

## SEMESTER AT SEA COURSE SYLLABUS

Colorado State University, Academic Partner

<b>Voyage:</b>	Fall 2019
<b>Discipline:</b>	Natural Resources
<b>Course Number and Title:</b>	NR 150 Oceanography (Section 1)
<b>Division:</b>	Lower
<b>Faculty Name:</b>	Ed Sobey
<b>Semester Credit Hours:</b>	3

**Prerequisites:** None

### COURSE DESCRIPTION

Explore the sea with an understanding of how the oceans work. There is no greater challenge today than repairing and saving the oceans. And, there is no better place to learn about the oceans, its life, and its future than while voyaging at sea. Each class begins with a walk on the ocean searching for signs of life, pollution, and tomorrow's weather. On shore immersive experiences bond with learning at sea to provide you with a complete ocean experience.

To understand the ocean, we delve into the forces that drive its motion, its life, and its geology. The basics were discovered years ago, but recent discoveries have rocked our understanding of the seas. We will focus on those discoveries and provide the latest research so you leave the ship fully informed.

We will travel along a route that will provide us front-row seats to see a wide variety of ecosystems and climate types. Our voyage takes us across the trade winds, the horse latitudes, the doldrums, and the equator. This route gives us the opportunity to experience diverse ocean environments and to see flying fish and whales.

If you are concerned with climate change and passionate about the ocean and ocean life, take this class.

### LEARNING OBJECTIVES

The goal is for students to: Understand how the oceans work and to understand key topics of interest to students. Learning will occur through first-hand observation of the ocean from the deck of the ship, exploration during the Field Class, in-class discussions, text readings, and special topics presentations.

## REQUIRED TEXTBOOKS

AUTHOR: Tom Garrison  
TITLE: Oceanography: An Invitation to Marine Science  
PUBLISHER: Cengage Learning  
ISBN #: 13: 978-1305105164  
DATE/EDITION: 2015/ 9<sup>th</sup> Edition

**Prefer:** 2010 Edition: 978-0-495-39193-7

I suggest looking for a used copy or earlier edition on the internet.

Additional readings will be made available on the ship or handed out in class.

## TOPICAL OUTLINE OF COURSE

### Class daily agenda

- Photo or video of the day
- Questions from the reading
- Quiz (team or individual)
- Walk on the wild side – be dressed the weather as we will go on deck to make observations – every class day
- Regional – Special Interest Topics presentation
- Questions to ponder – in study teams

### Depart The Netherlands – September 9

#### B1 – September 12:

Topic	Reading	Regional – Special Interest Topics
Outline of the course		What you can see at sea + Weather + Traffic

#### B2 – September 14:

Topic	Reading	Regional – Special Interest Topics
Origins	Chapter 1	Kiel Canal + Baltic Sea

### Gdansk, Poland – September 15-20

**B3 – September 22:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
History and Positioning Latitude, Longitude, Maps and Charts	Chapter 2 Appendix IV, V	Seasons and North Sea

**B4 – September 24:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Earth structure, plate tectonics	Chapter 3	Whales

**Lisbon, Portugal – September 26-28**

**Cadiz, Spain – September 29 – October 1**

**B5 – October 2:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Ocean basins	Chapter 4	Atlantic Ocean and Gibraltar

**B6 – October 4:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Sediments	Chapter 5	Mediterranean Sea and Adriatic Sea

**Dubrovnik, Croatia – October 6-10**

**B7 – October 11:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Water and ocean structure	Chapter 6	Fish that fly and birds that swim

**B8 – October 13:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Ocean chemistry	Chapter 7	Poles Apart: Arctic and Antarctic

Icebergs and sea ice

Casablanca, Morocco – October 15-20

B9 – October 21:

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Circulation of the atmosphere	Chapter 8	Weather forecasting and hurricanes Volta da Mar

B10 – October 23:

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Circulation of the ocean	Chapter 9	Garbage patch

B11 – October 26:

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Waves	Chapter 10	Rogue waves and Gulf of Guinea

Tema, Ghana – October 28-30

Takoradi, Ghana – October 31 - November 1

B12 – November 2:

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Tides	Chapter 11	Shark Attack

B13 – November 5:

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Coasts	Chapter 12	Equator

B14 – November 7:

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Life in the Sea	Chapter 13	Procreation

