Syllabus

Introduction to Marine Biology

Course Overview

This one-semester course is intended to help you familiarize yourself with the knowledge and skills required for a career in marine biology. This course has 15 lessons organized into four units. Each unit has a Unit Activity and each lesson contains one or more Lesson Activities.

In the Introduction to Marine Biology course you will explore the fundamental concepts of marine biology. You will learn about the formation and characteristic features of the oceans. You will also learn about the scientific method and explore careers available in marine biology. The course will introduce you to the characteristic features of different taxonomic groups found in the ocean. You will learn about the different habitats, life forms, and ecosystems that exist in the oceans and explore the different types of adaptations marine creatures possess to survive in the ocean. You will learn about succession and the flow of energy in marine ecosystems. Finally, you will also learn about the resources that the oceans provide and the threats that the oceans face from human activities.

Your teacher will grade your work on the Unit Activities, and you will grade your work on the Lesson Activities by comparing them with the given sample responses. The Unit Activities (submitted to the teacher) and the Lesson Activities (self-checked) are major components of this course. There are other assessment components, namely the mastery test questions that feature along with the lesson; the pre- and post-test questions that come at the beginning and end of the unit, respectively; and an end-of-semester test. All of these tests are a combination of simple multiple-choice questions and technology-enhanced (TE) questions.

Course Goals

By the end of this course, you will be able to do the following:

- Describe the formation, geography, and characteristic features of the oceans.
- Explain how the biogeochemical and hydrological cycles operate and their significance to life on Earth.
- Describe and implement the scientific approach to studying marine biology.
- Describe the careers, skills, and qualifications required for a career in marine biology.
- Describe the different zones in the ocean and the division of life forms on the basis of these zones.
- Classify and describe different life forms in the ocean.

- Discuss the abiotic and biotic features of different ecosystems present in the ocean.
- Describe adaptations of organisms to life in a marine environment.
- Examine how succession takes place over a period of time in an ecosystem.
- Identify different types of marine resources and discuss the services provided by the world's oceans.
- Identify and describe the threats faced by marine ecosystems due to human activity.

General Skills

To participate in this course, you should be able to do the following:

- complete basic operations with word-processing software, such as Microsoft Word or Google Docs
- complete basic operations with presentation software, such as a Microsoft PowerPoint or Google Docs presentation
- perform online research using various search engines and library databases
- communicate through email and participate in discussion boards

For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.

Credit Value

Introduction to Marine Biology is a 0.5-credit course.

Course Materials

- notebook
- pencil or pen
- computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Microsoft PowerPoint or equivalent

Course Pacing Guide

This course description and pacing guide is intended to help you stay on schedule with your work. Note that your course instructor may modify the schedule to meet the specific needs of your class.

Unit 1: Oceanic Features and Processes

Summary

This unit focuses on the geology and the physicochemical processes that occur in the ocean, the scientific method, and the career opportunities in the field of marine biology. In this unit, you will describe the formation and characteristic features of the oceans. You will learn about the biogeochemical cycles and their significance to life on Earth. You will also understand and describe the scientific approach. Finally, you will explore careers available in marine biology and the skills and qualifications required to pursue these careers.

	Unit 1: Oceanic Features and Processes	
Day	**Activity/***Objective*	**Type**
1 day: 1	**Syllabus and Plato Student Orientation** *Review the Plato Student Orientation and Course Syllabus at the beginning of this course.*	Course Orientation
4 days: 2–5	**Introduction to the Oceans** *Describe the formation, geography, and characteristic features of the oceans.*	Lesson
4 days: 6–9	**Hydrological and Biogeochemical Cycles** *Explain how the biogeochemical and hydrological cycles operate and their significance to life on Earth.*	Lesson
4 days: 10–13	**What Is Marine Biology?** *Understand and describe the scientific approach to studying marine biology and the careers, skills, and qualifications required for this field.*	Lesson
1 day: 14	**Para Jumble**	Game
4 days: 15–18	**Unit Activity and Discussion—Unit 1**	Unit Activity Discussion
1 day: 19	**Posttest—Unit 1**	Assessment

Unit 2: Life in the Oceans

Summary

This unit focuses on the different life forms in the ocean. In this unit, you will discuss the theory that life began in the oceans and understand the naming convention of life forms. You will describe different oceanic zones. You will classify and describe different life forms in the oceans such as simple organisms, invertebrates, and vertebrates. You will also discuss adaptive features that enable marine organisms to live in marine environments.

