

UNIVERSITY OF HAWAII AT MANOA  
College of Engineering

MAJOR FUNCTIONS

**I. ACADEMIC SUPPORT**

**A. Office of the Dean:**

Consists of the Dean, Associate Dean, Assistant Dean, and their support staffs--secretarial, fiscal, clerical, and student help. Administers the total program of instruction, research, and public service for the College including, in addition to standard operating support, responsibility for allocation of resources assigned to the College and for long-range planning of programs, facilities, faculty and staff. Associate Dean concentrates on academic and personnel issues; Assistant Dean on student records, fiscal, and administrative affairs. Input and advice on decisions provided by: a) Engineering Executive Committee, composed of Deans, Director of the Center for Engineering Research, Chairmen of the four academic departments, President of the Faculty Senate, and one representative each from the undergraduate and graduate student body; b) Engineering Faculty Senate; and c) Engineers' Council of the University of Hawaii, consisting of the presidents of the seven student engineering professional and honorary organizations.

**B. Engineering Shop:**

Provides assistance to the College faculty and staff in the construction and repair of equipment and apparatus for both instructional laboratories and research activity. Services include design, fabrication, assembly, trouble-shooting, modification, testing and calibration in the areas of machine shop, electronics, metal working, and welding.

**II. INSTRUCTIONAL PROGRAM**

Includes the following departments and degree programs.

	<u>B.S.*</u>	<u>M.S.</u>	<u>Ph.D.</u>
Department of Civil Engineering	x	x	
"      "  Electrical Engineering	x	x	x
"      "  Mechanical Engineering	x	x	
"      "  Ocean Engineering		x	x
Program in General Engineering	x		

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\*The three basic undergraduate curricula in civil, electrical, and mechanical engineering are fully accredited by the national accreditation agency, the Engineers' Council for Professional Development.

## **A. Civil Engineering:**

Encompasses such diverse fields as control of environmental pollution, solid waste management, industrial wastes, space vehicles, radio telescopes, and nuclear plant installations. The program in civil engineering continues to meet the demands of business, industry and government where a broad, fundamental education is required. The curriculum, however, develops depth in the various areas of the civil engineering professions such as environmental and sanitary engineering, structures, applied mechanics, construction engineering, water resources, hydraulics, surveying, soil mechanics, transportation and urban engineering. It is designed to give the student the broad educational background essential to modern civil engineering practice, including a better understanding of societal and environmental problems. The course offerings reflect the changes that are constantly taking place in civil engineering, with emphasis on computer use and the systems analysis approach to large engineering projects. The department faculty is involved in a number of externally funded research programs in the curricular areas listed above.

## **B. Electrical Engineering:**

Provides a program of excellence in electrical engineering education that includes a proper balance between undergraduate and graduate instruction, research and public service. The department has three large research projects and several smaller research projects bringing in substantial funds (over \$1 million) for graduate assistantships, supporting staff and student help employment. The Department of Electrical Engineering co-sponsors annually the Hawaii International Conference on System Sciences. These conferences, which attract over 300 people from all over the world, provide an opportunity to interchange work and ideas among the United States, Japan, Australia and Asian researchers in the general field of systems. The department is also involved in the interdisciplinary program leading to the B.S. degree in Computer Science, which requires coordination with Colleges of Arts and Sciences and Business Administration. The department is responsible for offering the computer programming and system analysis courses for all engineering students, as well as other interested students from throughout the Manoa Campus.

## **C. Mechanical Engineering:**

Offers to the citizens of the State of Hawaii the opportunity to undertake programs of study that will enable its graduates to successfully pursue professional careers in mechanical engineering. The graduate program leading to the M.S. degree is offered for those who wish to improve their educational background and thereby increase their professional capabilities. The department encourages its students and professors to be involved in research work. Such research is an important component of the instructional programs,

especially for graduate students, because only through the involvement with research can students acquire the ability to search out new knowledge and solve new problems relevant to the State as well as to the nation. The department also provides services to the community by active involvement in local professional societies, technical consultation, State Science and Engineering Fair, and high school visitation program.

#### **D. Ocean Engineering:**

Administers a balanced program of instruction and research in ocean engineering. The academic program is a graduate program and leads to the degrees of M.S. and Ph.D., but the department has responsibility for the instruction of both graduate and undergraduate courses in the field. The instructional program also involves curriculum planning and advising of students in their research. The research program consists of carrying out research in accordance with the purpose for which the proposals were funded. The research effort blends with the instructional effort in that it provides students with support through research assistantships, and it provides students with research subjects for their theses. As part of their function, faculty members serve in committees at the College and University level and participate in other service activities.

