**College of Engineering**

Department of Mechanical and Mechatronic Engineering

Department of Systems Engineering and Naval Architecture

Department of Harbor and River Engineering

Institute of Materials Engineering

**Deportment of Mechanical and Mechatronic Engineering**

The Department of Mechanical and Mechatronic Engineering offers BS, MS, and PhD programs. The major fields of study involve solid mechanics and material science, design and manufacturing, thermo-fluid and energy engineering, mechatronics and automation control, and nano/micro systems.

The department is involved with developing industrial and technological innovations. Mechatronics, automation engineering, precision measuring and machining, and micro-electromechanical systems are also studied because these areas integrate electronic, electrical, information, computer, optoelectronic, and control technologies.

To enhance the depth and breadth of learning, the department collaborates with other related departments and offers non-degree cross-departmental programs, such as the Nano/Micro Technology Program, Mechatronics and Control Program, and the Ocean Energy Technology Program, which enable students to cultivate technology integration skills and cross-field expertise. The offered curriculum, in addition to the basic theories and concepts of the mechanical and electromechanical fields, is supplemented by various experimental courses and the study of specific topics. The graduate programs encompass related scientific and technical disciplines. Graduate students may also choose their own topics of interest to study.

In 2007, to increase the quality of education and to promote student employment competitiveness, the department obtained educational accreditation by the Institute of Engineering Education Taiwan (IEET) in engineering and technology for a term of 6 years. Further efforts will be devoted to obtaining a second term of IEET accreditation toenhance the academic reputation of the institute.

Department of Systems Engineering and Naval Architecture

The primary mission of this department is to educate students in naval architecture and mechanical engineering, which involves the teaching of structures, fluids, acoustics, and mechatronics. Specifically, we prepare undergraduate students for advanced graduate work and for jobs in the public and private sectors. We also prepare graduate students for careers in fundamental and applied research.

Our secondary mission is providing students with research and development opportunities in industries, such as naval architecture, fluid engineering, and structural engineering, ultimately enabling students to develop and use high-quality systems in these industries. Experience in the field, proficiency in the laboratory, and familiarity with complex computer modeling are all essential components of success in these research programs.

This department contains three research centers: the Underwater Acoustics and Hydrodynamics Research Center, the Sound and Vibration Research Center, and the Marine Industry and Information Management Research Center. The department offers BS, MS, and PhD degrees to qualified candidates.

Department of Harbor and River Engineering

The scope of harbor and river engineering provides students with the opportunity to gain a deep understanding of the latest technology and analytic methods in the fields of civil, hydraulic, coastal, and ocean engineering. The educational goals of the department are to help students develop the comprehensive background knowledge that is required in professional engineering and to provide students with a macro view of engineering and foster civil responsibility. The department offers BS, MS, Executive Master of Engineering, and PhD degrees. The undergraduate and graduate programs are accredited by the IEET. Academic research focuses on structural analysis and design, geotechnical engineering, materials, hydrodynamics, water resource management, and hydrology.

Degrees are offered in the following majors: Hydrodynamics of Wave Motion, Beach Erosion, Coastal Sediment Estuary, Water Resources and Hydraulic Engineering, Engineering Behaviors of Soil and Rock, Pile Foundations, Mechanical Behaviors of Construction Materials, Structural Mechanics, and Solid Mechanics.

Institute of Materials Engineering

The goal of the Institute of Materials Engineering is to provide graduate students with an advanced background in materials engineering and to develop the experimentation skills that are required in future careers in various industries, governmental organizations, research and development institutes, and advanced studies.

Research fields and curricula in this institute emphasize aqueous corrosion and corrosion control, high-temperature corrosion and prevention, surface modification of alloys, surface modification processes, welding techniques, corrosion-resistant alloy design, physical-vapor deposition and thin-film sputtering, nano-materials and amorphous alloys, and the development of marine construction materials.

圖片說明:

Cavitation phenomenon of high-speed propeller

Double side mask aligner

3 dimensional coordinate determination instrument

Yuan-Shan-Zi diversion channel

Lab lectures on he campus

High resolution field-emission scanning electron microscopy

Multi-directional wave basin-one of the largest ocean engineering labs in Taiwan