

ORE 601 Ocean and Resources Engineering Laboratory

Designation

Core Course

Catalog Description

Design, construction, and evaluation of an engineering system. Field experience and data analysis supplemented with appropriate theory. Pre: 603 and 607.

Prerequisites by Topics

General oceanography

Water wave mechanics

Textbook

None

Reference books

1. Manuals for instruments used in the course.
2. *The Civil Engineering Handbook*, W.F. Chen, editor, CRC Press, 1995.

Course Objectives

1. To provide students with the experience of working in the real ocean environment and form the basis of quantitative judgment of ocean phenomena.
2. To become familiar with ocean wave and current conditions as well as water quality and sediment characteristics.
3. To work with instrumentation and data processing and design processes.
4. To conduct hydraulic scale model experiments and prepare engineering reports.

Topics Covered

1. Field measurements of currents, waves, water quality, sand characteristics, bathymetry and navigation.
2. Design, construction and deployment of instrument systems.
3. Design, construction and conduct of hydraulic scale model studies.
4. Data processing and engineering report preparation.
5. Evaluation of manned research submarines and ROVs.

Assessment

Field report (50%)

Model report (20%)

Research Submersible report (10%)

Class participation (20%)

Usage of Engineering Tools and Computers

Eulerian and Lagrangian current meters, pressure wave gage, fathometer, GPS, sextant, water sampler, sand sampler, drying oven, scale, nephelometer, acoustic distance gage, computer for data analyses and report preparation.

Schedule

Six-week summer course.

Three 3.5-hour sessions per week.

Contribution to Professional Component

Engineering Science: 1 credit

Engineering Design: 2 credits

Relationship to Program Outcomes

Program Outcome 2: Basic science, mathematics, & engineering

Program Outcome 3: Ocean engineering core

Program Outcome 5: Use of latest tools in ocean engineering

Program Outcome 6: Problem formulation & solution

Program Outcome 8: Independent & teamwork

Program Outcome 9: Professional issues

Program Outcome 10: Communication skills

Prepared by

H.J. Krock, Spring 2003