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**MARINE SCIENCE 210**

**OCEANS AND SOCIETY**

**BULLETIN INFORMATION**

MSCI 210 - Oceans and Society (3 credit hours)
**Course Description:**
A nontechnical introduction to human interactions with the marine environment: marine organisms, marine systems, and the physical and chemical characteristics of oceans and estuaries. Not available for marine science major credit.

**SAMPLE COURSE OVERVIEW**

Oceans and Society provides students with an opportunity to explore the world of oceanography, marine biology, and conservation.  As you will discover, oceanography is an interdisciplinary subject comprised of concepts and ideas from biology, ecology, meteorology, geology, chemistry, physics, cultural anthropology, economics, political science, environmental law, and many other disciplines.  Of the total water resources available, more than nine-tenths is composed of the oceans.  We use the oceans for food, energy and materials, and oceans play a major role in controlling climate.  Understanding and applying the information and principles that we cover in this course is vitally important for the future of humanity and all other life on our planet.  By the end of this course, you will:  1) have learned the basic principles, concepts, and terms of oceanography, 2) understand the scientific method and how hypotheses, experimentation and observations are used to explore and explain how marine systems work, and 3) have learned how science can be used to manage our oceans and our planet so as to provide a more pleasant and safe environment for ourselves and future generations.

**ITEMIZED LEARNING OUTCOMES**

**Upon successful completion of Marine Science 210, students will be able to:**

1. Compare current scientific theories concerning the origin of the Earth and the waters that cover its surface
2. Identify the features of the ocean basins and relate the structures observed to the scientific theories of their origin
3. Demonstrate understanding of basic chemical oceanography in terms of properties of water, salts, and gases and how these properties control life in the oceans
4. Describe motions in the sea in terms of their causes, interactions, and effects on marine and shoreline environments, and influence on human activities
5. Identify key features, interconnectedness, and understand importance of marine organism groups such as protists, zooplankton, sharks, and mammals
6. Demonstrate understanding of the basic ecosystem structure of different marine environments and relate the physical properties of oceanic environments to these ecosystems.
7. Identify the causes of marine pollution and environmental degradation, and understand the problems associated with containment and alleviation
8. Demonstrate understanding of how past evidence of ocean and climate history is obtained and how this information is interpreted in the modern ocean using basic oceanographic principles and first order testable hypotheses
9. Evaluate the scientific evidence for both natural and human-induced climate change and evaluate the pros and cons of climate change on ocean systems with respect to society

**SAMPLE REQUIRED TEXTS/SUGGESTED READINGS/MATERIALS**

1. *Essentials of Oceanography*, 6th ed., Tom Garrison, Thompson Learning, Inc., Belmont, Calif. (can also use 5th edition—available used online).

**SAMPLE ASSIGNMENTS AND/OR EXAM**

This course includes the following four means of evaluating student performance and comprehension of the material:

1. **Exams:** There are three lecture exams and one final exam.  Exams consist of multiple choice questions designed to evaluate student understanding of basic terminology, key concepts and scientific principles covered in lecture
2. **Quizzes & Participation:** In-class attendance quizzes will be used to evaluate student comprehension of key concepts and theories in oceanography presented in prior weeks’ lectures and are designed so that students not only demonstrate their knowledge, but interpret results of the information/data provided.
3. **Four Critical Thinking/Writing Assignments:** These short assignments will require students to reflect on a documentary/video or topic discussed in class that focuses on the interface between oceans and society (e.g., the Pacific Garbage Patch, deep ocean oil drilling, whaling, etc.).  The paper should present the underlying evidence and theories for the basis of the discussion, discuss misconceptions (if any) and present possible solutions.  These assignments are to be typed and turned in on Blackboard.
4. **Extra Credit/Bonus points:** These points may come from extra credit on quizzes and additional extra credit opportunities that will be provided throughout the course, (e.g. evaluate the correct and incorrect scientific underpinnings of a movie such as “The Day After Tomorrow”).

**SAMPLE COURSE OUTLINE WITH TIMELINE OF TOPICS, READINGS/ASSIGNMENTS, EXAMS/PROJECTS**

Class 1: First day of classes

Introduction to class/objectives

Course Syllabus

Class 2: Blue Planet Documentary: Ocean World

Writing Assignment 1

Class 3: The Scientific Method

History of the Earth and Ocean

Chapter 1

Class 4: History of Marine Science

Chapter 2

Class 5: Earth Structure and Plate Tectonics

Chapter 3

Writing Assignment 1 DUE

Class 6: Earth Structure and Plate Tectonics, cont.

Ocean Basins

Chapter 3, 4

Class 7: Ocean Basins, cont.

Chapter 4

Class 8: Ocean Sediments

Exam 1 Review

Chapter 5

Class 9: **EXAM 1**

Class 10: Water

Chapter 6

Class 11: Blue Planet Documentary: Tidal Seas

Writing Assignment 2

Class 12: Water, Cont.

Atmospheric Circulation

Chapter 6, 7

Class 13: Atmospheric Circulation, cont.

Ocean Circulation

Chapter 7, 8

Class 14: Ocean Circulation, cont.

Chapter 8

Writing Assignment 2 DUE

Class 15: Waves

Exam 2 Review

Chapter 9

Class 16: **EXAM 2**

Class 17: “Mutual Expectations”

Tides

Chapter 10

Feedback “Quiz”

Class 18: Blue Planet Documentary: Seasonal Seas

Class 19: Tides, cont.

Chapter 10

Class 20: Coasts

Chapter 11

Class 21: Life in the Ocean

Chapter 12

Writing Assignment 3 – Food Webs

Class 22: Life in the Ocean, cont.

Pelagic Communities

Chapter 12, 13

Class 23: **EXAM 3**

Class 24: Pelagic Communities, cont. – Zooplankton

Chapter 13

Writing Assignment 3 DUE

Class 25: Pelagic Communities, cont. – Fishes and Mammals

Chapter 13

Class 26: Benthic Communities

Chapter 14

Class 27: Benthic Communities, cont. – Coral Reefs, Hydrothermal Vents, Deep Sea

Chapter 14

Class 28: Uses and Abuses of the Ocean

Climate Change

Final Review Info

Chapter 15

Assigned reading

Writing Assignment 4

 **FINAL (EXAM 4) according to University exam schedule**