SEMESTER AT SEA COURSE SYLLABUS

Voyage: Spring 2014
Discipline: Biology
BIOL 1559-501 (section 1) and 502 (section 2): Marine Biology
Division: Lower
Faculty Name: Jon Kastendiek

Pre-requisites: None

COURSE DESCRIPTION:

This course is a general course in Marine Biology. The course will introduce students to the biological characteristics of marine life and the ecological processes that structure marine ecosystems. The course will cover basic concepts of physical and chemical oceanography, a description of the major types of marine communities (e.g., intertidal, subtidal, pelagic, deep-sea, coral reefs) and discussion of the major groups of marine plants and animals that are found in these communities. The course is also designed to help students understand and appreciate the relationship between humans and the sea and to stress the importance of conservation efforts as they related to the sea's ecology and biodiversity.

COURSE OBJECTIVES:

1. To investigate and learn basic ecological principles through an exploration of marine ecosystems.
2. To discover the great diversity of marine organisms and how they have evolved to meet the challenges of various marine environments through the process of natural seletion.
3. To provide a basic scientific framework so that students can learn how to assess and critique studies in the area of marine biology
4. To understand and appreciate the relationship between humans and the sea.
5. To understand the importance of conservation efforts as they relate to the seas ecology and biodiversity.

REQUIRED TEXTBOOKS:

AUTHOR: Castro, P and Huber ME
TITLE: Marine Biology
PUBLISHER: McGraw Hill
ISBN #: 978-0-07-352420-7
DATE/EDITION: 2012/ 9th ed.

TOPICAL OUTLINE OF COURSE

B1- January 13: Introduction to marine biology. Reading: Chapter 1 of text

B2- January 15: Physical features of the sea floor. Reading: Chapter 2 of text

January 20-21: Hilo

B3- January 18: Physical oceanography. Reading: Chapter 3 of text

January 17: Hilo

B4- January 21: Principles of biology and life in the sea. Reading: Chapter 4 of text

B5- January 23: Marine microbes. Reading: Chapter 5 of text.

B6- January 26: Multicellular plants and algae of the sea. Reading: Chapter 6 of text.

B7- January 28: First Exam

January 29-February 3 Yokohama-Kobe

B8- February 5: Marine invertebrates 1. Reading: Chapter 7 of text.

February 6-11: Shanghai-Hong Kong

B9- February 13: Marine invertebrates 2. Reading: Chapter 7 of text.

February 14-19: Ho Chi Minh City

B10- February 21: Marine fishes. Reading: Chapter 8 of text.

February 22-23: Singapore

B11- February 26: Marine birds and reptiles. Chapter 9 of text. Research paper assigned.

February 27 March 4: Rangoon

B12- March 6: Marine mammals. Chapter 9 of text.

B13- March 7: Introduction to marine ecology. Reading: Chapter 10 of text**.**

March 9-14: Cochin

B14- March 16: Intertidal communities. Reading: Chapter 11 of text

B15- March 19: Second exam

March 21: Port Louis

B16- March 22: Estuaries. Reading: Chapter 12 of text

B17- March 24: Subtidal communities. Reading: Chapter 13 of text

B18- March 27: Coral reefs. Reading: Chapter 14 of text

March 28-April 2: Cape Town

B19- April 4: Biology of the open ocean 1. Reading: Chapter 15 of text

B20- April 6: Biology of the open ocean 2. Reading: Chapter 15 of text

B21- April 8: Ecology of the deep sea. Reading: Chapter 16 of text

April 10-14: Takoradi-Tema

B22- April 16: Marine resources. Reading: Chapter 17 of text. Research paper due.

B23- April 18: Human impact and Conservation of the sea 1. Reading: Chapter 18 of text

B24- April 21: Human impact and Conservation of the sea 2. Reading: Chapter 18 of text

April 23-27: Casablanca

B25- April 29: B Day Final

May 2: Arrive in Southampton

FIELD WORK

FIELD LAB (*At least 20 percent of the contact hours for each course, to be led by the instructor.*)

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The purpose of the field assignment is to reinforce course topics discussed in class and to allow students to have a personal experience of the marine environment and the organisms that live in it. The basic goals of the field assignments are to (1) experience the physical aspects of a marine environment, (2) observe first-hand structural or behavioral adaptations exhibited by living marine organisms and (3) appreciate the diversity of marine life.

Students must attend the field lab for the corresponding section of MARINE BIOLOGY. Field lab descriptions are as follows:

BIOL 1559-501: Day at Yokohama Aquarium

We will tour the aquarium and observe and discuss the adaptations exhibited by plants and animals from various marine habitats. We will discuss concepts of convergence and adaptive radiation among groups of plants and animals. We will also pose questions about how to scientifically determine the adaptive value of what we observe.

Academic Objectives:

1. Relate adaptations to the marine environment described in lecture to living organisms
2. Discovery the diversity of organisms living in the sea
3. Learn to pose scientific hypotheses concerning morphological and behavioral adaptations

BIOL 1559-502: A Day Visiting Various Marine Habitats in Port Louis

We will visit mangroves, reefs and open ocean to observe firsthand the diversity of organisms present, their behaviors and adaptations to the marine environment. We will look for the evidence of interactions among plants, animals and their physical environments.

Academic Objectives:

1. Relate concepts concerning physical and biological aspects of the marine environment described in lecture to a natural setting.
2. Experience the diversity of marine organisms.
3. Learn to pose scientific hypotheses concerning the marine environment.

FIELD ASSIGNMENTS

Students will prepare a field report (notebook) after the field lab that integrates classroom materials and field experiences as well as questions that come to mind. Students will be evaluated on the degree to which they relate their own observations and experiences to material discussed in the classroom.

METHODS OF EVALUATION / GRADING RUBRIC

Grading in this course will be based upon performance on two midterm (100 pts each) and final (100 pts) exams, a research paper (100 pts) and a field notebook (100 pts). The research paper is designed to demonstrate how marine biological science is performed. The student will select a "fact" presented in the course and then describe the science that supports that fact.

RESERVE LIBRARY LIST

None needed

ELECTRONIC COURSE MATERIALS

None needed

ADDITIONAL RESOURCES

None needed

HONOR CODE

Semester at Sea students enroll in an academic program administered by the University of Virginia, and thus bind themselves to the University's honor code. The code prohibits all acts of lying, cheating, and stealing. Please consult the Voyager's Handbook for further explanation of what constitutes an honor offense.

Each written assignment for this course must be pledged by the student as follows: "On my honor as a student, I pledge that I have neither given nor received aid on this assignment." The pledge must be signed, or, in the case of an electronic file, signed "[signed]."