Degree Applicable

Glendale Community College
January 2010

COURSE OUTLINE

Biology 132
Introduction to Marine Science

I. Catalog Statement

Biology 132 serves as an introduction to oceanography, marine biology and the related marine technologies. Topics covered include sea floor topography and geologic processes, water circulation, the diversity of marine organisms and their physiological and ecological adaptations, and the marine technologies dealing with the development and utilization of biological and geological resources.

Units: 4
Lecture Hours: 3.0

Prerequisite: None

II. Course Entry Expectations

Skill Level Ranges: Reading - 5; Writing - 5; Listening/Speaking - 5; Math - 5

III. Course Exit Standards

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

1. Learn the basics of the origin of the universe, the earth and the oceans as it is currently understood by modern science.
2. Demonstrate an understanding of the basic features of the ocean basins and their formation through the process of plate tectonics.
3. Learn the physical and chemical properties of the oceans and how they affect marine organisms.
4. Describe traits and examples of the major phyla of organisms inhabiting the oceans.
5. Describe the major ecological principles affecting life in the oceans and the different kinds of marine communities.
6. Understand the importance of our use of the oceans for resources and the impact these activities have on the marine environment.

IV. Course Content

A. The Origin of the Earth, Ocean and Life	5 hours
B. Ocean Basins	5 hours
1. Sea floor topography	
2. Plate tectonics	
C. Ocean Sediments	3 hours
1. Characteristics and classification of ocean sediments	
2. Distribution of ocean sediments	

D. Chemical and Physical Properties of Water	1.5 hours
E. Light, Sound and Temperature Properties of Water	1.5 hours
F. Climate and Ocean Circulation	5 hours
1. Atmospheric properties	
2. Tides, currents and waves	
G. Marine Organism Diversity	7 hours
1. The invertebrates	
2. The vertebrates	
3. Marine botany	
H. Ecological Principles	6 hours
1. Energy flow	
2. Productivity	
3. Organism adaptation	
I. The Ecology of the Marine Environment	7 hours
1. The intertidal zone	
2. Life of the deep ocean basins	
3. Open ocean communities	
4. Coral reef communities	
J. Marine Resources and Ocean Technology	4 hours
1. Fisheries	
2. Energy production	
3. Mineral exploitation	
4. Recreation	
5. Mariculture	
K. Ocean Pollution and Management	3 hours

V. Methods of Presentation

The following instructional methodologies may be used in the course:

1. Black/white board presentations
2. Overhead presentations
3. PowerPoint presentations
4. Selected Video clips
5. Internet exercises
6. Field activities
7. Lab experimentation and observation of live and preserved specimens

VI. Assignments and Methods of Evaluation

1. Two or three short quizzes.
2. Two or three one-hour examinations and a 2 ½-hour final. All lecture exams have a written component, which is not less than 25% of the total points for each exam.
3. Students are also required to either read articles from scientific magazines/journals or a book dealing with some aspect of marine science.

4. Students attend several fieldtrips and complete questionnaires regarding information discussed during the field activities.
5. The students are responsible to answer several questions about the assigned readings and fieldtrip questionnaires during their midterm examinations or quizzes.

VII. Textbooks

While no textbook is mandatory for adoption, the current editions of following titles are recommended:

Garrison, T.. Oceanography: An Invitation to Marine Science. 7th ed.
Brooks/Cole, 2009.
13th Grade textbook reading. ISBN 049539193X.

Castro, P. and Huber, M.E.,. Marine Biology. 8th ed.
McGraw Hill, 2010.
13th Grade textbook reading. ISBN 007893673X.

Kunzig, R. Mapping the Deep. The Extraordinary Story of Ocean Science.
W. W. Norton, New York, 2000.
13th Grade textbook reading. ISBN 0393320634.

VIII. Student Learning Outcomes

1. Students will be able to recognize, define, and/or explain one or more of the main geological, physical and/or chemical oceanographic processes affecting life in the oceans.

2. Students will be able to recognize, define, describe, list, compare and/or explain the ecological characteristics of the epipelagic, deep-sea, hydrothermal vents, and intertidal ecosystems.

3. Students will be able to recognize, define, describe, list, compare and/or explain the impact that humans have had on the major marine ecosystems.