SEMESTER AT SEA COURSE SYLLABUS

Colorado State University, Academic Partner

Voyage:	Fall 2018
Discipline:	Natural Resources
Course Number and Title:	NR 300 Biological Diversity
Division:	Upper
Faculty Name:	Lindsay Young
Semester Credit Hours:	3

Meeting: A Days, 1100-1220 in Adlon
Prerequisites: One (1) biology or natural resources course

COURSE DESCRIPTION

Our world is in a period of unprecedented environmental change, primarily as a result of human modification. This course will examine the causes and consequences of one of the most pressing issues of our time- species extinctions and the loss of biological diversity. We will examine the science behind biodiversity: how physical, ecological and geologic processes contribute to the origin biological diversity (i.e. speciation), and delve into practice of conservation biology and actions that are being taken to prevent extinctions. You will learn both relevant theory, and applied practices, to understand and resolve conservation issues from a practicing conservation biologist. You will be participating in, and evaluating real-world examples from ports visited throughout the semester. Throughout the voyage, you will gain an understanding of, and be able to compare, biological diversity challenges faced by countries with different cultures, economic means, and population sizes.

LEARNING OBJECTIVES

The goals of this course will be to:

1. explore the scientific evidence that shows how and why Earth's biological resources are being altered
2. outline how these changes impact ecosystems and the services they provide to society
3. describe the social and economic consequences of biodiversity loss, and
4. understand current management strategies used to curb changes in our planet's biological resources.

REQUIRED TEXTBOOKS:

AUTHOR: Richard. B. Primack and Anna A. Sher
TITLE: An Introduction to Conservation Biology
PUBLISHER: Sinauer Associates, Inc. Publishers

ISBN #: 9781605354736
DATE/EDITION: 2016/1st
COST: approx. $84

Other readings from primary literature will be assigned and provided to the students.

TOPICAL OUTLINE OF COURSE

Depart Hamburg, Germany — September 9

A1—September 11: What is conservation biology?
Reading: Chapter 1; Soule 1985; Kareiva & Marvier 2012

A2—September 13: Drivers of biodiversity
Reading: Chapter 2; Spain's Biodiversity Report

Barcelona, Spain — September 15-16
Valencia, Spain — September 17-18

A3—September 19: Intrinsic and extrinsic values of biodiversity
Reading: Chapter 3; Leonard 2008

A4—September 21: Ecosystem services
Reading: Chapter 4; McCauley 2006 & replies

No Class — September 23

A5—September 24: Drivers of extinction: population growth, habitat destruction and pollution
Reading: Chapter 4; Brashares et al. 2001, Brooks et al. 2002

A6—September 26: Biodiversity in a developing nation: Ghana as a case study
Reading: Skim Ghana's Biodiversity Strategy; Brashares et al. 2004

Tema, Ghana — September 27-28
Takoradi, Ghana — September 29-30

Community Programming—October 2: No Class

A7—October 3: Drivers of extinction part two: Climate Change
Reading: Chapter 4; McClachlan et al. 2007; Ricciardi & Simberloff 2009

A8—October 5: Biodiversity in a semi-developed nation: South Africa as a case study
Reading: Skim 5th National Biological Diversity Report for South Africa; Biggs et al. 2013; Wasser et al. 2010

Cape Town, South Africa — October 7-12

A9—October 13: Drivers of extinction part three: Invasive species

Reading: Clavero & Garcia-Berthou 2005; Davis et al. 2011 & replies; Keesling & Ostfeld 2015.

A10—October 15: Extinction is forever
Reading: Chapter 5; Thomas et al. 2004

No Classes/study day — October 16

A11—October 18: Size matters: challenges of small populations
Reading: Mauritius Biodiversity Profile; Florens and Baider, 2013.

Port Louis, Mauritius — October 19

No Classes/study day — October 21

A12—October 22: Mid Term Exam

A13—October 24: Conserving populations: the role of metapopulations and population viability analyses
Reading: Chapter 6 to p 211; Lahoz-Monfort et al. 2014; Bakker and Doak 2009

Cochin, India — October 25-30

Reflection and Study (Global Studies Reflection) — October 31

A14—November 2: Conserving species- the role of management actions and legal frameworks
Reading: Chapter 6- 211-233; Rao et al. 2013

Yangon, Myanmar — November 4-8

A15—November 9: Critically endangered species and the debate over 'rewilding'
Reading: Chapter 7; Donlan et al. 2006; *NYT Magazine*: The mammoth cometh

Community Programming—November 11: No Class

A16—November 12: Wildlife crime and designating protected areas: Vietnam as a case study
Reading: Chapter 8; Alacs et al. 2010; Drury 2009; Wildlife Smuggling in Vietnam NY times article

Ho Chi Minh City, Vietnam — November 14-18

A17—November 19: Designing effective reserves: single large or several small?
Reading: Chapter 8; McCarthy et al 2011; Baskett et al. 2007

No Class/Study day — November 21

A18—November 22: The other 99%: conservation outside of reserves
Reading: Chapter 9; Dudgeon 2010; Lim et al. 2008; Czarnezki 2013;

Shanghai, China — November 24-29

A19—November 30: Involving indigenous groups and local populations in conservation
Reading: Sushinsky et al. 2013; Skim The National Biodiversity Strategy of Japan.

