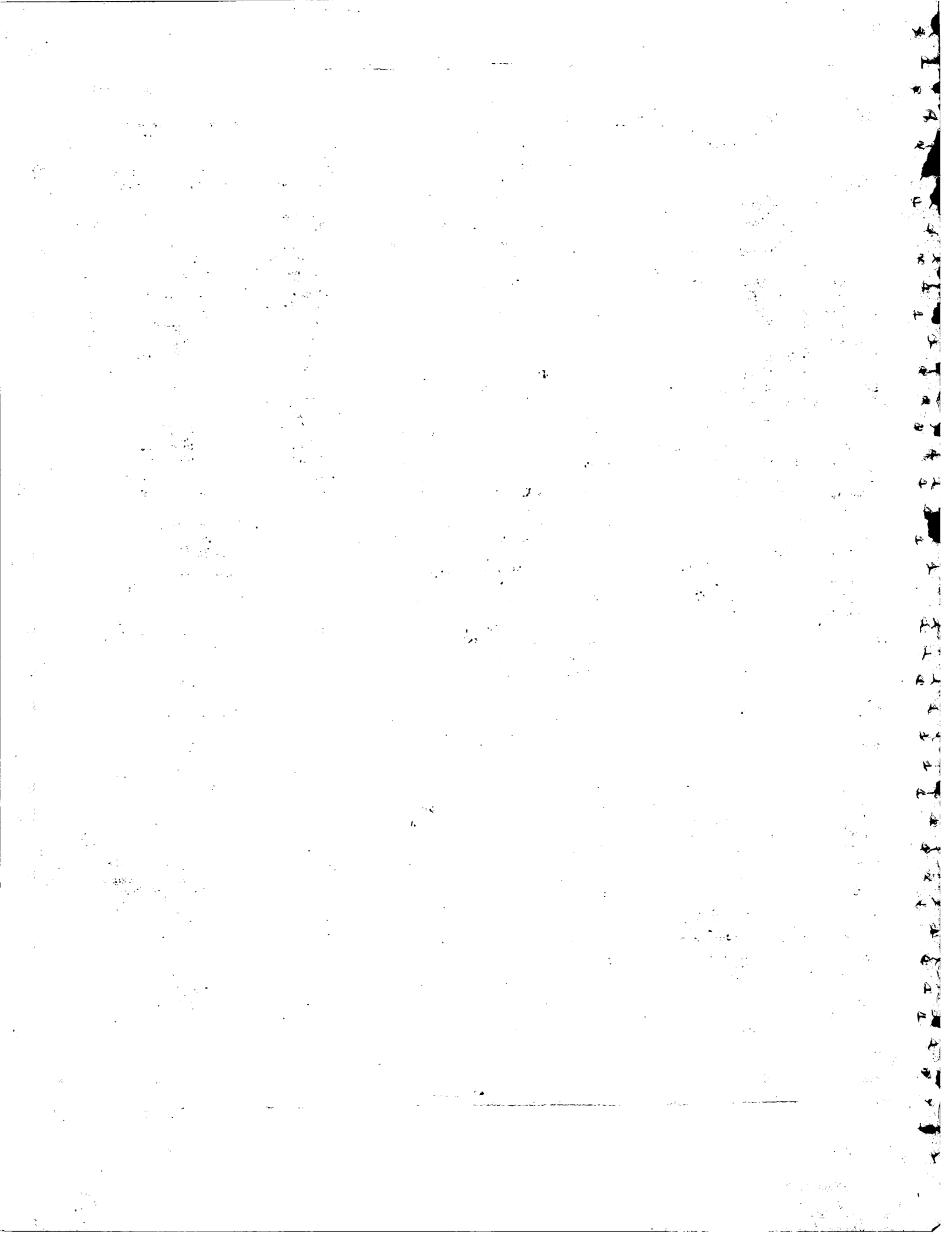
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- Winnick, Theodore, *Emeritus Professor of Biochemistry*; B.A. 1935, California (Los Angeles); Ph.D. 1939, California
- Wiswell, Ella L., *Emeritus Associate Professor of European Languages*; Diploma 1931, Paris; B.A. 1941, Hawaii
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Office of Research Administration

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Education Research and Development Center

Center for Engineering Research

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Economic Research Center

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Environmental Center

- *Doak C. Cox *Director*
The Center is comprised of members of the University community actively concerned with ecological and environmental problems.

