



This course supports the assessment for The Ocean Systems. The course covers 5 competencies and represents 4 competency units.

## Introduction

### Overview

In this course, learners investigate the complex ocean system by looking at the way its components—atmosphere, biosphere, geosphere, hydrosphere—interact. Specific topics include: origins of Earth’s oceans and the early history of life; physical characteristics and geologic processes of the ocean floor; chemistry of the water molecule; energy flow between air and water, and how ocean surface currents and deep circulation patterns affect weather and climate; marine biology and why ecosystems are an integral part of the ocean system; the effects of human activity; and the role of professional educators in teaching about ocean systems.

In this course, you will engage in a seminar with field researchers and educators. This seminar, from the world-renowned American Museum of Natural History, provides an environment for learning and engaging in scientific dialogue. *It also serves as the assessment.* In order to pass, you must achieve a grade of “Meets Requirements” in the seminar. Review the [Assessment Retake Fee](#) section of the Student Handbook: if you do require a third or subsequent retake of this seminar, you will be charged the cost, \$400.00 (as of August, 2014; subject to change).

Watch the following video for an introduction to this course:

*Note: To download this video, right-click the following link and choose "Save as...":* [download video](#).

### Competencies

This course provides guidance to help you demonstrate the following 5 competencies:

- **Competency 2005.1.1: Oceanographic Systems**  
The graduate demonstrates knowledge of oceans, their formation, and the interconnections between ocean systems, the atmosphere, the biosphere, and the geosphere.
- **Competency 2005.1.2: Ocean Water**  
The graduate analyzes how properties of seawater affect the ocean systems.
- **Competency 2005.1.3: Currents**  
The graduate analyzes ocean currents and how they influence weather and climate.
- **Competency 2005.1.4: Marine Biology**  
The graduate analyzes the interrelationships of life forms, natural systems, and cycles within the ocean environment.
- **Competency 2005.1.5: Humankind and the Ocean Systems**  
The graduate utilizes knowledge of ocean systems, environmental challenges, oceanographic and interdisciplinary methods, and pedagogical techniques to effectively



teach others about the ocean systems.

## **Teaching Dispositions Statement**

Please review the [Statement of Teaching Dispositions](#).

## **Course Instructor Assistance**

As you prepare to successfully demonstrate competency in this subject, remember that course instructors stand ready to help you reach your educational goals. As subject matter experts, mentors enjoy and take pride in helping students become reflective learners, problem solvers, and critical thinkers. Course instructors are excited to hear from you and eager to work with you.

Successful students report that working with a course instructor is the key to their success. Course instructors are able to share tips on approaches, tools, and skills that can help you apply the content you're studying. They also provide guidance in assessment preparation strategies and troubleshoot areas of deficiency. Even if things don't work out on your first try, course instructors act as a support system to help you prepare for another attempt. You should expect to work with course instructors for the duration of your coursework, and you are encouraged to contact them as soon as you begin. Course instructors are fully committed to your success!

## **Preparing for Success**

The information in this section is provided to detail the resources available for you to use as you complete this course.

## **Learning Resources and Assessment**

The learning resources listed in this section are required to complete the activities and assessment in this course. For many resources, WGU has provided automatic access through the course. However, you may need to manually enroll in or independently acquire other resources. Read the full instructions provided to ensure that you have access to all of your resources in a timely manner.

### **Manually Enrolled Resources**

Take a moment to enroll in the learning resource listed in this section. To enroll, navigate to the "Learning Resources" tab, click the "Sections" button, and then click the "Enroll Now" button for the resource. Once your mentor approves your enrollment in the resource, you will receive an e-mail with further access instructions. Contact your mentor if you have questions.

### **AMNH Seminar: *The Ocean System* (Required)**

Online seminars offered by the American Museum of Natural History (AMNH) use multimedia and discussions to connect teachers and future teachers from around the world to cutting-edge research, classroom resources, and each other. Participating in *The Ocean System* develops your understanding of the content, models an appropriate teaching technique, and exposes you to an array of resources that can be used in your classroom. This is a required component of the course: the assessment in this course is based on successful completion of the AMNH seminar.



*Note: You will receive login information by e-mail directly from AMNH at least two days before the scheduled start for the seminar. Contact your program mentor if you have not received this information on time. If you wish to work ahead, you may begin the readings linked within the course of study.*

This six-week seminar requires about eight hours per week of your time. Review the [AMNH Calendar](#) to determine when the seminar is offered and consult your mentor to coordinate this seminar with your schedule.

