NATIONAL UNIVERSITY VIRTUAL HIGH SCHOOL
AN AFFILIATE OF THE NATIONAL UNIVERSITY SYSTEM

Marine Science B

Course Description:

Marine Science B is a continuation of the study of the oceans on planet Earth. In semester one, students learned about geological oceanography and chemical oceanography. In semester two, students will cover the remaining two of the four major divisions of oceanography: physical and biological.

Physical oceanography is the study of the movement of ocean water in waves, tides, and currents. We will look at the forces that cause ocean water to move and how the movement of the water affects the continents.

Biological oceanography is the study of life in the ocean. We will learn about the Plankton (drifters), the nekton (swimmers), and the benthic organisms (those who live on or in the seafloor). We will also take a look at the many different marine communities in which these organisms live.

Learning Outcomes:
At the completion of Marine Science B, the student will be able to:

- Describe the forces that cause the mass movement of ocean water.
- Describe the different types of ocean currents.
- Determine the effects of ocean currents on continental landmasses.
- Describe the characteristics of waves.
- Explain how and why ocean waves develop.
- Analyze deep-water waves versus shallow-water waves.
- Understand the difference between wave refraction, diffraction and reflection.
- Describe the origins of seiches and tsunamis.
- Describe the forces that generate tides.
- Understand the gravitational pull of the sun and the moon on ocean water.
- Explain why tides behave as shallow-water waves.
- Predict the tidal cycle in a chosen location.
- Explain the difference between and the features of erosional coasts and depositional coasts.
- Describe the movement of sand water along a coastline.
- Understand the formation and movement of barrier islands.
- Explain the effect of global warming.
- Describe the different types of phytoplankton.
- Explain primary productivity and the global distribution of plankton productivity.
- Know the characteristics of zooplankton.
- Describe and classify marine algae and plants.
- Describe the characteristics of the invertebrates.
- Distinguish between several Phyla of invertebrates.
- Describe the characteristics and requirements of fish.
- Explain the differences among several orders of marine mammals.
- Describe the influence of physical and biological factors in marine environments.
- Describe the different types of marine communities.
- Understand how marine organisms are adapted to their habitat.

Required Text:
Publisher: Brooks Cole
Title: Oceanography: An Invitation to Marine Science
Author(s): Garrison
Year published: 2005
Student edition text: ISBN 0534408877

Prerequisites:
Marine Science A

Course Methodology:

- This is an inquiry-based course. Students will generate knowledge through online readings, synchronous chats, and asynchronous discussions with students and their instructor, interactions with online tutorials, online and hands-on simulations, and virtual classroom chats.
- A semester project developed by each student will be used to demonstrate knowledge and understanding of the material in the course.
- The instructor will act as a guide, a facilitator, an events planner, and a resource advisor. He/she will always be available through e-mail.
- The student must actively construct and acquire knowledge by being intrinsically motivated to succeed. To succeed, students must participate and complete all readings and activities. This course requires the student's active participation.
- Both formal and informal assessment methods will be used in the course. Informal assessment will include an evaluation of the quality and timeliness of participation in class activities. Formal assessment may include multiple-choice quizzes, tests, discussion board participation, and written assignments. A final exam will be given at the end of the course.

Unit	Topics	Assignments
1	Circulation of the Ocean	Text: Chapter 9 – Circulation of the Ocean Lecture: Circulation of the Ocean Activities: • Circulation of the Ocean – What do you know? • El Niño and La Niña Discussion Topics: • Learning Styles Assessment • The Weather

Unit	Topics	Assignments
		Review Project Options • Option 1: Oil Spill • Option 2: Coral Bleaching • Option 3: Estuaries Quiz
2	Waves	Text: Chapter 10 – Waves Lecture: Waves Activities: • Waves – What do you know? • Tsunami Discussion Topics: • Waves – Deep/Shallow • Surfing Begin Project Quiz
3	Tides	Text: Chapter 11 – Tides Lecture: Tides Activities: • Tides- What do you know? • Tides and the Moon Discussion Topics: • Tidal Power • Latitude and Tides Continue Project Quiz