Hawaii Agricultural Experiment Station

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- *Haramoto, Frank H., *Assoc. Entomologist*
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- *Lichton, Ira J., *Assoc. Nutritionist*
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- *Luykx, Nicolaas, *Assoc. Ag. Ec.*
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- *Matsumoto, Hiromu, *Biochemist*
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- *Mitchell, Wallace C., *Entomologist*
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- *Murdoch, Charles, *Asst. Horticulturist*
- *Nakamura, Robert M., *Assoc. Animal Sci.*
- *Nakasone, Henry Y., *Horticulturist*
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- *Nishida, Toshiyuki, *Entomologist*
- *Nishimoto, Roy K., *Asst. Horticulturist*
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- *Palafox, Anastacio L., *Asst. Poultry Sci.*
Parvin, Philip E., *Assoc. Horticulturist*
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- Patil, Suresh S., *Assoc. Plant Pathologist*
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- *Philipp, Perry F., *Agricultural Economist*
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 B.S. 1963, Hawaii; M.S. 1967, Ph.D. 1969,
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 *Sherman, Martin, *Entomologist*
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 *Silva, James A., *Asst. Soil Scientist*
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Industrial Relations Center

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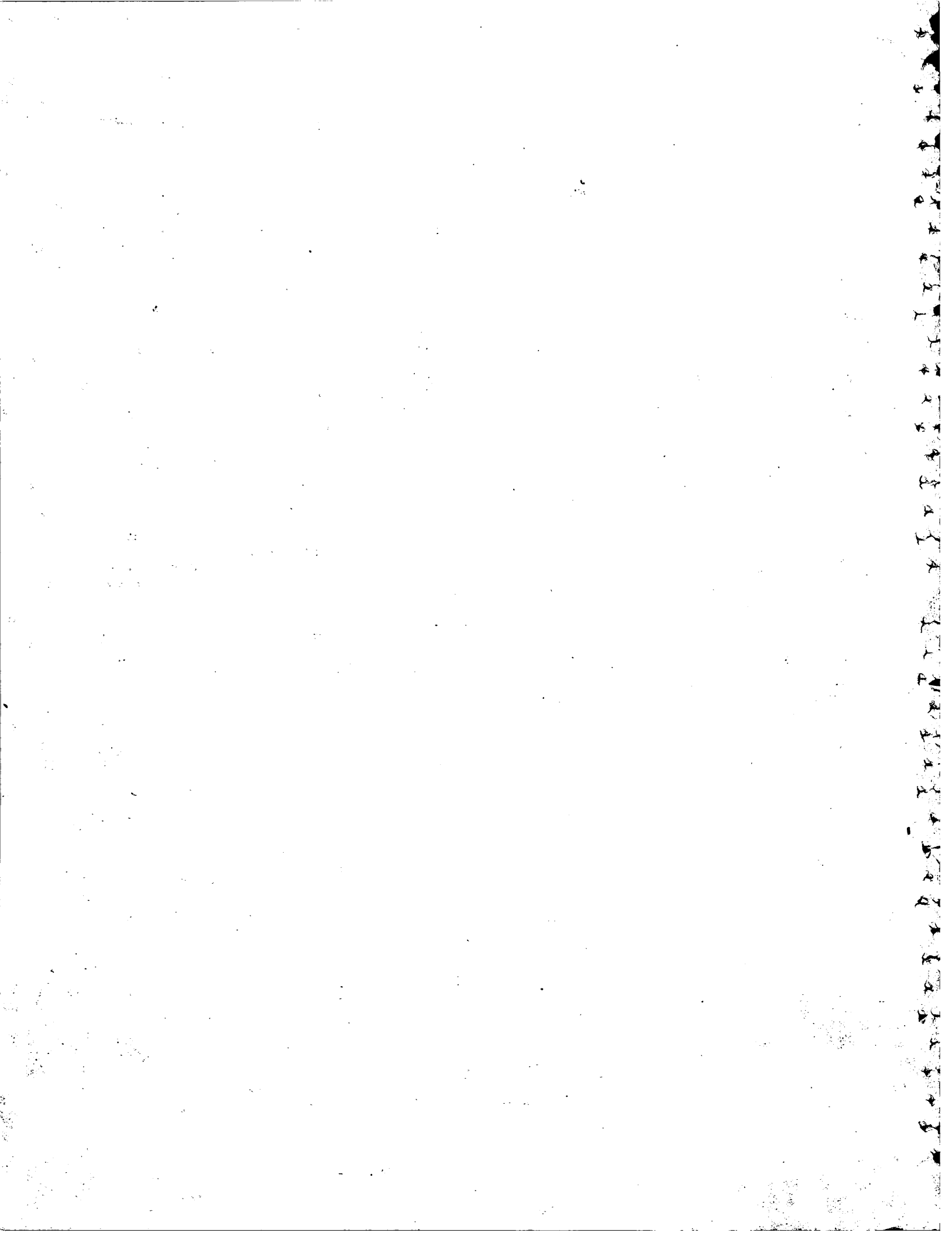
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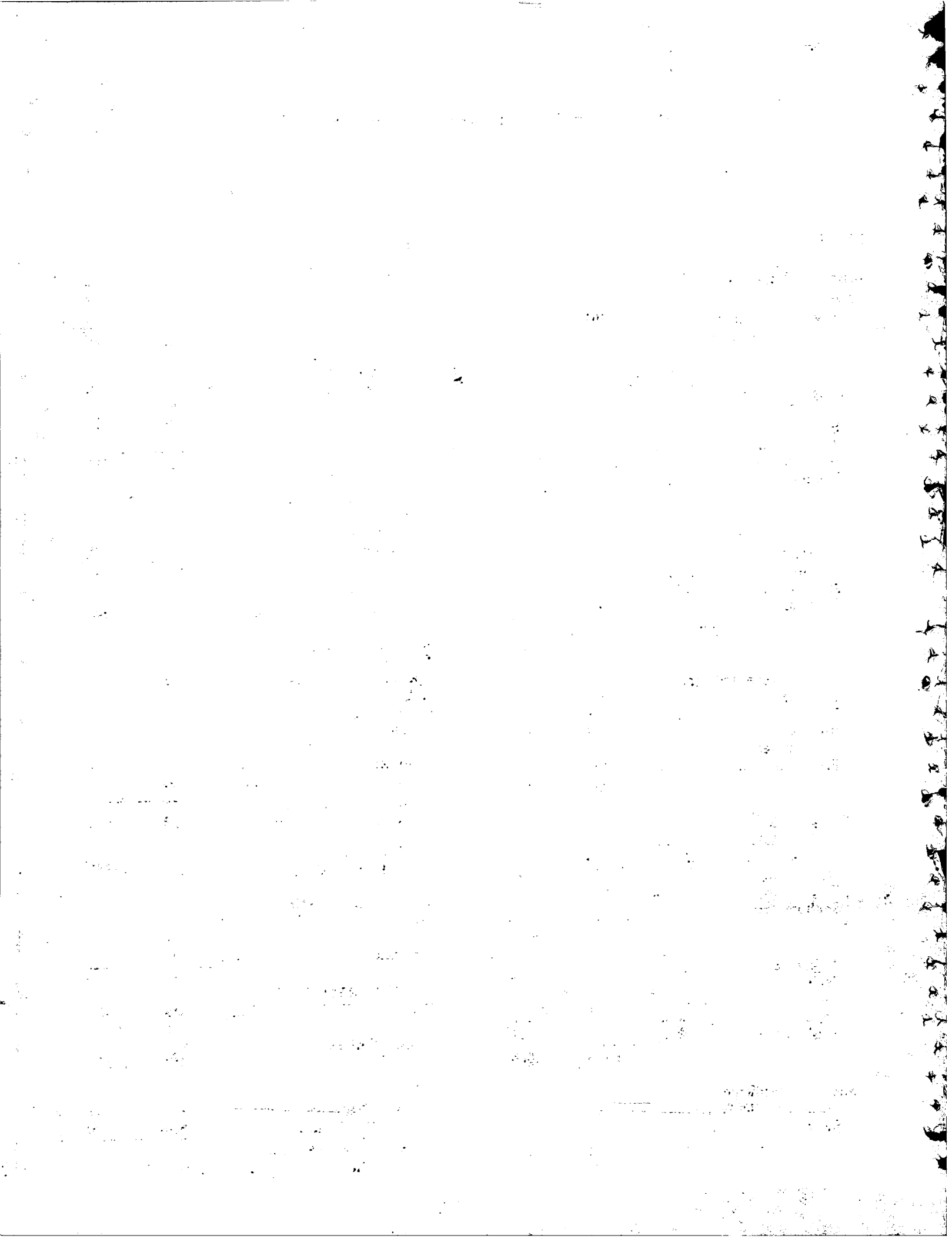