The keys for these seminars are attendance and participation. You will get out of these seminars what you put into them:

**1. Get into the seminar early and often**

AMNH online seminars are *not* self-paced, but are asynchronous by week—this is different from the WGU structure to which you are accustomed. There are no required log-in times, but *each week has assignments and discussions in which you are required to participate*. The seminars are not overwhelming if you don't fall behind. It's important to pace yourself through the weeks (especially if you are taking more than one course at a time). For example, a good weekly schedule would be:

Therefore, it is good to visit your AMNH seminar and participate at least twice each week. It is not necessary to respond to every thread, but you should keep up with the flow of discussion and meet the requirements of the seminar.

If you have to miss some time, you can always read ahead in the seminar. If you let your instructor know, they can help you come up with a schedule to keep you on top of the material.

- *Monday and Tuesday*—Read assigned essays and selections from the text.
- *Wednesday*—Post a response to your readings in the weekly discussion thread, and read over what others have written, making comments as you see fit.
- *Friday-Sunday*—Go back to the discussion, read follow-up posts, and continue conversations that have developed over the week. Make sure you pay particular attention to questions the instructional team has posted to your comments.

**2. Participate in the Icebreakers**

The first week has an “icebreaker” discussion thread that asks you to introduce yourself to your classmates. Please participate in this thread as early as possible—it lets the instructors know your background so they can tailor the experience to you. Reading through this discussion lets you know who else will be in your seminar and helps to familiarize you with the seminar's discussion format.

**3. E-mail your instructors and/or mentors any time with questions and concerns**

The instructional team for AMNH seminars is aware that people are coming to the seminar with varying levels of science content knowledge and classroom experience. *They are very willing to give you a guiding hand if you feel out of your depth on a particular topic, or if you are confused by an assignment.* Your WGU mentor has a



good grasp of how the seminars work, and can give you advice on how best to tie your seminar into developing the competency required by WGU. Your AMNH instructors will contact your WGU mentor with a progress report if you are struggling. Your WGU mentor can explore ways to fit this seminar into your life. WGU mentors can help—but they cannot help if they do not know there is a problem.

#### 4. Great learning happens in the discussion forums

The readings, videos, and interactives used in AMNH seminars are content-rich, but a good deal of learning happens in the discussion forums. This is where you actually have a chance to interact with a PhD scientist who is active in the field, and where you can learn what your classmates think about that week's topic. It's a handy place to pick up extra links that will help you with the material, and to work out problems you may be having with the material. Discussion forums are essential, so don't brush them off!

#### 5. How AMNH assessment works

You are assessed based on your participation in discussions, assignments, and the final project. The [rubric](#) can be found in the **course info** section of [The Ocean Systems](#). It is important to note that your discussion assessment is based on both the content of your posts and your level of participation. (Quality is more important than quantity, but 35 posts that expand on the discussion would be an appropriate level of participation.) Your assessment grades can be viewed in your gradebook as soon as they are posted, but it sometimes takes a week or two to get all the grades up. Your final project is due the week after the seminar ends. If you follow the weekly milestones for the project, it should be a rewarding exercise that will be useful in your teaching practice. Your final assessment is e-mailed to you as a PDF at the end of the seminar. That is where you will find the instructors' notes on your final project.

**IMPORTANT NOTE: AMNH will submit your assignments and final project to TurnItIn (TII) to verify originality.** After completing this course, you may decide to reuse parts of your AMNH assignments in other WGU courses. Because these materials will have been previously submitted to TII, they will be flagged in subsequent TII originality reports as copied content. To make it easier for WGU staff to verify the originality of your work in future TII reports and to avoid authenticity concerns, you **must** include your full name, **as it appears in your WGU account**, within all of your AMNH assignments **as well as any future WGU submissions that include your AMNH work**. The upper left corner of your project and assignments or the line directly under the title would be good places to put your full WGU name so it will be easy for WGU staff to find.

#### Automatically Enrolled Resources

You can access the learning resources listed in this section by clicking on the links provided throughout the course. You may be prompted to log in to the WGU student portal to access the resources.

#### VitalSource E-Texts

The following textbook is available to you as an e-text within this course. The following table of contents includes links directly to the chapters you will be reading.



