

1. Course Number and Title
ORE 601, Ocean and Resources Engineering Laboratory
2. Credits and Contact Hours
Course is 3 credits. Two 1.5-hour sessions per week on average. Special arrangements are needed for field work and site visits as they may need half or whole day.
3. Course Coordinator's Name
Zhenhua Huang
4. Textbook and/or Other Reading Material
 - a. Textbook: None
 - b. Reference:
 - i. Measurement and Data Analysis for Engineering and Science. By Patrick F. Dunn. Published by McGraw-Hill Higher Education. 2005.
 - ii. Coastal Engineering Manual, Army Corps of Engineers, 2002
 - iii. User manuals for the devices used in projects and field work
 - iv. Supplemental handouts
5. Specific Course Information
 - a. Design, construction and evaluation of an engineering system. Laboratory and field experience and data analysis supplemented with appropriate theory
 - b. Prerequisites and co-requisites: ORE 603 and ORE 607 or consent
 - c. Designation: ORE required core course
6. Specific Goals for the Course
 - a. This course aims to provide ocean and resources engineering students with the fundamentals necessary for carrying out field and laboratory work along with analysis of observational and experimental data in support of engineering endeavors.
 - b. Student Outcomes: (1) Fundamentals. (2) Core program. (4) Problem formulation. (5) Multi-facet design. (6) Communication. (8) Teamwork. (9) Research and experimentation. (10) Constant learning.
7. Topic Covered
 - a. Data acquisition system
 - b. Dimensional analysis
 - c. Experimental design
 - d. Error analysis
 - e. Wave measurement and data analysis
 - f. Beach profile measurement
 - g. Model design and fabrication using 3D printing
 - h. Wave flume tests on coastal structures and beach erosion
 - i. Lab and field instrumentation (Wave gauges, ADCP, REMUS 100 AUV, Hydrophone)
 - j. Laboratory techniques and scaling
 - k. Technical report writing