#### **E. General Engineering:**

Offers a baccalaureate program in engineering for the student desiring greater flexibility than can be achieved through one of the three traditional accredited curricula. A student may earn a B.S. in General Engineering through the Engineering Special Studies Program, if he obtains the approval for his program of study from the faculty advisory committee and maintains a GPR above 2.5. A pre-professional program is also offered in cooperation with the College of Business Administration.

### **III. RESEARCH PROGRAM**

The bulk of the research activity conducted within the College of Engineering is performed by faculty whose salaries come entirely from the Instructional Budget. Engineering does not have a large cadre of researchers, such as HIG or HAES; and the development of the significant level of extramural funding, necessary to support graduate students and their thesis projects, has been achieved primarily by instructional faculty--over and above their teaching responsibilities. The Center for Engineering Research provides service and support to assist the faculty in its research efforts, but does not conduct research directly. The J.K.K. Look Laboratory of Oceanographic Engineering is the exception to the above policy, and does support a limited number of positions for ocean-related research.

#### **A. Center for Engineering Research:**

The Director of the Center for Engineering Research (CER), is responsible for all functions of that facility, reporting directly to the Dean of Engineering. In addition to administrative and management responsibilities, he is also involved in research and public service activities, as appropriate.

The major line function is to assist in the preparation and to review all research proposals submitted by College of Engineering faculty. During fiscal year 1974, the number of active grants and contracts was 21, with awards amounting to about \$1,900,000, as compared with fiscal 1973, when there were 25 contracts and grants, with awards received of about \$1,800,000.

Direct staff functions include:

- 1) Assistance in seeking funding sources for research of interest to the faculty.
- 2) Liaison with the University Office of Research Administration.
- 3) Particular emphasis on developing new and/or interdisciplinary research programs for the College.
- 4) Cooperation with the Dean's Office and the Departments in promoting interaction with the engineering community and the general public.
- 5) Assistance in the development and production of continuing education courses, special seminars, and conferences.
- 6) General participation in promoting the College of Engineering.

Staff duties include: typing and reproduction of research proposals, reports, technical papers and journal articles for engineering faculty; operation of associated equipment; drafting assistance; information on interests, formats and deadlines of funding agencies and technical publications; generating and maintaining files of documents received, College of Engineering proposals and reports, and faculty research time commitments.

**B. J.K.K. Look Laboratory of Oceanographic Engineering:**

The Director is responsible for the research and instructional activities, and for the personnel at the J.K.K. Look Laboratory of Oceanographic Engineering.

The Look Laboratory has multiple functions in:

- 1) Providing research facilities and services to faculty, students, and staff which are involved in academic research, including extramural, intramural, and/or in-house studies relating to ocean engineering.
- 2) Assisting the state and federal agencies in solving many ocean-related problems.
- 3) Educating the graduate students in all aspects of physical and mathematical modeling techniques as applied to waterways, harbors, coastal engineering, and ship hydrodynamics through an ocean hydrodynamics laboratory course and on-the-job training.
- 4) Educating the public on the awareness of marine science and ocean engineering by making the Look Laboratory facilities and researchers available to study-tour groups or individuals.
- 5) Educating the college, secondary and elementary school students on the awareness of marine science and ocean engineering by making the Look Laboratory's facilities and researchers available to study-tour groups or individuals.
- 6) Providing advisory services to a variety of organizations and/or general public in the field of ocean engineering.

**C. Pacific International Center for High Technology Research (PICHTR)**

The Director is responsible for all activities of PICHTR and reports to the Dean of Engineering.

According to Act 152 of the 1983 Session Laws of Hawaii, the Center shall assist the State's High Technology Development Corporation in its efforts, shall promote educational, scientific, technological, and literary pursuits in the area of high technology, and shall provide support for the high technology industry in Hawaii in the following manner:

- 1) By fostering scientific and technological interchange between students and scholars of the United States and other nations;
- 2) By encouraging, initiating, aiding, developing, and conducting scientific investigations and research in high technology;
- 3) By encouraging and aiding in the education and training of persons from the United States and other nations for the conduct of such investigations, research, and study;
- 4) By assisting in the dissemination of knowledge by establishing, aiding, and maintaining professorships or other staff positions, fellowships, scholarships, publications, and lectures;
- 5) By other means to make the benefits of investigations, research, and study available to the public; and
- 6) By any and all other acts reasonably designed to further the above purposes in the interest of promoting the general welfare of the people of the State and the mutual understanding between the United States and other nations.