- [Garrison, T. \(2015\). \*Essentials of Oceanography\* \(7th ed.\). Stamford, CT: Cengage Learning. ISBN: 1285753860](#)
  1. [Earth and Ocean](#)
  2. [A History of Marine Science](#)
  3. [Earth Structure and Plate Tectonics](#)
  4. [Ocean Basins](#)
  5. [Ocean Sediments](#)
  6. [Water and Ocean Structure](#)
  7. [Atmospheric Circulation](#)
  8. [Ocean Circulation](#)
  9. [Waves](#)
  10. [Tides](#)
  11. [Coasts](#)
  12. [Life in the Ocean](#)
  13. [Pelagic Communities](#)
  14. [Benthic Communities](#)
  15. [Uses and Abuses of the Ocean](#)

*Note: These e-texts are available to you as part of your program tuition and fees, but you may purchase a hard copy at your own expense through VitalSource or a retailer of your choice. If you choose to do so, please use the ISBN listed to ensure that you receive the correct edition. The following sites provide instruction on how to create a VitalSource account, use features such as downloading your e-texts for offline use, and purchase a print-on-demand option, if available.*

- [VitalSource Navigational Video](#)
- [Print-On-Demand Option](#)

## Pacing

Follow the schedule and expectations presented in [your seminar](#). Engage and participate actively in the conversations and activities within [the seminar](#). You may work ahead, but you must adhere to the due dates established by the American Museum of Natural History and the instructors. Begin work on your Final Project early in the course, and continue working throughout so that you can finish it within six weeks.

The following schedule includes the weekly topics and required readings from *Essentials of Oceanography* (7<sup>th</sup> edition). Assignments and additional materials are linked directly from within the course.

### Week 1: How did the Oceans Form?

- [chapter 1 \("Earth and Ocean"\)](#)

### Week 2: What does the Ocean Floor Look Like?



- [chapter 3 \("Earth Structure and Plate Tectonics"\)](#)
- [chapter 4 \("Ocean Basins"\)](#)
- [chapter 5 \("Ocean Sediments"\)](#)

### Week 3: What is Water?

- [chapter 6 \("Water and Ocean Structure"\)](#)

### Week 4: How does the Ocean Move?

- [chapter 7 \("Atmospheric Circulation"\)](#)
- [chapter 8 \("Ocean Circulation"\)](#)

### Week 5: How Do Animals Live in Water?

- [chapter 12 \("Life in the Ocean"\)](#)
- [chapter 13 \("Pelagic Communities"\)](#)
- [chapter 14 \("Benthic Communities"\)](#)

### Week 6: How is Human Activity Affecting the Ocean System?

- [chapter 2 \("A History of Marine Science"\)](#)
- [chapter 15 \("Uses and Abuses of the Ocean"\)](#)

### Checklist

AMNH has provided a checklist for you to follow for a quick outline of all the course materials. This checklist does not replace the course materials, but does provide you a document to check off items as you complete them. You are expected to use the course readings and videos to aid in your discussion participation and completing your assignments and final project.

- ["Weekly Checklist"](#)

## The Ocean System from AMNH

Participate in your course through the [AMNH seminar website](#). You will be assigned multiple readings, videos, discussions, and activities within the seminar. Readings within the textbook are linked here, along with a summary of the competencies you will be building each week.

### How Did the Oceans Form?

This topic addresses the following competency:

- **Competency 2005.1.1: Oceanographic Systems**  
The graduate demonstrates knowledge of oceans, their formation, and the interconnections between ocean systems, the atmosphere, the biosphere, and the geosphere.



This topic highlights the following objectives:

- Define a system.
- Summarize how the Earth and oceans formed.
- Evaluate theories about how life on Earth began and the earliest organisms.
- Analyze the systems interactions that make Earth unique in the Solar System.

### **Week One of AMNH's The Ocean System**

Complete the required readings, videos, activities, discussions, and assignments in [Week One of The Ocean System from the American Museum of Natural History](#).

**Read: Chapter 1 of Essentials of Oceanography**

- [chapter 1 \("Earth and Ocean"\)](#)

### **Final Project**

Review expectations and begin working on your final project.

## **What Does the Ocean Floor Look Like?**

This topic addresses the following competency:

- **Competency 2005.1.1: Oceanographic Systems**  
The graduate demonstrates knowledge of oceans, their formation, and the interconnections between ocean systems, the atmosphere, the biosphere, and the geosphere.

This topic highlights the following objectives:

- Contrast chemosynthesis and photosynthesis.
- Interpret plate tectonics' effect on the oceans.
- Describe how oceanographers study the ocean floor.
- Interpret hydrothermal vent ecosystems through the interconnections of oceanic, geologic, and biological systems.

### **Week Two of AMNH's The Ocean System**

Complete the required readings, videos, activities, discussions, and assignments in [Week Two of The Ocean System from the American Museum of Natural History](#).

