

## 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 130 Global Environmental Systems
<b>Division:</b>	Lower
<b>Faculty Name:</b>	Ed Sobey
<b>Semester Credit Hours:</b>	3

**Prerequisites:** None

### COURSE DESCRIPTIONS

Explore the earth's ecosystems and what is happening to them in this era of human domination. We will look at the atmosphere, the forces, and phenomena that impact us and how we impact them. Climate and climate change will be important themes throughout the course. We will look at the seas around our ship with an eye to understanding how they work and how people have changed them. We will look at the tectonic forces and geological processes that shape our planet and how they impact climate and life. And, we will look at life on the planet and how it has changed and continues to change.

We will travel from the cold Baltic Sea through temperate regions of the Atlantic Ocean, through the tropics, and across the equator four times. The transition from one region to the next will be visible from the deck of the ship as well as on land.

People today face enormous environmental challenges and yet few people are fully aware of the challenges nor of underlying forces creating those challenges. If you are concerned about the health of our planet, take this class.

### LEARNING OBJECTIVES

Students will understand the physical, biological, and geologic environmental systems of the earth and understand interactions between the several systems. They will learn how to make observations and conduct research leading to broader understanding of the environmental systems and issues in the countries we visit and the waters we sail on. They will better understand the environmental issues facing people today including climate change, pollution, and overuse of natural resources.

### REQUIRED TEXTBOOKS

AUTHOR: Brian J. Skinner and Barbara W. Murck  
TITLE: *The Blue Planet: An Introduction to Earth System Science*  
PUBLISHER: Wiley  
ISBN #: 978-0470556481 (Loose Leaf) OR 978-0471236436 (eTextbook)  
DATE/EDITION: 2011/ 3<sup>rd</sup> Edition

I suggest looking for a used copy on the internet.

## 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
- Regional – Special Interest Topics presentation
- Questions to ponder – in study teams

### Depart Amsterdam, The Netherlands – September 9

#### A1–September 11:

Topic	Reading	Regional – Special Interest Topics
Outline of the course		Easter Island

#### A2–September 13:

Topic	Reading	Regional – Special Interest Topics
The earth system	Chapter 1	Environmental + Economic Observations

### Gdansk, Poland – September 15-20

#### A3–September 21:

Topic	Reading	Regional – Special Interest Topics
Energy	Chapter 2	Kiel Canal

#### A4–September 23:

Topic	Reading	Regional – Special Interest
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Matter	Chapter 3	<b>Topics</b> Time scales
<b>A5—September 25:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Space and time	Chapter 4	Shifting baselines+ Footprints
<b>Lisbon, Portugal – September 26-28</b>		
<b>Cadiz, Spain – September 29 – October 1</b>		
<b>A6—October 3:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Tectonic cycle	Chapter 5	The Mediterranean Sea, Suez Canal, Adriatic Sea
<b>A7—October 5:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Earthquakes and volcanoes	Chapter 6	Population analysis; Kuznet's Curve
<b>Dubrovnik, Croatia – October 6-10</b>		
<b>A8—October 12:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
The rock cycle	Chapter 7	Weather Forecasting at Sea
<b>A9—October 14:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Hydrologic cycle	Chapter 8	Deserts – the Sahara, Morocco
<b>Casablanca, Morocco – October 15-20</b>		
<b>A10—October 22:</b>		
<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Cryosphere	Chapter 9	Poles Apart: Arctic vs Antarctic

**A11—October 25:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
World Ocean	Chapter 10	Great Ocean Garbage Patches

**A12—October 27:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
The Atmosphere	Chapter 11	Clouds, Dams, Ghana

**Tema, Ghana – October 28-30**

**Takoradi, Ghana – October 31 – November 1**

**A13—November 3:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Wind and Weather Systems	Chapter 12	Rogue Waves, Tsunamis, and the Perfect Storm

**A14—November 6:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Climate	Chapter 13	Equator

**A15—November 8:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Life, death, and evolution	Chapter 14	Rainforests & Brazil

**Salvador, Brazil – November 10-15**

**A16—November 16:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Ecosystems, biomes, and cycles of life	Chapter 15	Coral reefs

**A17—November 18:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Populations, communities, and change	Chapter 16	The Caribbean Sea

**A18—November 20:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Humans and the earth system	Chapter 17	Pollution at sea; Marine Protected Areas

