

I. CATALOG DESCRIPTION

A. Department Information:

Division: Science & Math
Department: Geology/Oceanography
Course ID: OCEAN 111
Course Title: Investigations in Oceanography
Units: 1
Lecture: None
Laboratory: 3 hours
Pre/Corequisite: OCEAN 101

B. Catalog and Schedule Description: Techniques of oceanography including bathymetry, charts, and methods of studying the physical ocean environment.

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

III. EXPECTED OUTCOMES FOR STUDENTS:

Upon completion of the course, the student will be able to:

- A. utilize charts and graphs to represent oceanographic data;
- B. identify and understand the origin and significance of the three fundamental rock types;
- C. find specific locations on oceanographic charts and identify common features using map symbols;
- D. take measurements from maps and determine the rate of geologic processes;
- E. identify the coastal landforms on maps and charts and understand their origin;
- F. list common life forms one expects to find in the various Marine Life Zones;
- G. understand the taxonomic system of classifying biota;
- H. make measurements using a variety of tools and use the data collected to generalize conclusions about the system being measured.

IV. CONTENT:

- A. Bathymetry
- B. Marine Charts and Navigation
- C. Sea-Floor Spreading and Plate Tectonics
- D. Geography of the Oceans
- E. Materials of the Sea Floor
- F. Seismic-Reflection Profiling
- G. Temperature and Salinity
- H. Water Masses and How We Study Them
- I. Surface Currents
- J. Intertidal Marine Life
- K. Tides
- L. Waves at Sea
- M. Waves in Shallow Water and Beach Erosion

V. METHODS OF INSTRUCTION:

- A. Lecture, including directed discussion, instructor-guided investigations, instructor-moderated problem solving sessions, and audio-visual aids, including computer-generated lecture outlines, and supervised illustration of major features.
- B. Field trips in which students will be shown Oceanographic features first hand, collect representative samples, perform field identifications, and assess the results of a variety of geologic processes. (Field trips are optional. Alternative assignments will be available for those students unable to participate in field trip activities)

VI. TYPICAL ASSIGNMENTS:

A. Reading Assignments

1. Selected assignments from the textbook and laboratory manual.
2. Articles covering current events in Oceanography (landslides, earthquakes, volcanic eruptions, floods) as well as long-term events (for example, natural resource depletion, environmental effects of Fishing and Mining).

B. Writing Assignments

1. Selected chapter exercises from the textbook.
2. Instructor-prepared exercises, especially those involving illustrations (maps, charts, diagrams, cross-sections) and their analysis.
3. A journal to be kept when in the field.
4. Laboratory reports including observations, drawings, conclusions, and answers to related questions.
5. A written term project, either a research paper or a group project, showing synthesis of the concepts and processes covered in the course.

C. Example

Choose one of the magazine or newspaper articles on the reading list and analyze the following:

1. Scientific accuracy
2. Topic of study in this course
3. What was reinforced as learned in this course
4. What was new information for you
5. Prepare a written summary and a 3-5 minute class presentation.

VII. EVALUATION:

A. Methods of evaluation:

1. Written quizzes and/or tests of a variety of types of questions from among true-false, multiple choice, fill-in, sentence completion, and short essay.
2. Written exercises.
3. Written summaries of magazine or newspaper articles.

B. Frequency of evaluation:

1. Quizzes are given in lab at the end of each major section.
2. Laboratory exercises are completed in the lab and turned each meeting.
3. A final Project involving independent thinking, observation and analysis and resulting in a written report is usually assigned for the last 2-3 weeks of the semester.

C. Typical exam questions

1. List the major Marine Life Zones with depth parameters.
2. In the list below, identify the animals that belong to the Phylum Chordata.

| | |
|---------------|-----------------------|
| a. Seals | f. Whale Sharks |
| b. Bony fish | g. Gray Whales |
| c. Jelly Fish | h. Crabs and Lobsters |
| d. Snails | i. Squid |
| e. Sharks | j. Coral |
3. Which of the groups listed above are included in the Phylum Mollusca:
4. Which of the groups listed above are included in the Phylum Cnidaria:
5. On the map provided, identify the major oceanic currents:

VIII. TYPICAL TEXTS

Pipkin, et. al., *Laboratory Manual for Oceanography*, 3rd ed., W.H. Freeman and Company, 2001.

IX. OTHER SUPPLIES REQUIRED OF STUDENTS: None