Department: MARN

Course No.: 171

Credits: 4

Title: Introduction to Oceanography with laboratory

Contact: Annelie Skoog

Content Area: CA3 Science and Technology- Lab

Catalog Copy: MARN171. Introduction to Oceanography with laboratory. First semester (Avery Point). Four credits. Three hours lecture and one three-hour laboratory per week. A background in secondary school physics, chemistry or biology is recommended. Not open to students who have passed MARN 170. Codiga/P. Kremer

Processes governing the geology, circulation, chemistry, and biological production of the world's oceans. Interrelationships between geological, physical, chemical, and biological processes that contribute to the stability and variability of the marine environment. Laboratory experiments, hands-on exercises, and field observations, including required cruise on research vessel.

Course Information: a. A brief (2-3 sentences) course description that includes course goals and objectives. The course covers processes governing the geology, circulation, chemistry and biological productivity of the world's oceans. Emphasis is placed on the interactions and interrelatioships between physical, chemical, biological and geological processes that contribute to both the stability and the variability of the marine environment.

b. Course requirements: Specify exam formats, nature and scope of weekly reading assignments, nature and scope of writing assignments, problem sets, etc. Written exams include definition of terminology, multiple choices, and essays. Reading of one textbook chapter per week on average (20 pages). Homework assignments include word problems, short essays, and calculations.

c. List the major themes, issues, topics, etc., to be covered.
History of oceanography
Structure of the Earth, interior and surface
Plate tectonics
Physical and chemical properties of seawater
Structure and circulation of oceans
Waves and tides
Coastal zone structure and dynamics
Environmental issues
Biological life and production in the ocean

Meets Goals of Gen Ed.: The proposed course will ensure that students acquire intellectual breadth and versatility by introducing current scientific understanding of the ocean through the

four subdisciplines of oceanography- geological, chemical, physical, and biological oceanography. The intellectual versatility of a student is promoted through illustration of the scientific approaches to achieve current state of knowledge.

The students will acquire an awareness of their era and society through the presentation of the history of oceanography, presentation of up-to-date scientific findings, and remaining scientific challenges, including problems encountered in managing the oceans as a resource.

CA3 Criteria: Scientific and technical methods used within the sub-disciplines of oceanography are introduced. The interdisciplinary nature of scientific inquiry within oceanography is emphasized. Examples of hypotheses and problems are given, including clear demonstrations of the scientific method, data collection and analysis, and hypothesis testing. The students also participate directly in data collection, analysis, and hypothesis testing on an oceanographic cruise to Long Island Sound.

Important unresolved questions within oceanography and ongoing research programs addressing these issues are discussed, e.g. the role of the ocean in climate regulation in the planet and the main factors controlling global productivity of the ocean.

By emphasizing the close connection between oceanographic issues and contemporary human society (e.g., El Nino and flooding; ocean circulation and climate; coastal eutrophication and environmental degradation), students are stimulated to continue learning about science and technology and the impact upon the world and human society.

CA3 Lab Criteria: The laboratory for this course meets once a week for three hours. There are fourteen lab meetings during the semester, all but one require a lab report. Although it may not always be possible, the professor tries to attend lab in addition to the Graduate Teaching Assistant. The lab for this course has been taught for 5 years, first as MARN196, until departmental and CLAS approvals were obtained. Unlike many of the Oceanography labs that are offered to accompany beginning Oceanography courses, this lab offers hands-on, experiential learning during all lab periods. Two members of the Department of Marine Sciences have developed this lab to help teach many of the fundamental concepts associated oceanography. The lab book associated with this laboratory is available (electronically or hard copy) upon request.

Role of Grad Students: Graduate assistants are expected to help correct homework assignments, exams, and field trip reports. They are also expected to participate in field trips and hold review sessions. The graduate assistant will also prepare for the laboratory, with the assistance of the instructor as needed. Normally both the instructor and the graduate assistant will supervise the actual lab, interacting with the students. The graduate assistant will also grade the lab reports turned in weekly by the students. The graduate assistants are closely supervised by the professor teaching the course.

Supplementary Information: This course identical to MARN170, but with laboratory added. Lecture section of the course is taught together with MARN170. This course is taught only at Avery Point during fall semester. The course has one session with 20 students. Lecture section of the course is taught together with MARN170.