SEMESTER AT SEA COURSE SYLLABUS

Colorado State University, Academic Partner

Voyage:	Spring 2018
Discipline:	Natural Resources
Course Number and Title:	NR150 Oceanography (Section 1)
Division:	Lower
Faculty Name:	Steingrimur Jonsson
Semester Credit Hours:	3
Prerequisites:	None

COURSE DESCRIPTION

The ocean is under greater pressure from anthropogenic influence than ever before. It is therefore pertinent that we try to understand the nature of the oceans, be it the marine geology, the ecosystems, or the chemical and physical properties of the ocean that all interact with each other. The course will emphasize the interdisciplinarity of the subject. The bathymetry of the ocean and the forces that shape it will be studied. Characteristics of waves and tides are considered. The properties of seawater will be explored and how outside forces lead to formation of different water masses that then circulate in the ocean. We will be learning about the ocean circulation and its effects on the biology of the ocean on large and small scales. Recent anthropogenic effects on the ocean, such as global warming, increased acidity and other pollutants will be addressed. The oceanic and coastal areas we travel through will be used as examples in the course.

LEARNING OBJECTIVES

The goal is for students:

- to understand the role of the ocean as a part of the Earth as a system and especially as a climate system
- to develop a basic understanding of the principles of oceanography as well as their effects on marine ecology
- to appreciate the interdisciplinary links between geological, physical, chemical, and biological systems
- to gain an understanding of the complex interrelationships regarding physical and anthropogenic interactions with coastal and marine systems
- to learn about tools and methods used by oceanographers
- to observe and become inspired to explore current issues in oceanography outside the classroom

REQUIRED TEXTBOOKS

AUTHOR: Paul R. Pinet
TITLE: Essential invitation to oceanography
PUBLISHER:Jones and Bartlett learning
ISBN #: 9781449686437
DATE/EDITION: 1st edition, 2014

TOPICAL OUTLINE OF COURSE

Depart Ensenada, Mexico — January 5

A1—January 7: Introduction and syllabus. The scale of things. A quick tour through oceanographic features we will encounter during the cruise and the ports visited.

A2—January 9: History of oceanography. Environmental issues and sustainability. (Chapter 1)

A3—January 11: The Earth's structure, plate tectonics and topography of the ocean floor. (Chapters 2 and 3). Preparation for Hawaii.

Honolulu, Hawaii — January 12

A4—January 14: Debriefing Hawaii. The properties of seawater. Temperature, salinity and density. (Chapter 4)

January 16—International Date Line crossing (Lost Day)

A5—January 17: The properties of seawater. Dissolved gases, nutrients and photosynthesis. (Chapter 4)

No Class — January 19

A6—January 20: Atmospheric circulation, Coriolis force and geostrophy. (Chapter 5)

A7—January 22: Exam 1 (10%).
Ocean circulation. (Chapter 5). Preparation for Japan

Kobe, Japan — January 24-28

A8—January 29: Debriefing Japan. Deep water circulation and its importance for climate. (Chapter 5). Preparation for China.

Shanghai, China — January 31 - February 1

In-Transit — February 2-3

Hong Kong, SAR — February 4-5

A9—February 6: Debriefing China. Surface and internal waves. Tsunamis (Chapter 6). Preparation for Vietnam.

Ho Chi Minh City, Vietnam — February 8-13

A10—February 14: Debriefing Vietnam. Tides. (Chapter 7)

No Class —February 16

A11—February 17: Sea level rise. (Chapter 7). Preparation for Myanmar.

Yangon, Myanmar — February 19-23

A12—February 24: Marine ecology. (Chapter 8). Debriefing Myanmar

A13— February 26: Marine ecology. (Chapter 8). Preparation for India

Cochin, India — February 28 – March 5

A14—March 6: Biological productivity in the oceans. (Chapter 9). Debriefing India.

