EESC 1030 920 Oceanography

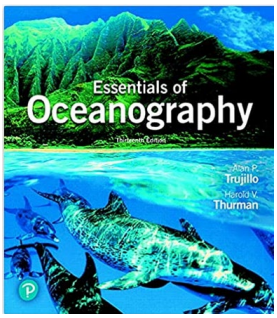
SHORELINE FEATURES

Course Description

The oceans cover over 2/3 of the Earth's surface. This course introduces you to basic oceanographic concepts such as plate tectonics, marine sediments, physical and chemical properties of seawater, ocean circulation, air-sea interactions, waves, tides, nutrient cycles in the ocean, biology of the oceans, and environmental issues related to the marine environment.

Class Format

This is an asynchronous course that consists of recorded lectures, videos, quizzes, readings, and quantitative homework assignments. There are no live classes or scheduled meeting times. The lectures are designed to organize and synthesize material from your readings in your primary text, *Essentials of Oceanography* to help you understand the Physical, Chemical, and biological properties of the Ocean.

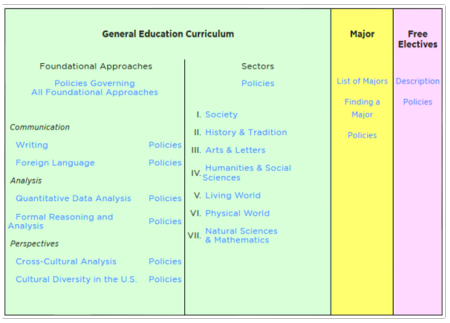


Required Reading

Trujillo, A. P. and Thurman, H.V., 2019. *Essentials of Oceanography*, 13th ed., Pearson, 595pp. ISBN-13:9780135204306

Pearson or Amazon.

Weekly readings refer to this text.



Curriculum Requirements

This course fulfills the Sector VI Physical World and Quantitative Data Analysis Requirements for all College and LPS Undergraduates.

Instructor Information

DR YVETTE BORDEAUX

bordeaux@sas.upenn.edu

Live Office Hours will be posted on Canvas.

Course Topics

Week 1: June 29-July 6

Plate Tectonics

Why do we have ocean trenches, ridges and continental shelves?

How do tsunamis form?

Read Chapter 2

Marine Provinces (What's down there?)

Did you know there were flat-topped mountains, volcanoes and vast mud-covered plains on the ocean floor?

Read Chapter 3

Marine Sediments

Why do we have sandy beaches?

Video ~191.5 min
Read Chapter 4
Week 1 Quiz

Week 2: July 6-13

Seawater (Physics & Chemistry)

What is "salt" in seawater

Does the salinity of the ocean change over time?

Where does the salt in the ocean come from?

Read Chapter 5

Air & Sea (Weather & Climate)

Why do we have global wind belts and how did this affect early trade routes?

How is our weather and climate affected by the oceans?

What is the ocean's role in hurricane formation?

Read Chapter 6

Oceans & Climate

How do oceans affect climate?

How is Global Climate change affecting the oceans?

What happens if the Great Conveyor Belt shuts down?

Read Chapter 16

Video ~194 min
Week 2 Quiz
Assignment 1: Due July 13th

Week 3: July 13-20

Ocean Circulation

Why are some regions of the world warmer than others?

Read Chapter 7

Waves & Water Dynamics

A second look at tsunamis

How can waves be harnessed for clean energy?

Read Chapter 8

Tides

How can tides impact the effects of storms

Why do some areas have 2 high tides/day while others only have one?

Read Chapter 9

Midterm Exam
Video ~179 min
Homework 2 & 3: Due July 20th

DID YOU KNOW?

There is a stream in the Atlantic ocean that flows past the east coast of the United States.