**SUMMARY OF ENROLLMENT, MANOA CAMPUS
1970-71**

DAYTIME CREDIT ENROLLMENT

Degree and Diploma Candidates	1st Sem.	2nd Sem.
Graduate Division		
Doctor's Candidates	607	645
Master's Candidates	2,302	2,345
	<u>2,909</u>	<u>2,990</u>
College of Arts and Sciences		
Seniors	1,450	1,261
Juniors	2,044	1,887
Sophomores	2,897	2,905
Freshmen	3,186	3,072
	<u>9,577</u>	<u>9,125</u>
College of Business Administration		
Seniors	476	388
Juniors	531	529
Sophomores	441	500
Freshmen	344	352
	<u>1,792</u>	<u>1,769</u>
School of Travel Industry Management		
Seniors	148	108
Juniors	129	119
Sophomores	127	139
Freshmen	141	158
	<u>545</u>	<u>524</u>
College of Education		
Professional Diploma Candidates	444	500
Seniors	802	654
Juniors	862	969
Sophomores	46	100
	<u>2,154</u>	<u>2,223</u>
College of Engineering		
Seniors	297	242
Juniors	266	267
Sophomores	232	233
Freshmen	324	324
	<u>1,119</u>	<u>1,066</u>
School of Medicine		
Medical Students	88	84
Seniors	48	53
Juniors	33	47
	<u>169</u>	<u>184</u>

School of Nursing		
Seniors	105	76
Juniors	76	74
Sophomores	78	79
Freshmen	46	55
	<u>305</u>	<u>284</u>
College of Tropical Agriculture		
Seniors	183	143
Juniors	157	171
Sophomores	106	113
Freshmen	101	108
	<u>547</u>	<u>535</u>
New College		
Seniors	1	1
Juniors	43	39
Sophomores	14	18
Freshmen	76	45
	<u>134</u>	<u>143</u>
Total Degree and Diploma Candidates	19,251	18,843
Not a Degree or Diploma Candidate		
Special Graduate Students	63	42
In-Service Teachers	0	0
Unclassified Undergraduate		
Students	419	417
Unclassified Graduate		
Students	1,192	1,211
No Data	165	5
	<u>1,839</u>	<u>1,675</u>
Total Non-Degree and Diploma Candidates	1,839	1,675
TOTAL DAYTIME CREDIT ENROLLMENT	21,090	20,518
EAST-WEST CENTER GRANTEES ON STUDY TOURS		
Asians	26	3
Americans	14	23
	<u>40</u>	<u>26</u>
EVENING CREDIT ENROLLMENT	2,688	3,062
TOTAL CREDIT ENROLLMENT	23,818	23,606
SUMMER SESSION 1970		
	1st Session	2nd Session
Daytime Credit Enrollment	12,813	5,402
Evening Credit Enrollment	1,560	0
	<u>14,373</u>	<u>5,402</u>
Total Summer Session Enrollment	14,373	5,402



