SEMESTER AT SEA COURSE SYLLABUS

Colorado State University, Academic Partner

Voyage:	Spring 2020
Discipline:	Natural Resources
Course Number and Title:	NR 150 Oceanography (Section 3)
Division:	Lower
Faculty Name:	Scott Denning
Semester Credit Hours:	3

Prerequisites: None

COURSE DESCRIPTION

What better way to study oceanography than from a ship as we explore the oceans? Oceanography (NR150) is the study of the oceans and the organisms that live in them, in the context of the Earth System as a whole. We explore the interrelationships among the geological, physical, chemical, and biological systems of the oceans. The oceans are critical to the functioning of the Earth's climate, weather, and biodiversity. We emphasize local marine environments we will be visiting and the social issues and policies affecting them. On the MV World Odyssey - while in the classroom, on deck, or on shore - we will we will explore topics such as currents, tides and waves, the regions of the ocean, and the organisms that have evolved to live in these challenging and varied habitats.

LEARNING OBJECTIVES

Learning objectives for this course include: gaining a deeper understanding and appreciation of the open ocean, midwater and deep ocean, and their connection to other marine ecosystems; and acquiring the knowledge and insight necessary to evaluate opportunities and challenges facing our oceans today. At the completion of this course and the end of the voyage, students will have acquired knowledge and experience in oceanography and gained the skills to be able to:

- explain the vertical stratification and circulation of the oceans
- describe the interactions between vertical motion and nutrients that control biological productivity of the oceans
- use the concept of marine food webs to explain fisheries
- apply scientific tools and methods oceanographers use to study the ocean
- describe the impacts of warming and acidification on marine ecosystems
- explain the dependence of marine resource sustainability on policy
- become inspired to explore current issues in oceanography around the world

REQUIRED TEXTBOOKS

AUTHOR: Tom Garrison
TITLE: Essentials of Oceanography, 9th edition
PUBLISHER: Cengage Learning
ISBN # 13: 978-1-305-25428-2
DATE/EDITION: 2016/9th Edition

TOPICAL OUTLINE OF COURSE

Depart Ensenada, Mexico — January 4

B1—January 7: Course Introduction

B2—January 9: Exploring the World's Oceans

B3—January 11: The Ocean Floor: Earth Structure and Plate Tectonics

Honolulu, Hawaii, USA — January 12

Reflection & Study Day — January 13 (No Class)

B4—January 15: Ocean Sediments and Hydrothermal Vents

International Date Line Crossing — January 16 (Lost Day)

B5—January 18: Vertical Structure of the Oceans

Study Day — January 19 (No Class)

B6—January 21: Chemical Oceanography

B7—January 23: Atmospheric Circulation

Kobe, Japan — January 24-28

B8—January 30: Ocean Circulations and Currents

Shanghai, China — January 31 – February 5

B9—February 7: Waves and Tides

B10—February 9: Synthesis: Physical & Chemical Oceanography

Ho Chi Minh City — February 10-15

Community Programming — February 17 (No Class)

B11—February 18: Nearshore Ecosystems

Port Klang/Kuala Lumpur, Malaysia — February 19-24

B12—February 26: Open Ocean, Phytoplankton

B13—February 28: Midterm Exam

Cochin, India — February 29 – March 5

Community Programming — March 7 (No Class)

B14—March 8: Zooplankton; Nutrient Cycling

B15—March 10: Marine Communities

Port Louis, Mauritius — March 11

B16—March 13: Student presentations

B17—March 15: Marine Invertebrates

B18—March 17: Coral Reef Ecosystems

Cape Town, South Africa — March 18-23

B19—March 25: Student presentations

Study Day — March 26 (No Class)

B20—March 28: Student presentations

Tema, Ghana — March 30-31
Takoradi, Ghana — April 1-3

B21—April 4: Marine Vertebrates and Fisheries

B22—April 6: Climate Change and Oceans

B23—April 8: Marine Resources and Human Impacts

B24—April 10: Student presentations

Casablanca, Morocco — April 11-14

Study Day — April 15 (No Class)

B25—April 17: Final Exam

Arrive Amsterdam, The Netherlands — April 20

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 **Sunday, 12 January 2020 in Honolulu, Hawaii**.