**A19—November 23:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Mineral and energy resources	Chapter 18	How to generate electricity; Trinidad and Tobago

**Port of Spain, Trinidad and Tobago – November 24**

**A20—November 26:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
The changing earth system	Chapter 19	Climate Change

**A21—November 28:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Climate change	Living Planet Index	How Panama formed; The Panama Canal

**A22—December 1:**

<b>Topic</b>	<b>Reading</b>	<b>Regional – Special Interest Topics</b>
Presentations		Galapagos

**Guayaquil, Ecuador – December 2-7**

**A23—December 9:**

<b>Topic</b>		<b>Regional – Special Interest Topics</b>
Presentations		Rain forests

Puntarenas, Costa Rica – December 11-15

A24—December 16

Topic	Reading	Regional – Special Interest Topics
Review questions - Jeopardy	The Lorax	Presentations

A25—December 19: Final Exam

Topic	Regional – Special Interest Topics
Final exam	A 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 **December 12<sup>th</sup>** in Puntarenas, Costa Rica.

**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.

### From Mangroves to Rain Forests

Country: Costa Rica

Thursday, 12 December 2019

We will kayak through coastal mangroves and hike through rain forests with naturalists to see firsthand the natural environments of Costa Rica. Mangroves and rain forests are two highly productive ecosystems that are quite fragile.

After our hike we will discuss what we saw and experienced. Each person will prepare a report based on what we did and experienced.

Objectives: To provide context and understanding to the division of habitats and to enjoy the natural beauty.

## **Independent Field Assignments**

See Global Environmental Issues Report

## **METHODS OF EVALUATION**

Field Class (participation and report)	20%
Global Environmental Issues Report	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.

### **Global Environmental Issues Report**

#### Global Environmental Issues

In a team of two or three students identify an environmental issue and propose a solution for it.

#### The issue

The issue should be geographically related to the voyage itinerary. It could be a regional or national issue in one of the countries we visit; an issue of importance to a wider area; or an issue related to the marine environment we travel through.

#### Resources

You should gather information on the issue and possible resolutions from as many sources as possible:

- In-country interviews with tour guides and other people
- On-ship interviews with Life-long learners, faculty, and others
- On-line sources – I recommend you gather information in port where the internet might be faster
- Observations: on camera – take photos that show the issue and potential solutions
- Other – be creative

### Solutions

Your team should identify at least one and not more than three potential solutions. Each solution will have costs (environmental, political, social, economic) that you should identify and enumerate if possible. Your team should pick one solution that you identify as the “best” and be able to defend your choice.

### Report

Your team will make a presentation using PowerPoint on Day 21, 22, or 23 and will turn in a PDF no later than Day 23.

### Evaluation

Evaluation will be based equally on:

- Your team’s demonstrated understanding of the environment and the issue: Why is the issue important to the specific environment.
- The diversity and authority of the data you collect: credible news sources, peer-reviewed articles, personal observations, and interviews.
- The creativity of the solution and your demonstrated critical thinking of the possibility of implementing the solution you suggest
- Succinct delivery and focus, overall attention to detail, and attractiveness (the report, not yours).

### **Daily Quizzes**

A quiz will be given every class. Material covered by the quiz includes the reading for the day and information presented in previous Regional – Special Topics Presentations. 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: Silent Spring  
PUBLISHER: Houghton Mifflin Co.  
ISBN #: 9780618249060  
DATE/EDITION: 2002

AUTHOR: Jared Diamond

TITLE: Collapse: How Societies Choose to Fail or Succeed  
PUBLISHER: Penguin  
ISBN #: 13: 978-0143117001  
DATE/EDITION: 2011

AUTHOR: Dr. Suess  
TITLE: The Lorax  
PUBLISHER: Random House  
ISBN #: 13:978-0394823379  
DATE/EDITION: 1971

### **FILM REQUEST**

Title of Film: Chasing Ice, 2012  
Distributor: Submarine Deluxe

### **ELECTRONIC COURSE MATERIALS**

*The Tragedy of the Commons*, **Garrett Hardin**,  
<http://science.sciencemag.org/content/162/3859/1243>

*Limits to Growth*, Donella H. Meadows, Dennis L. Meadows, Jorgen Randers William W. Behrens III  
<http://www.donellameadows.org/wp-content/userfiles/Limits-to-Growth-digital-scan-version.pdf>

### **ADDITIONAL RESOURCES**

None