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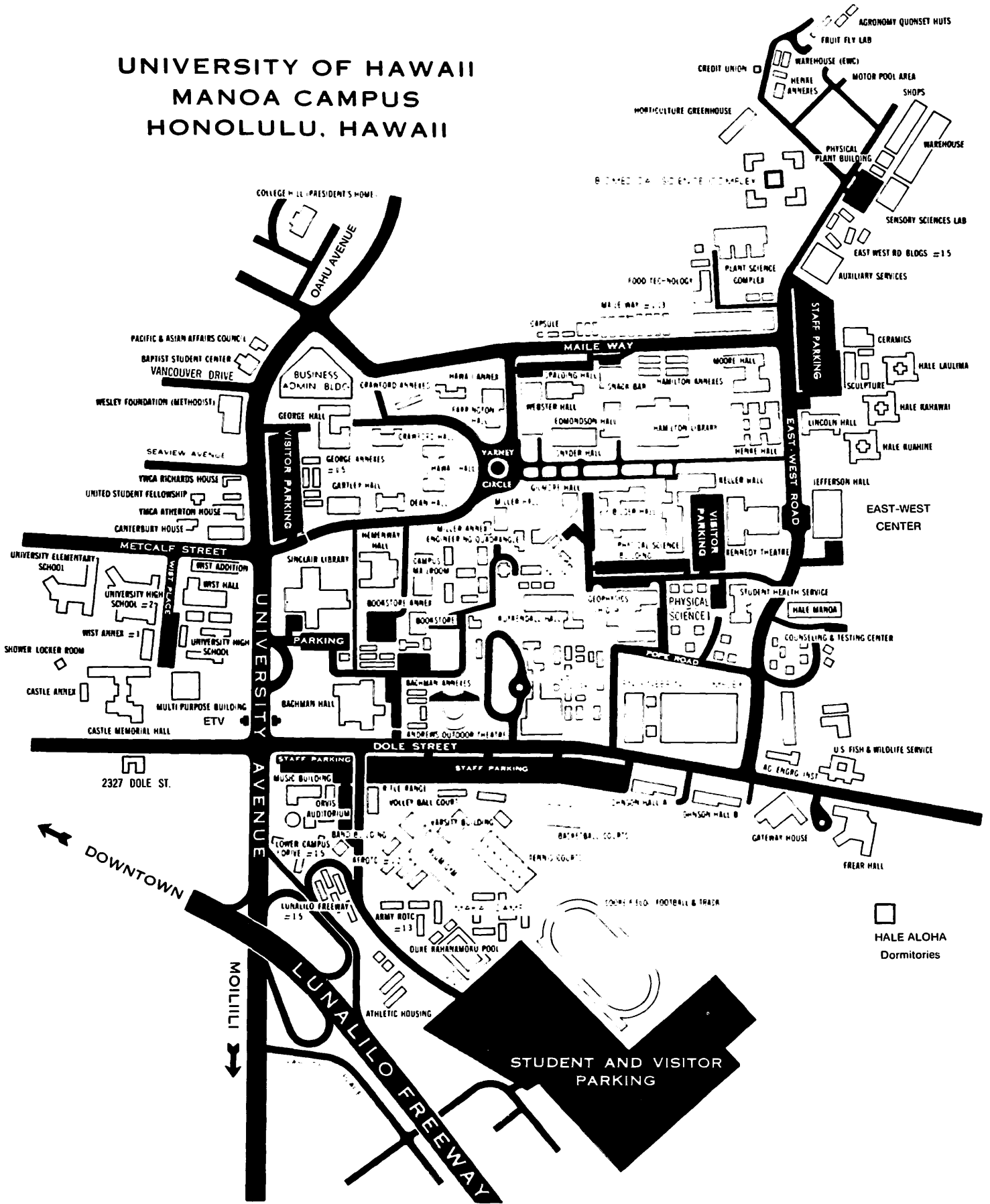
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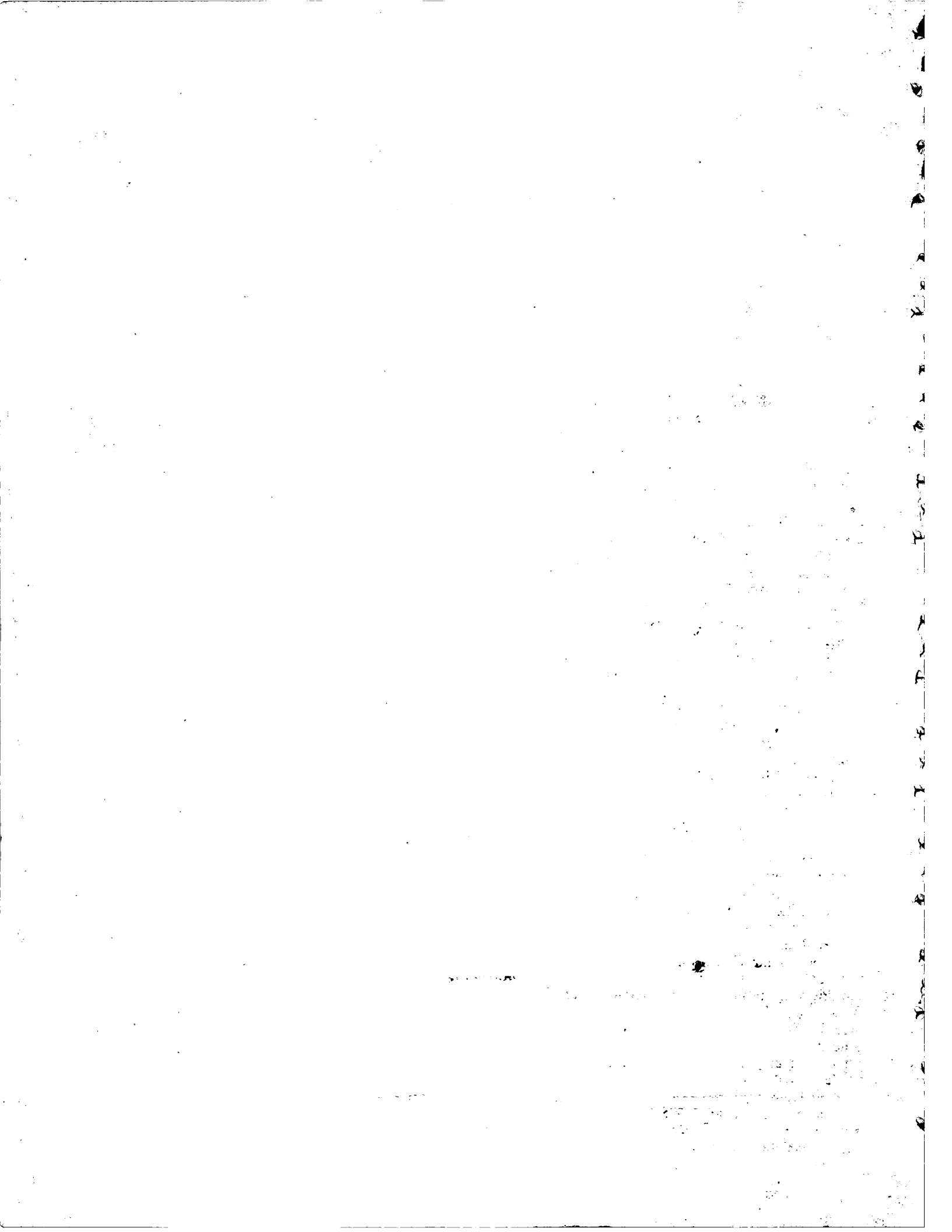
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□ HALE ALOHĀ
Dormitories

UNIVERSITY OF HAWAII
Office Locations

Admissions and Records Office, Bachman 125
Athletics Office, Varsity Building
Business Office, Bachman 110
Campus Police, Bachman Annex 3
College of Arts and Sciences, Webster 204
 Student Services, Bachman Annex 10
College of Business Administration, Hawaii 107
 Travel Industry Management, Lunalilo Freeway 4
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, Biomedical Sciences Building
 Nursing, Webster 416
 Public Health, 1960 East-West Rd.
 Social Work, Makai Campus 8
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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