

SEMESTER AT SEA COURSE SYLLABUS

Voyage: Fall 2013

Discipline: Environmental Science

EVSC 2559: Geohazards and Natural Disasters

Division: Lower

Faculty Name: Davies-Vollum

Pre-requisites: none

COURSE DESCRIPTION

This course focuses on understanding natural phenomena that we perceive as hazardous or disastrous. We will consider the science that governs these phenomena using case studies from countries that we will visit. Topics include earthquakes, volcanic eruptions, floods, coastal erosion, hurricanes and wildfires.

COURSE OBJECTIVES

By the end of this course students will be able to:

- Bring a scientific awareness and understanding to natural phenomena that are commonly perceived as hazardous or disastrous.
- Explain the physical processes governing the phenomena that are regarded as geohazards or natural disasters
- Gain an appreciation for the effects that geohazards and natural disasters can have on our lives.
- Have an understanding of how natural disasters and geologic hazards have shaped the cities and countries visited during the voyage.

REQUIRED TEXTBOOKS

AUTHOR: Patrick L. Abbott

TITLE: Natural Disasters

PUBLISHER: McGraw-Hill

ISBN #: 978-0-07-305034-8

DATE/EDITION: Ninth (2013).

COST: approximately \$115

TOPICAL OUTLINE OF COURSE

Date	Class	Topic	Reading due	Assignment due
8/26	A1	Introduction	None	
8/28	A2	Natural disasters in context	Chapter 1	
IN	PORT	ST. PETERSBURG		
9/3	A3	Plate tectonics	Chapter 2	<i>Synopsis: France Belgium</i>
IN	PORT	HAMBURG		
9/9	A4	Earthquakes	Chapter 4	
9/11	A5	Seismology	Chapter 4	
IN	PORT	ANTWERP/LE HAVRE		
9/18	A6	Earthquake damage	Chapter 3	<i>Synopsis: Spain Portugal, Morocco</i>
IN	PORT	DUBLIN		
9/24	A7	Tsunami	Chapter 8	
9/26	A8	Lisbon earthquake and tsunami	Page 51	Quiz 1 (A3-A7)
IN	PORT	LISBON/CADIZ		
IN	PORT	CASABLANCA		
10/8	A9	Weather essentials	Chapter 9	
10/11	A10	Cyclones	Chapter 11	<i>Synopsis: Ghana S. Africa</i>
10/13	A11	Heat waves and drought	Pages 278-279/ 338-339	
IN	PORT	TAKORADI/TEMA		
10/20	A12	Mid voyage check in		
10/22	A13	Coastal hazards	Chapter 16	
10/25	A14	Coastal hazards	Chapter 16	
IN	PORT	CAPE TOWN		
11/2	A15	Plate tectonics and volcanoes	Chapter 6	(A9 – A14)
11/5	A16	What makes a volcano hazardous?	Chapter 6	<i>Synopsis: Argentina</i>
11/7	A17	Volcanic hazards	Chapter 7	
11/10	A18	Volcanic hazards in South America	Chapter 7	
IN	PORT	BUENOS AIRES		
11/13	A19	Landslides	Chapter 15	<i>Synopsis: Brazil</i>
11/15	A20	Preparation for field lab	None	Quiz 3 (A15-A19)
IN	PORT	RIO DE JANEIRO		
11/25	A21	Follow up to field lab	None	
11/22	A22	Floods	Chapter 13	
11/25	A23	Floods	Chapter 13	Field lab
IN	PORT	MANAUS		
12/8	A24	Documentaries	None	Documentary
12/11	A25	Finals	None	Final (comprehensive)

FIELD WORK

FIELD LAB (At least 20 percent of the contact hours for each course, to be led by the instructor.) **Attendance and participation in the Field Lab is MANDATORY.**

Disaster management in Rio: Floods, landslides, coastal erosion and forest fires all impact the densely populated city of Rio de Janeiro. To find out what the city is doing to mitigate natural disasters students will visit the new state of the art Rio Operations Center. Students will also visit the sites of hazards and disasters in the Rio area, in particular areas affected by the 2011 mudslides and floods (the worst natural disaster in Brazilian history).

FIELD ASSIGNMENTS

- 1) **Field lab report.** To produce this report, students will draw on their field notes, sketches and photographs from the field lab, in addition to using and referring to assigned readings. A draft of the report must be submitted for feedback and review before the final report is due (due dates are given on the topical outline). Specific details of, and a grading rubric for the report will be supplied. Field reports must be emailed to me as either a word file or pdf by noon on the date due.
- 2) **A disaster documentary for one location visited.** In small groups (to be assigned in class A2) students will research either a natural disaster that has occurred, or the hazard planning/disaster potential for a port or country visited. Each group will then write a synopsis and script for a two-five minute documentary based on their research and the film the documentary on location. Students may use cameras and/or phones to make the video and editing is not required. Grading will be based on scientific accuracy and content, NOT film making abilities. Further details and grading criteria are available in a separate document. Options for the documentary include but are not limited to volcanic hazard in Argentina, Droughts and heat waves in North Africa, Atlantic tsunami, Floods on the Amazon, the Lisbon earthquake, Coastal engineering (multiple locations)

METHODS OF EVALUATION / GRADING RUBRIC

- **Completion of documentary synopsis, script and film: 30%** See above for more information.
 - Synopsis to be turned in before film is made (**as shown on the syllabus**); comments will be provided and the documentary approved before the relevant port.
 - Script and revised synopsis with list of resources used – turned in before relevant port as shown on syllabus: 10%
 - Finished movie: 15%
- **Field lab report: 20%.** This report will allow students to integrate material covered in class and readings, and apply it to what they will observe during the field lab. See above for more information.

- **In-class practical participation: 15%.** Class participation may include free-writes, discussion, and small group exercises. Small group exercises involve applying content covered in readings and lectures, and allow you to relate it to ports visited.
- **Quizzes: 15% (each worth 5%).** These will be short quizzes including true/false, multiple choice and short answer questions to ensure that you understand the material covered in the course.
- **Final assessment/exam: 20%.** The final exam will be comprehensive and will focus on the main themes and ideas covered in the course. It will include a combination of short answer, true-false, multiple-choice questions as well as interpretation of hazard-related diagrams.

Grading schedule

		B+	87-89%	C+	77-79%	D+	67-69%
A	94-100%	B	84-86%	C	74-76%	D	64-66%
A-	90-93%	B-	80-83%	C-	70-73%	D-	60-63%

Students earning less than 60% will receive an F

RESERVE LIBRARY LIST

Any introductory textbook in physical geology

Any introductory textbook in meteorology/climatology

ADDITIONAL RESOURCES (DVDs/videos shown in class)

- 1) Krafft, M., Understanding Volcanic Hazards, AVCEI (International Association of Volcanology and Chemistry of the Earth's Interior) /UNESCO
- 2) Inman, D., and Shelton, J., The Beach A River of Sand, Scripps Institute of Oceanography/American Geological Institute (available on Youtube)
- 3) National Geographic, Cyclone, Warner Home Video

HONOR CODE

Semester at Sea students enroll in an academic program administered by the University of Virginia, and thus bind themselves to the University's honor code. The code prohibits all acts of lying, cheating, and stealing. Please consult the Voyager's Handbook for further explanation of what constitutes an honor offense.

Each written assignment for this course must be pledged by the student as follows: "On my honor as a student, I pledge that I have neither given nor received aid on this assignment." The pledge must be signed, or, in the case of an electronic file, signed "[signed]."