Kobe, Japan — December 2–6

A20—December 7: Restoration ecology
Reading: Chapter 10; Choi 2007; Harris et al. 2006

A21—December 9: Moving forward: sustainable development and preventative conservation
Reading: Chapters 11-12

A22—December 11: Student presentations

A23—December 13: Student presentations

A24—December 15: Biogeography of Hawaii and the threat of invasive species
Reading: Fortini et al. 2015; Vorsino et al. 2014; VanderWerf et al. 2014; Young et al. 2013

Honolulu, Hawaii — December 16
Field class to Kaena Point Natural Area Reserve for Albatross research

No Class/study day — December 18

A25—December 19: Final Exam

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 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 Sunday December 16th in Honolulu, Hawaii.

Field Class Title: Island biogeography and conservation challenges on islands

Field Class Description: Students will go on a day trip to Ka`ena Point Natural Area Reserve, where Dr. Young has been running a research and conservation program for more than 14 years. Students will learn about full ecosystem restoration and invasive species management by examining the predator proof fence at this site and meeting some of the other managers who were instrumental in the restoration at the site. Laysan Albatrosses, who students will have seen during the voyage, also nest in this reserve and students will have the opportunity to participate in bird banding, nest marking, GPS tracking and contributing to a 14 year data set by actively participating in the research. Students will also have the opportunity to participate in the restoration throughout-planting of native plants and weeding of non-native plants. This is the only accessible albatross colony *in the world* that allows student visits within the colony, and thus this provides an unparalleled opportunity for experiential learning by participating in real on the ground research. In the days approaching the port visit, the students will read and discuss peer reviewed publications that have resulted from the research and restoration at Ka`ena Point and thus will have the chance to visit a living laboratory as a culminating activity.

Field Class Learning Objectives:
1) Understand the past and current state of biodiversity of the islands, especially with respect to seabirds, that we have observed from the ship throughout our voyage.
2) Comprehend current management challenges such as those relating to climate change and invasive species, which are unique on islands.
3) After reading and visiting the site and learning more about the conservation challenges, discuss the next steps moving forward and how this project could be improved.

INDEPENDENT FIELD ASSIGNMENTS:

Comparison across ports
Each student will choose a topic to examine more deeply by making a comparison across the ports of our voyage. Field notes will need to be kept and each student will present their topic before the class in the style of a speed talk at a scientific conference (5-6 minute Powerpoint talk, 2-3 minutes of questions from the audience). All presentations will be posted on Canvas. Each student will also provide a set of three questions relevant to their conservation issue to be considered for use on the final exam.

Discussion and Debate
During many class periods we will have an in-class discussion focused on papers from the scientific literature. Typically, a team of two students will be assigned to lead each discussion section. The lead students are expected to submit 3-5 discussion questions on the reading for posting on Canvas no later than the class period before the discussion. Each student in the course must come to each discussion section prepared to discuss these questions and critique the paper or chapter. At the start of the discussion, the lead students will provide a concise overview of the paper. In the summary, you should: 1) review the major points of the paper, 2) highlight novel results and conclusions, 3) relate the paper to other readings or discussions in class or your own knowledge, and 4) raise questions or objections you have with the methods, results, and/or conclusions. Following the summary, the lead students should then be prepared to actively generate and facilitate discussion for the rest of the allocated time. You will be assigned a grade for leading the discussion.

There will also be four debates that focus on important emerging issues in conservation biology. Details on the topic and structure of the debates will be provided in class.

Op-Ed Article/Advocacy Letter and Elevator Talk
Each student will be required to write a brief (300-500 word) "Op-Ed" or Advocacy letter on a current conservation biology topic or issue of their choice. The article should be written for an appropriate outlet (e.g., local, regional, national or international newspaper, depending on the scope of your issue; your congressperson). We will workshop the articles in class and your classmates will provide suggestions for improvement before submission to the instructor and (optional) submission. You will also give a 60-90 second "elevator talk" on your topic in class towards the end of the voyage. More details on this assignment will be given in class.

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	

METHODS OF EVALUATION

Item	% of Final Grade
Discussion Lead	5%
Debate	15%
Op-Ed/Advocacy Article	10%
Elevator Talk	5%
Field trip Essay Assignment	10%
Comparison Across Ports Presentation	15%
Midterm Exam	15%
Final Exam	20%
Participation and Attendance	5%

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 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

TITLE: The Sixth Extinction: An Unnatural History
PUBLISHER: Henry Holt & Company
ISBN #: 978-0-8050-9299-8
DATE/EDITION: 2014

FILM REQUEST:

Racing Extinction
RiverWebs
The Cove
Behind the Cove- The Quiet Japanese Speak Out

ELECTRONIC COURSE MATERIALS

Available in the course folder

ADDITIONAL RESOURCES

None