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.

Title: Geologic history of Hawaii and Coral Reef Exploration

Description: Two stops: Makapu'u Lighthouse (hike) and Hanauma Bay (snorkeling)

Objectives: Learn about volcanic history of Hawaii and observe a coral reef close-up.

Students will be required to take detailed notes during field trip activities, including observations, photographs and drawings. These will be included in the expedition log and will form the basis for a 3-page paper which will include answers to questions provided prior to the activity.

Independent Field Assignments

Expedition Log
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. ship location (which ocean, coordinates, continental shelf/ or middle of ocean etc.), sea state and color, ocean depth, wave height, weather conditions, wind speed, bottom depth, and marine wildlife sightings. A photo of the ocean should be taken every day at the same time to get an idea of the sea state and the color of the ocean. They should also document how the ocean changes as we go from the open ocean across the continental shelf and into harbor at port

or the reverse route. Any experiences in port that add to the understanding of the marine environment must be included in the log. A complete set of guidelines will be available on the 1st day of class. All field work activities are to be included in the log as well.

The logs will be evaluated on the basis of completion and effort. Expedition logs and ocean sampling results will be checked on February 8th and due on March 29th.

Group Presentations and Papers

Students in groups will be assigned two ports-of-call in countries for comparision and contrast. In that country, students should note anything they find relevant to our course, which could include pollution, coastal erosion, manmade structures to prevent erosion, aquaculture, fishing practices etc. Groups will be assigned, and topics will be discussed and approved by the instructor early in the term.

Each group will prepare a 20-minute power point presentation for their port and topic. Every student in the group should present a part of the talk. This presentation should include photos and sketches. Each group will also turn in an essay (5 pages of text). The other students in the class are required to write down 3 pertinent questions or comments for each presentation and turn these in to the instructor at the end of the class. Students are encouraged to ask questions and participate in the discussion. These questions and participation in the discussion will count toward class participation marks. The students presenting will be graded according to Holistic Rules (below) on their creativity and ability to apply concepts that have been covered in class to their observations, as well as the quality of their essays and power point presentations.

Holistic Rubric

5	**Excellent:** The student clearly describes the question studied and provides strong reasons for its importance. Specific information is given to support the conclusions that are drawn and described. The delivery is engaging and sentence structure is consistently correct. Eye contact is made and sustained throughout the presentation. There is strong evidence of preparation, organization, and enthusiasm for the topic. The visual aid is used to make the presentation more effective. Questions from the audience are clearly answered with specific and appropriate information.
4	**Very Good:** The student described the question studied and provides reasons for its importance. An adequate amount of information is given to support the conclusions that are drawn and described. The delivery and sentence structure are generally correct. There is evidence of preparation, organization, and enthusiasm for the topic. The visual aid is mentioned and used. Questions from the audience are answered clearly.
3	**Good:** The student describes the question studied and conclusions are stated, but supporting information is not as strong as a 4 or 5. The delivery and sentence structure are generally correct. There is some indication of preparation and organization. The visual aid is mentioned. Questions from the audience are answered.
2	**Limited:** The student states the question studied, but fails to fully describe it. No conclusions are given to answer the question. The delivery and sentence structure is understandable, but with some errors. Evidence of preparation and organization is lacking. The visual aid may or may not be mentioned. Questions from the audience are answered with only the most basic response.
1	**Poor:** The student makes a presentation without stating the question or its importance. The topic is unclear and no adequate conclusions are stated. The delivery is difficult to follow. There is no indication of preparation or organization. Questions from the audience receive only the most basic, or no, response.
0	No oral presentation is attempted.

METHODS OF EVALUATION

Class participation	10%
First week quiz and writing exercise	5%
Expedition log	10%
3 written assignments	15%
Midterm	10%
Group presentations and papers	20%
Field class	20%
Final exam	10%

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%: 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, 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 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 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

None

FILMS

None

ELECTRONIC COURSE MATERIALS

None

ADDITIONAL RESOURCES

None