	Unit 2: Life in the Oceans	
Day	**Activity/***Objective*	**Type**
4 days: 20–23	**Ocean Habitats** *Explore the array of habitats in the world's oceans.*	Lesson
4 days: 24–27	**Simple Marine Organisms** *Classify and describe simple life forms in the ocean.*	Lesson
5 days: 28–32	**Marine Invertebrates** *Classify and describe important groups of invertebrates and discuss their adaptations to life in the ocean.*	Lesson
5 days: 33–37	**Marine Vertebrates** *Classify and describe important groups of vertebrates and discuss their adaptations to life in the ocean.*	Lesson
1 day: 38	**Space Jumble**	Game
4 days: 39–42	**Unit Activity and Discussion—Unit 2**	Unit Activity Discussion
1 day: 43	**Posttest—Unit 2**	Assessment

Unit 3: Marine Ecosystems

Summary

In this unit, you will learn about the different types of ecosystems found in the marine environment. You will list and describe different types of organisms found in each type of ecosystem. You will learn about the abiotic conditions of different ecosystems such as coral reefs, open ocean, and the deep sea. Finally, you will learn about the adaptations of organisms that dwell in these ecosystems.

	Unit 3: Marine Ecosystems	
Day	**Activity/***Objective*	**Type**
4 days: 44–47	**Intertidal and Estuarine Ecosystems** *Describe the abiotic and biotic features of intertidal and estuarine ecosystems.*	Lesson
4 days: 48–51	**The Neritic Zone and Coral Reef Ecosystems** *Describe the abiotic and biotic features of the neritic zone and coral reef ecosystem.*	Lesson
4 days: 52–55	**Marine Temperate Ecosystems** *Describe the abiotic and biotic features of marine temperate ecosystems.*	Lesson
4 days: 56–59	**The Open-Ocean and Deep-Sea Ecosystems** *Describe the abiotic and biotic features of open-ocean and deep-sea ecosystems.*	Lesson
1 day: 60	**Para Jumble**	Game
4 days: 61–64	**Unit Activity and Discussion—Unit 3**	Unit Activity Discussion
1 day: 65	**Posttest—Unit 3**	Assessment

Unit 4: Interactions in the Marine Environment

Summary

This unit focuses on how living organisms interact with each other and with the ocean. In this unit, you will learn about ecological succession and explore different types of ecological interactions such as symbiosis, competition, and predation. Further, you will learn about biomass, and explore the significance of the food chain and the food web in marine ecosystems. You will discuss marine resources and different ways to manage and conserve these resources. You will also discuss important services provided by the oceans. Finally, you will discuss major threats faced by the oceans as a result of human activities.

	Unit 4: Interactions in the Marine Environment	
Day	**Activity/***Objective*	**Type**
4 days: 66–69	**Ecological Succession and Interactions in Marine Organisms** *Describe ecological succession and examine interactions between marine organisms and the pathway of energy transfer between organisms.*	Lesson
4 days: 70–73	**Ecological Pyramids** *Describe the flow of energy in an ecosystem.*	Lesson
4 days: 74–77	**Marine Resources** *Identify different types of marine resources and discuss the services provided by the world's oceans.*	Lesson
5 days: 78–82	**Human Impact on the Sea** *Identify and describe the threats faced by marine ecosystems due to human activity.*	Lesson
1 day: 83	**Thwack-A-Mole**	Game
4 days: 84–87	**Unit Activity and Discussion—Unit 4**	Unit Activity Discussion
1 day: 88	**Posttest—Unit 4**	Assessment
1 day: 89	**Course Review**	
1 day: 90	**End-of-Course Exam**	Assessment