Unit	Topics	Assignments
4	Coasts	Text: Chapter 12 – Coasts Lecture: Coasts Activities: • Marine Protected Areas • Letter to the Mayor (Global Warming) Discussion Topics: • Letter to the Mayor (Global Warming) • Barrier Island Development Continue Project Quiz
5	Plankton, Algae and Plants	Text: Chapter 14 – Plankton, Algae and Plants Lecture: Plankton, Algae and Plants Activities: • Plankton, Algae and Plants – What do you know? • Phytoplankton Concentration Discussion Topics: • Human Activity and Coastal Processes • Phytoplankton No More Continue Project Quiz
6	Marine Animals	Text: Chapter 15 – Marine Animals Lecture: Marine Animals Activities: • Zooplankton Comparison • Coral Reefs

Unit	Topics	Assignments
		Discussion Topics: • More Land or Water Animals? • Parasites Continue Project Quiz
7	Marine Communities	Text: Chapter 16 – Marine Communities Lecture: Marine Communities Activities: • Habitats • Disposing of Obsolete Oil Rigs Discussion Topics: • Arctic National Wildlife Refuge Drilling • Alternative Energy Finalize Project Quiz
8	Review Finish Project Final Exam	Text: Review Chapters 9 – 16 Lecture: None Activities: • Ozone Depletion • Oceanography – What have you learned? Discussion Topics: • Share your Project • What Now? Submit Project Final Exam

Assessment:

Type of Assessment	Points
Assignments (16)	10 points each
Discussion Forums (16)	10 points each
Quizzes (7)	25 points each
Exploration Project	80 points
Final Exam (Unit 8)	40 points
Synchronous Discussions	Instructor Determined
Total Points Possible: 615	

Grading Scale:

Letter Grade	Percentage Earned
A	95%+
A-	90% - 94.9%
B+	87% - 89.9%
B	84% - 86.9%
B-	80% - 83.9%
C+	77% - 79.9%
C	74% - 76.9%
C-	70% - 73.9%
D+	67% - 69.9%
D	64% - 66.9%
D -	60% - 63.9%
F	59% and lower

Student's Role and Responsibilities in this Course

Expectations:

Students are expected to conduct themselves in a responsible manner that reflects sound ethics, honor, and good citizenship. It is the student's responsibility to maintain academic honesty and integrity and to manifest their commitment to the goals of NUVHS through their conduct and behavior. Students are expected to abide by all NUVHS policies and regulations. Any form of academic dishonesty, or inappropriate conduct by students or applicants may result in penalties ranging from warning to dismissal, as deemed appropriate by NUVHS.

Communication:

Throughout this course students will need to be in close contact with their instructor and fellow students. Students are expected to communicate via email and electronic discussion boards. Therefore, students should plan on checking email at least three times a week and participate in the discussion boards during the weeks they are live.

Instructors strongly encourage and welcome open communication. Clear, consistent, and proactive communication will ensure a successful experience in this course. It is the student's responsibility to notify the instructor immediately if and when a personal situation occurs that affects his/her performance in this class. Being proactive with communication will result in a quick solution to any problems that may occur.

Technical Support is offered through Spectrum Pacific Learning Company (SPLC). Should a student need any technical assistance, he/she is to email the Help Desk as soon as possible athelpdesk@myonlinelogin.com or call 1-877-252-7715. SPLC will help resolve technical problems and walk through the solution with students. If a problem persists for more than 48 hours, the student must also notify the teacher and NUVHS.

Time Required For This Course:

To complete this course in eight weeks, students should plan to allocate at least 12-15 hours a week on assigned readings, assignments, discussions (asynchronous and synchronous), quizzes, and exams. It is highly recommended that students organize themselves around the course schedule.

NUVHS wishes every student great success in their online class. Please contact us at 1.866.366.8847 if any questions arise.