College of Ocean Science and Resource

Department of Environmental Biology and Fisheries Science

Department of Marine Environmental Informatics

Institute of Applied Geosciences

Institute of Marine Affairs and Resource Management

Institute of Marine Environment and Ecology

Doctoral Degree Program in Ocean Resource and Environmental Changes

Deportment of Environmental Biology and Fisheries Science

The aim of this department is to provide undergraduate and graduate students with a stimulating curriculum and to develop a research program that achieves an effective blend of basic and applied marine science for sustaining the usage of marine resources.

In addition to applying marine sciences for sustaining marine resources, the field also improves the marine environment, develops marine culture, and perfects marine management by conducting research and educating students about biodiversity conservation and biological resource management. The two major teaching and research domains are as follows:

1. Environmental biology: The focus in this field is between biodiversity and the marine environment. By further understanding the environmental impact on marine resources and biodiversity, this department incorporates the marine biological resource assessments used for conserving biodiversity.

2. Fisheries science: This field focuses on conducting biological resource assessments to sustain fisheries management. The department develops sustainable fishery management techniques, and advances the development of fishing technology and knowledge regarding the biology of various species of fish.

Deportment of Marine Environmental Informatics

The main objective of the department is to provide fundamental education and training for specialists in marine environmental informatics. Taiwan is located at the margin of the western Pacific Ocean. The ability of Taiwan to develop natural resources relies on how to plan and manage the marine environment. Since the early 1960s, the government has consistently selected ocean study as a main target in developing Taiwan high technology. Following this mission, the department - Department of Oceanography was established in 1969. It was changed to “Department of Marine Environmental Informatics” in 2005 to better reflect the strength of the department. In addition to the undergraduate program, the master degree and doctoral degree were started in 1982 and 2002, respectively. A continue education program for the master degree started in 2003. At present, there are 11 faculty members (6 professors, 3 associate professors, and 2 assistant professors), 1 assistant, and 1 technician of the department. The department is well facilated. The department is equipped with a fullyequipped research vessel and a wide range of special equipment for marine environmental Surveying and monitoring. This includes all types of current meters, drifters, pressure gauges for waves and tides, XBTs, an AVHRR satellite receiving g station, a sonar side scan, laser particle analyzers, and two fully-equipped high quality chemical inorganic and organic) oceanography laboratories, as well as an image processing system. Research topics cover the field surveys, data analysis, remote sending, modeling and laboratory experiments, etc.

Institute of Applied Geosciences

The Institute of Applied Geosciences offers MS and PhD programs. The number of students, who mainly have backgrounds in the sciences and engineering, has grown steadily from 15 to more than 30. Currently, seven faculty members serve the institute; two professors, two associate professors, two assistant professors, and one administrative assistant.

The goal of the institute is to provide students with a strong geological and geophysical education and to cultivate their ability to solve problems in the marine and environmental geosciences, in resource exploration, and in tectonic/engineering geophysics. Our research topics focus on the following eight areas:

(a) paleoceanography, paleoclimatology, and climate change; (b) ocean bottom seismometry (OBS) and continental shelf research; (c) high-resolution seismic and ground penetrating radar (GPR) imaging; (d) sedimentary environmental analysis and paleoenvironmental change; (e) mineral synthesis; (f) subducting slab research in Northern Taiwan; (g) 2D and 3D resistivity imaging; and (h) groundwater modeling, remediation, and management.

Our goal is to train students to become adaptable and flexible in their thought processes. We encourage our students to present their research results at international symposia. The program is designed to enhance student knowledge of geology and geophysics, with which they meet industrial or governmental sector employment requirements.

Institute of Marine Affairs Resource Management

Established in 2002, the Institute of Marine Affairs and Resource Management (IMARM) is the only institute in Taiwan that focuses on marine resource management. The institute was established to advance the level of marine resource management by employing integrated research of the natural and social sciences. We are committed to fostering the sustainable usage of marine resources by gaining an improved understanding of marine resource stock, ecosystems, and by developing methods for implementing an improved management policy.

The institute aims to educate and train students to be high-level professionals capable of assessing marine resources and marine ecological systems and devising management policies based on those assessments. The institute offers courses in quantitative analysis, economic analysis, policy and decision making. The graduate program is an excellent learning opportunity for students seeking professions in marine resource management and for those pursuing a PhD.

The four major research areas of the institute are as follows:

1. Assessment of the marine ecosystem: This includes determining the relationship between each trophic level and evaluating the energy flow from primary producers to the highest consumers by using computer simulations;

2.Stock assessment and management: This area involves focusing on the influences of fish population dynamics, conducting quantitative analyses based on biological information, and providing management recommendations;

3. Marine affairs: This area entails providing recommendations on marine resource usage, coastal Zone management, and ocean governance and regulations to administrators for devising management policies that are based on the rational and optimal use of marine resources;

4. Resource economics: This area involves conducting economic analyses on sectors including the far seas and coastal fishing. Marine resource common-property evaluations are also conducted.

Institute of Marine Environment and Ecology

      The objectives of Institute of Marine Environment and Ecology (IMEE) are to train students and provide them with the requisite knowledge and abilities to carry out research and field investigations in marine environment and ecology. Graduate students can select marine environment and/or marine ecology as their major and focus area for their o theses. Also, in order to pursue new knowledge and discoveries, marine research often needs a collaborative team consisting of scientists with varied expertise working well together.

IMEE has set up a long-term inshore project, focused on research in marine environment and marine ecology through collaborations of faculty and graduate students. It is important that IMEE graduate students have the ability to conduct collaborative research and learn how to apply their professional knowledge and techniques in field investigations

Doctoral Degree Program in Ocean Resource and Environmental Changes

The global environmental change has risen as one of the most important scientific research fields as now human society is facing drastic impacts from global warming, ocean acidification, and anthropogenic deterioration of natural environments that are causing negative effects on our living and existence of human being. The rapid increase in greenhouse gases emission rate since the industrial revolution has been driven largely by economic growth and livelihood improvement. Intergovernment Panel on Climate Change (IPCC) reported that the increases of greenhouse gases and its induced climate changes would highly likely cause millions of people living on the earth to face shortages of water and food by the year of 2080. Moreover, the unprecedentedly rate of changes of global environments would cause strong disturbance on earth and marine ecosystems, that in turn, would bring more impacts on the absorptions of CO2. The anthropogenic environmental changes would also bring tremendous impacts on our earth and marine resources, such as through deforestation, overfishing, and pollution. All these deterioration of earth and ocean environments would be further exaggerated by the shortage of fossil fuel and the loss of farming surface due to unprecedentedly increased rate of resource explorations, which challenge severely the survival and development of human being and modern civilizations. Facing to the challenges, our hope relies on conducting integrated, novel earth and marine scientific research, with aiming to investigate the natural and anthropogenic impacts on earth and marine ecosystems. With newly growing scientific research and marine technology, we hope to find innovative solutions to mitigate the impacts brought by the environmental changes, and provide strategies for more cost-effective management and utilization of sustainable earth and marine resources. These integrated and novel studies of earth and marine environmental science are becoming one of the focuses in future development of scientific research in the College of Ocean Science and Resource.

Under this development, a new Ph.D. program has been established since 2014. This program is characterized by trans-disciplinary and interdisciplinary earth and marine environment and resource studies, which are unlike other existing programs in the college but will interact closely within all faculty members and others in the university complimentarily

圖片說明:

Pursuit of sustainable protein supply from Ocean

Tissue embedding processor

Marine food web (including grazing food chain and microbial loop)