

College of San Mateo
Official Course Outline

1. **COURSE ID:** OCEN 100 **TITLE:** Oceanography
Units: 3.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; and 96.0-108.0 Homework hours
Method of Grading: Letter Grade Only
Recommended Preparation:
 Eligibility for ENGL 838 or ENGL 848

2. **COURSE DESIGNATION:**
Degree Credit
Transfer credit: CSU; UC
AA/AS Degree Requirements:
 CSM - GENERAL EDUCATION REQUIREMENTS: E5a. Natural Science
CSU GE:
 CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING: B1 - Physical Science
 CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING: B2 - Life Science
IGETC:
 IGETC Area 5: PHYSICAL AND BIOLOGICAL SCIENCES: A: Physical Science

3. **COURSE DESCRIPTIONS:**
Catalog Description:
 Introduction to marine geology, chemistry, and biology. Includes the hydrologic cycle and properties of sea water and marine organisms; currents, waves, tides, coastal processes, and ecology of the ocean; continental drift; and sea-floor spreading.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
 Upon successful completion of this course, a student will meet the following outcomes:
 1. Demonstrate an understanding of the scientific method in the study of natural science.
 2. Demonstrate an understanding of the geographic, geologic, chemical, physical and biological concepts of ocean science.
 3. Demonstrate an understanding of lines of evidence that support our knowledge of plate tectonics, seawater and its movement, coastal environments or the marine ecosystem.
 4. Solve quantitative problems associated with oceanographic topics.
 5. Interpret graphical representations of oceanographic topics such as seafloor features, waves, tides, salinity, pressure, temperature, sediment distribution, shoreline features, intertidal zones and marine adaptations.
 6. Evaluate the logic, validity and/or relevance of information in assessing evidence in oceanographic topics such as air/sea interactions, global warming, ocean circulation, plate tectonics, marine ecology and sustainable fisheries.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
 Upon successful completion of this course, a student will be able to:
 1. Demonstrate an understanding of the scientific method in the study of natural science.
 2. Demonstrate an understanding of the geographic, geologic, chemical, physical and biological concepts of ocean science.
 3. Demonstrate an understanding of lines of evidence that support our knowledge of plate tectonics, seawater and its movement, coastal environments or the marine ecosystem.
 4. Solve quantitative problems associated with oceanographic topics.
 5. Interpret graphical representations of oceanographic topics such as seafloor features, waves, tides, salinity, pressure, temperature, sediment distribution, shoreline features, intertidal zones and marine adaptations.
 6. Evaluate the logic, validity and/or relevance of information in assessing evidence in oceanographic topics such as air/sea interactions, global warming, ocean circulation, plate tectonics, marine ecology and sustainable fisheries.

6. **COURSE CONTENT:**
Lecture Content:
 1. Introduction to the scope of the course
 - A. Philosophy of science & the scientific method
 - B. Geography of the oceans

- C. History of Oceanography
- 2. Geological oceanography
 - A. Structure and composition of the earth
 - B. Evidence supporting continental drift
 - C. Evidence supporting plate tectonics
 - D. Seafloor spreading & volcanism
 - E. Features at plate boundaries
 - F. Bathymetry of the oceans
 - G. Other seafloor features
 - H. Structure of the ocean basin floor
 - I. Sediments and sedimentation
- 3. Physical & Chemical oceanography
 - A. Water and Seawater Properties
 - B. Seawater Composition
 - C. Stratification
 - D. Atmospheric circulation
 - E. Air-Sea interaction
 - F. Ocean circulation
 - G. Waves
 - H. Tides
 - I. Beaches & Coastal Processes
 - J. Global Warming
 - K. Pollution
- 4. Biological oceanography
 - A. Life in the oceans
 - B. Classification of marine life
 - C. Marine Ecology
 - D. Effects of Pollution & Overfishing
 - E. Marine adaptations
 - F. Energy transfer
 - G. Pelagic Life
 - H. Benthic Life

7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

- A. Lecture
- B. Activity
- C. Discussion
- D. Observation and Demonstration
- E. Other (Specify): The following methodologies are appropriate. Individual faculty will use whatever mix of these they find most effective in the presentation of each topic. Lecture presentation supplemented by visual aids (powerpoint presentations, movies, maps), in-class demonstration, instructor-led class discussion, hands-on experience with geologic or biologic samples, in-class review games, required reading of text, and required homework on key terms and concepts.

8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

Field Photo Essay Instructions:

Take photos of at least 10 marine organisms (freshwater organisms don't count). You must also take 3 photos of yourself at the site.

For each of the 10 organisms, you will write a 4- to 8-sentence paragraph/caption containing information about the organism. Although you may use information provided at the site, on the internet, or from your textbook, your captions must be in your own words and in complete sentences. Be careful not to plagiarize.

Reading Assignments:

Read the chapter before the lecture on the subject according to the class schedule and expect to reread some paragraphs 2-4 times before the concepts are clear to you.

Write in your textbook as you read and include questions you have, examples from your background knowledge, and concepts expressed in your own words.

9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Class Participation
- B. Class Performance
- C. Class Work
- D. Exams/Tests
- E. Homework
- F. Quizzes
- G. Instructors have considerable discretion in determining course grades, but the department expects in-class tests and quizzes to account for the majority of the final grade. Homework and in-class participation and performance typically combine to account for the balance of the grade.

10. REPRESENTATIVE TEXT(S):

Possible textbooks include:

- A. Trujillo, A.P. & Thurman, H.V.. *Essentials of Oceanography*, 11th ed. Pearson, 2014

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Course Originator: Linda Hand