Week 4 July 20-27

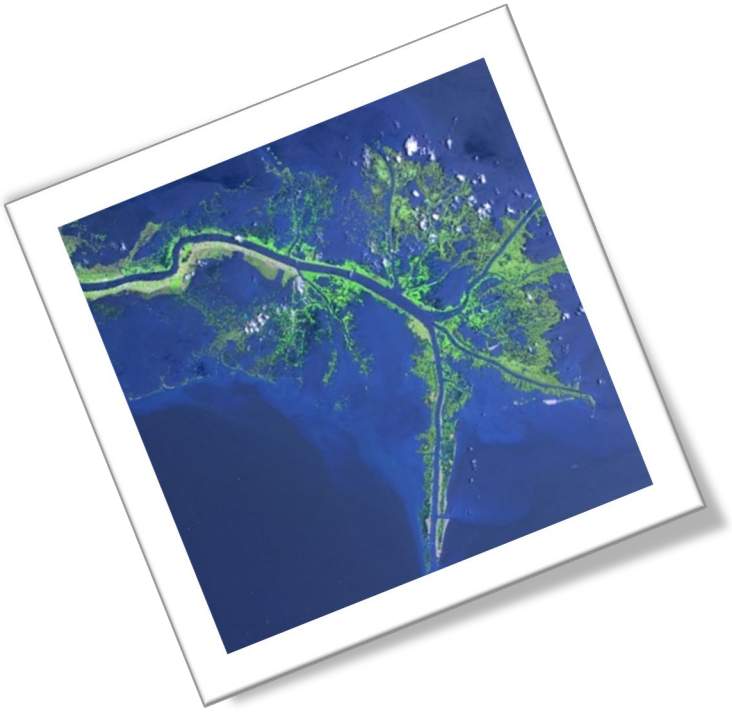
Shorelines (Reefs, Atolls, Deltas, Barrier Islands, and Estuaries)

Why are many atolls disappearing?

Why is building on a Barrier Island a bad idea?

How do reefs form and why are they in danger?

Is it safe to live on a barrier island?



Ocean Pollution

Is there really a plastic garbage patch the size of Rhode Island in the Pacific Ocean?

How does ocean trash affect organisms?

How can a balloon released in the air in Philadelphia affect a sea turtle off the coast of Europe?

Read Chapter 11

Why do most fishermen work near the coast rather than the middle of the ocean?

Read Chapter 10

Video~269min
Week 4 Quiz

Week 5 July 27-August 4

Marine Life and the Marine Environment

What conditions must organisms deal with in this special 3-D environment?

What are the special challenges of living in a salty environment?

Read Chapter 12-13

Benthic & Pelagic Organisms

How do floating organism avoid predators?

Why do few organisms live on the sandy ocean floor?

What are the benefits of living in the sediment?

Read Chapter 14 & 15

Final Exam

Grades

Your Grade is calculated as follows:

Topic	Points
3 Homework Assignments @ 25 pts each	75
Quizzes (3)	60
Midterm Exam (Week 3)	100
Final Exam (Week 5)	100
Total Points=	**335**

GRADE POLICY

This is an accelerated course and each week builds on the previous week's material. It is imperative that students submit all assignments on time. **No late assignments** will be accepted (this includes no partial credit for assignments submitted past the due date). There is **no extra credit** for this course.

Important Course Information

DID YOU KNOW?

269,000 tons of plastic trash float on the surface of the ocean, while some four billion plastic microfibers per square kilometer litter the deep sea

Academic Integrity

Since the University is an academic community, its fundamental purpose is the pursuit of knowledge. Essential to the success of this educational mission is a commitment to the principles of academic integrity. Every member of the University community is responsible for upholding the highest standards of honesty at all times. Students, as members of the community, are also responsible for adhering to the principles and spirit of the Penn Code of Academic Integrity. More details about this policy can be found online at

https://catalog.upenn.edu/pennbook/code-of-academic-integrity/.

Penn Libraries

Students can access all online resources available at the University of Pennsylvania by using the website

https://www.library.upenn.edu/

Log in with PennKey and password.

Student Disability Services (SDS)

Although the self-identification process is confidential and completely voluntary, it is required for those requesting accommodation. Student Disability Services (SDS) can be reached by phone at 215.573.9235, by TDD at 215.746.6320 or online:

https://www.vpul.upenn.edu/lrc/sds/contact_us.php

Add/Drop Period

Students may drop this class with no financial obligation through 5pm EDT July 6, 2023 by using Path@Penn. Please see the LPS Academic Calendar for relevant dates and links:

https://www.sas.upenn.edu/lps/about/academic-calendar

Failure to participate in a course does not automatically result in being dropped from the course.

Courses that are dropped will no longer appear on a student's transcript.

Withdrawing from a course

Students may withdraw from a course through 5pm EDT July 28.

https://path.at.upenn.edu/student/landing

Online Learning Team

There is 24/7 technical support available. If you encounter technical difficulties and need immediate assistance, please call 1-833-283-2987. You can access the Knowledge Base- Penn LPS Online Helpdesk to try troubleshooting on your own or live chat with a technical support staff member.

https://sas-lps.freshdesk.com/support/home

In addition, you can reach out via email at

online-learning-help@sas.upenn.edu

They we will respond to you within 24 hours