No Class — March 7

A15—March 9: Biological productivity in the oceans. (Chapter 9). The dynamic shoreline and coastal habitats. (Chapter 10-11). Preparation for Mauritius

Port Louis, Mauritius — March 11

A16—March 12: The dynamic shoreline and coastal habitats. (Chapter 10-11). Debriefing Mauritius.

A17—March 14: Ocean habitats and their biota. (Chapter 12).

A18—March 16: The Ocean's resources, living and inorganic. (Chapter 13). Preparation for South Africa

Cape Town, South Africa — March 18-23

A19—March 24: Student presentations. The Ocean's resources, living and inorganic. (Chapter 13). Human presence in the ocean. (Chapter 14). Debriefing South Africa.

A20—March 26: Exam 2 (10%).
Human presence in the ocean. (Chapter 14).

A21—March 28: Student presentations. Human presence in the ocean. (Chapter 14). Preparation for Ghana

Tema, Ghana — March 30 - April 1

Takoradi, Ghana — April 2-3

A22—April 4: Debriefing Ghana. Global climate change and the oceans. (Chapter 15).

A23—April 6:
Study Day — April 8

A24— April 9: Preparation for Morocco. Global climate change and the oceans. Sea-level, temperature, sea ice, acidity and effects on ecology. (Chapter 15)

Casablanca, Morocco — April 11-14

A25—April 15: Final Exam (25%)

Arrive Bremerhaven, Germany — April 19

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 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.

Field Class & Assignment
The Field Class for this course will take place on Tuesday, 3 April, in Tema, Ghana.

Field Class title: Fisheries and port activity in Ghana

Visit to the Fisheries Commission in Ghana, to gain insight into the fisheries and the fishing industry in Ghana and the difference between the local fisherman and the foreign fleets also fishing in Ghanaian waters. The field course will end with a visit to the fishing ports in Tema.

Field Class Learning Objectives: To observe the local artisan fisheries and their co-existence with the much more developed foreign fleet of fishing vessels operating in Ghanaian waters.

INDEPENDENT FIELD ASSIGNMENTS

Students in groups will maintain an Expedition Log for all days at sea. The log will include all available measurements and observations relevant for the course, e.g. weather, bottom depth, sea state, oceanographic parameters and marine wildlife sightings. A photo should be taken every day around noon to get an idea of the sea state and the color of the ocean. Also document how the ocean changes as we go from the open ocean across the continental shelf and into harbor at some ports or the reverse route. The second part of the entry should be descriptive or illustrative in nature, documenting the 'at sea' experience. Any experiences in port that add to the understanding of the marine environment are welcome in the log. Logs will be evaluated on the basis of completion (minority) and effort (majority). At a time to be decided towards the end of the semester, students in groups will deliver the log and a report based on the log (3-4 pages of text).

Ports-of-call reports: Students in groups will be assigned two ports-of-calls countries. In the port and in the country, students should note anything they find relevant to our course, which could for example include coastal erosion; manmade structures to prevent erosion; seafood consumption and seafood offered in stores and markets; aquaculture; fishing practices etc. Each group will prepare 5-minutes power point presentations for the two different ports, including own photos and sketches, and turn in an essay (1-2 pages of text). The students will be graded on their creativeness and ability to apply concepts that have been covered in class to their observations; quality of their essays and power point presentations.

METHODS OF EVALUATION / GRADING SCALE
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:

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

Class participation 10%
2 exams 20%
Observation log 10%
Group presentations & papers 15%
Final Exam 25%
Field Class 20%

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, laboratories). 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 lette4r from the student's home institution verifying the accommodations received on their home campus (dated within the last three years) is required before any accommodation is provided on the ship. Students must submit this verification of accommodations to academic@isevoyages.org as soon as possible, but no later than two months prior to the voyage.

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

None

FILM REQUEST:

None

ELECTRONIC COURSE MATERIALS

None

ADDITIONAL RESOURCES

None