B15 – November 9:

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Plankton, Algae, Plants	Chapter 14	Southern Cross + Turtles
<b>Salvador, Brazil – November 10-15</b>		
<b>B16 – November 17:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Marine animals	Chapter 15	Amazon outflow + tidal bores
<b>B17 – November 19:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Marine communities	Chapter 17	Coral reefs
<b>B18 – November 22:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Marine resources		Fisheries, Mangroves, Trinidad
<b>Port of Spain, Trinidad and Tobago – November 24</b>		
<b>B19 – November 25:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
The ocean and environment	Chapter 18	Caribbean Sea
<b>B20 – November 27:</b>		
<b>Topic</b>		<b>Regional – Special Interest Topics</b>
The Panama Canal		How Panama formed and Panama Canal
<b>B21 – November 30:</b>		
<b>Topic</b>		<b>Regional – Special Interest Topics</b>
Islands and atolls		The Ring of Fire; How Islands Form
<b>Guayaquil, Ecuador – December 2-7</b>		

**B22 – December 8:**

<b>Topic</b>	<b>Regional – Special Interest Topics</b>
How the oceans work	The 2-layer Problem; Presentations

**B23 – December 10:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Climate and the Ocean	Ocean Health Index	Costa Rica; Climate Change; Presentations

**Puntarenas, Costa Rica – December 11-15**

**B24 – December 17:**

<b>Topic</b>	<b>Regional – Special Interest Topics</b>
Review questions – Jeopardy	Review

**B25 – December 19: Exam Day**

<b>Topic</b>	<b>Regional – Special Interest Topics</b>
Final Exam	Last look at the ocean

**Arrive San Diego, California – December 23**

## **FIELD WORK**

Semester at Sea field experiences allow for an unparalleled opportunity to compare, contrast, and synthesize the different cultures and countries encountered over the course of the voyage. In addition to the one field class, students will complete independent field assignments that span multiple countries.

### **Field Class & Assignment**

The field class for this course is on **September 26<sup>th</sup> in Lisbon, Portugal.**

**Field Class attendance is mandatory for all students enrolled in this course. Do not book individual travel plans or a Semester at Sea sponsored trip on the day of your field class.**

Field Classes constitute at least 20% of the contact hours for each course, and are developed and led by the instructor.

Explore the shore of Portugal

Country: Portugal

In the morning we will visit the Lisbon Aquarium with guided tour. In the afternoon our guide will take us to a nearby beach so we can explore it and compare it to beaches we are familiar with at home.

Each person will submit a field class report describing that we did, what we found, and what they learned.

### **Independent Field Assignments**

See Observational Log below.

### **METHODS OF EVALUATION**

Field Class (participation and report)	20%
Observation Log	40%
Daily Quizzes	20%
Final Exam	20%

This will cover all the material in the text and presentations.

Study teams will be created and you will be strongly encouraged to meet with your team. Each member of the team will make approximately equal contributions to benefit the team. Teams may dismiss members who do not.

Problems? Let's meet – give me a few times of the day you are available and I will set a meeting.

### **Field Class Report**

You are required to participate in the field class and to report on the experience. Your report should include where we were, what we did, and what you learned.

### **Observational Logs**

Each student is to keep a log. Study teams can share information, but each individual will add information that they generate on their own and turn in their log.

Each entry in the log shall contain:

- Day/date
- Ship's location (at time of observation; position at sea or port)
- Weather and sea state; atmospheric phenomena
- Visual observations of marine life, ship traffic, pollution, and other phenomena

You can create your log as a word document/PDF or in handwriting in a log book. You can add images of what you see, weather forecasts from the internet, etc. Observations from ashore can be included.

Logs that are neatly presented with the above information will receive up to half credit. The remaining credit will be adjudicated by questions arising from observations and your demonstrated efforts to address the questions. For example, if you see and photograph a fishing boat at sea, you could look up the name of the boat to find out its home port and from its rigging you could determine what it's fishing for. Your curiosity might take you to find out the importance of fishing to that country's economy. Or, you could observe and research a marine bird, whale, aid to navigation, atmospheric phenomena, pollution, etc.

### **Daily Quizzes**

A quiz will be given every class. Material covered by the quiz includes the reading for the day and information presented previously in the Regional – Special Topics Presentation. Some quizzes will be given to study teams – people in the study team collaborate on answering the quiz questions. Other quizzes will be given to individual.