**Read: Chapters 3-5 of Essentials of Oceanography**

- [chapter 3 \("Earth Structure and Plate Tectonics"\)](#)
- [chapter 4 \("Ocean Basins"\)](#)
- [chapter 5 \("Ocean Sediments"\)](#)

### **Final Project**

Continue working on your final project.

## **What is Water?**

This topic addresses the following competency:



- **Competency 2005.1.2: Ocean Water**

The graduate analyzes how properties of seawater affect the ocean systems.

This topic highlights the following objectives:

- Identify the properties of water molecules.
- Define polarity, density, and heat capacity as relevant to water in the oceans.
- Interpret the processes that cause salinity and the implications of variable salinities across depths.
- Interpret sediments to explain the past and development of the ocean basin and Earth.

### **Week Three of AMNH's The Ocean System**

Complete the required readings, videos, activities, discussions, and assignments in [Week Three of The Ocean System from the American Museum of Natural History](#).

**Read: Chapter 6 of Essentials of Oceanography**

- [chapter 6 \("Water and Ocean Structure"\)](#)

### **Final Project**

Continue working on your Final Project.

## **How Does the Ocean Move?**

This topic addresses the following competency:

- **Competency 2005.1.3: Currents**

The graduate analyzes how properties of seawater affect the ocean systems.

This topic highlights the following objectives:

- Compare the processes that affect ocean current patterns.
- Analyze how the ocean affects weather and climate.
- Evaluate the use of sediment cores and modeling to inform the study of climate change.
- Interpret how the ocean affects weather in given places on land.
- Predict how changes in carbon dioxide and solar radiation levels will affect the planet.

### **Week Four of AMNH's The Ocean System**

Complete the required readings, videos, activities, discussions, and assignments in [Week Four of The Ocean System from the American Museum of Natural History](#).

**Read: Chapters 7 and 8 of Essentials of Oceanography**

- [chapter 7 \("Atmospheric Circulation"\)](#)
- [chapter 8 \("Ocean Circulation"\)](#)

### **Final Project**

Continue working on your final project.

## **How Do Animals Live in Water?**





This topic addresses the following competency:

- **Competency 2005.1.4: Marine Biology**

The graduate analyzes the interrelationships of life forms, natural systems, and cycles within the ocean environment.

This topic highlights the following objectives:

- Describe animal adaptations to marine environments.
- Summarize controls in the distribution of marine life.
- Analyze the connectedness of animals with the physical environment.

### **Week Five of AMNH's The Ocean System**

Complete the required readings, videos, activities, discussions, and assignments in [Week Five of The Ocean System from the American Museum of Natural History](#).

**Read: Chapters 12-14 of Essentials of Oceanography**

- [chapter 12](#) ("Life in the Ocean")
- [chapter 13](#) ("Pelagic Communities")
- [chapter 14](#) ("Benthic Communities")

### **Final Project**

Continue working on your final project.

## **How is Human Activity Affecting the Ocean System?**

This topic addresses the following competency:

- **Competency 2005.1.5: Humankind and the Ocean Systems**

The graduate utilizes knowledge of ocean systems, environmental challenges, oceanographic and interdisciplinary methods, and pedagogical techniques to effectively teach others about the ocean systems.

This topic highlights the following objectives:

- Identify ways in which human activity harms ocean life and interrupts natural ocean processes.
- Predict the impacts of human activities on ocean life and natural ocean processes.
- Contrast observatory science and expeditionary science in oceanography.
- Interpret ocean science as an interdisciplinary field.
- Evaluate pedagogical strategies for building awareness and appreciation of the ocean system and related systems.

### **Week Six of AMNH's The Ocean System**

Complete the required readings, videos, activities, discussions, and assignments in [Week Six of The Ocean System from the American Museum of Natural History](#).

**Read: Chapters 2 and 15 of Essentials of Oceanography**



- [chapter 2 \(“A History of Marine Science”\)](#)
- [chapter 15 \(“Uses and Abuses of the Ocean”\)](#)

### **Final Project**

Complete and submit remaining portions of the final project.

## **Final Steps**

Congratulations on completing the activities in this course! Remember to submit your final project by the due date noted in the AMNH seminar. You must achieve a grade of “Meets Requirements” in the AMNH seminar in order to pass this WGU assessment.

Review the [Assessment Retake Fee](#) section of the Student Handbook: if you do require a third or subsequent retake of this seminar, you will be charged the cost, \$400.00 (as of August, 2014; subject to change).