### **GRADING SCALE**

The following Grading Scale is utilized for student evaluation. Pass/Fail is not an option for Semester at Sea coursework. Note that C-, D+ and D- grades are also not assigned on Semester at Sea in accordance with the grading system at Colorado State University (the SAS partner institution).

Pluses and minuses are awarded as follows on a 100% scale:

<u>Excellent</u>	<u>Good</u>	<u>Satisfactory/Poor</u>	<u>Failing</u>
97-100%: A+	87-89%: B+	77-79%: C+	Less than 60%: F
93-96%: A	83-86%: B	70-76%: C	
90-92%: A-	80-82%: B-	60-69%: D	

### **ATTENDANCE/ENGAGEMENT IN THE ACADEMIC PROGRAM**

Attendance in all Semester at Sea classes, including the Field Class, is mandatory. Students must inform their instructors prior to any unanticipated absence and take the initiative to make up missed work in a timely fashion. Instructors must make reasonable efforts to enable students to make up work which must be accomplished under the instructor's supervision (e.g., examinations, field class). In the event of a conflict in regard to this policy, individuals may appeal using established CSU procedures.

### **LEARNING ACCOMMODATIONS**



Semester at Sea® provides academic accommodations for students with diagnosed learning disabilities, in accordance with ADA guidelines. Students who will need accommodations in a class, should contact ISE to discuss their individual needs. Any accommodation must be discussed in a timely manner prior to implementation.

A letter from students' home institutions verifying the accommodations received on their home campuses (dated within the last three years) is required before any accommodation is provided on the ship. Students must submit verification of accommodations to [academic@isevoyages.org](mailto:academic@isevoyages.org) as soon as possible, but no later than two months prior to the voyage. More details can be found within the Course Registration Packet, as posted to the [Courses and Field Classes page](#) no later than one month prior to registration.

## **STUDENT CONDUCT CODE**

The foundation of a university is truth and knowledge, each of which relies in a fundamental manner upon academic integrity and is diminished significantly by academic misconduct. Academic integrity is conceptualized as doing and taking credit for one's own work. A pervasive attitude promoting academic integrity enhances the sense of community and adds value to the educational process. All within the University are affected by the cooperative commitment to academic integrity. All Semester at Sea courses adhere to this Academic Integrity Policy and Student Conduct Code.

Depending on the nature of the assignment or exam, the faculty member may require a written declaration of the following honor pledge: "I have not given, received, or used any unauthorized assistance on this exam/assignment."

## **RESERVE BOOKS FOR THE LIBRARY**

AUTHOR: Rachel Carson  
TITLE: The Sea Around Us  
PUBLISHER: New York: Oxford University Press  
ISBN #: 0195147014  
DATE/EDITION: 2003

AUTHOR: Mark W. Denny  
TITLE: How the Ocean Works: An Introduction to Oceanography  
PUBLISHER: Princeton: Princeton University Press  
ISBN #: 0691126461  
DATE/EDITION: 2008

AUTHOR: Charles Moore and Cassandra Phillips  
TITLE: Plastic Ocean: How a Sea Captain's Chance Discovery Launched a Quest to Save the Oceans  
PUBLISHER: Avery

ISBN #: 978158333501  
DATE/EDITION: 2012

## **FILM REQUEST**

Title of Film: Blue Earth (2009)  
Distributor: National Geographic

Title of Film: The Blue Planet. Seas of Life (2007)  
Distributor: British Broadcasting Corporation (BBC)

Title of Film: Drain the Ocean (2009)  
Distributor: National Geographic

Title of Film: The End of the Line (2010)  
Distributor: New Video Team

Title of Film: Japans Killer Quake (2011)  
Distributor: PBS (NOVA)

Title of Film: Sand Wars (2014)  
Distributor: PBS

Title of Film: Tsunami: The Wave that Shook the World (2005)  
Distributor: PBS (NOVA)

## **ELECTRONIC COURSE MATERIALS**

Articles Lebreton et al. 2018. Evidence that the Great Pacific Garbage Patch is rapidly accumulating plastic. <https://www.nature.com/articles/s41598-018-22939-w.pdf>

## **ADDITIONAL RESOURCES**

None