BIOL 0016M - MARINE MAMMALS AND BIRDS

Catalog Description

Hours: 39 (21 lecture, 18 laboratory)
Description: Field study of the biology of marine mammals and marine birds. Shore and pelagic organisms are studied, emphasizing California-associated species and their habitats. Field and lecture topics include: ecology, evolution, behavior, reproduction, distribution, anatomy, physiology, identification, and population status of whales, true and eared seals, sea otters, shore, bay and pelagic birds. This class may require ability to hike moderate distances on uneven ground. Boat travel may be necessary. This class may involve camping in either developed campsites or in undeveloped wilderness areas. (CSU)

Course Student Learning Outcomes

- CSLO #1: Describe and evaluate the impacts of humans on marine mammals and birds.
- CSLO #2: Describe the ecological and geological principles that affect natural marine ecosystems.
- CSLO #3: Explain the factors that have shaped the evolutionary adaptations of marine birds and mammals.
- CSLO #4: Accurately document and interpret ecological observations made on a field trip to marine ecosystems.

Effective Term

Fall 2022

Course Type

Credit - Degree-applicable

Contact Hours

39

Outside of Class Hours

42

Total Student Learning Hours

81

Course Objectives

Course objectives are linked to items in the course content outline (parentheses)
Lecture Objectives:
1. Evaluate the factors that have affected the formation of marine ecosystems. (Lecture Outline #1, #2, #5)
2. Apply ecological terminology to the description of marine ecosystems. (Lecture Outline #1, #2, #4, #5)
3. Investigate the interactions that local organisms have with the biotic and abiotic factors of their ecosystems. (Lecture Outline #1, #2, #3, #4, #5)
4. Explain the role that geology plays in the formation and delineation of communities of marine ecosystems. (Lecture Outline #3)
5. Analyze the past and present effects that humans have on marine mammals and birds. (Lecture Outline #6)
Laboratory Objectives:
1. Demonstrate the use of a taxonomic key or field guide to identify species. (Laboratory/Field Outline #1, #4)
2. Identify geological and hydrological features that impact the formation and function of communities of marine ecosystems. (Laboratory/Field Outline #2, #3)
3. Investigate the interactions that local organisms have with the biotic and abiotic factors of their ecosystems. (Laboratory/Field Outline #1, #2, #3, #4)
4. Identify examples of human impacts on marine mammals and birds. (Laboratory/Field Outline #4, #5)
5. Create a detailed field journal or summary report documenting the field experience. (Laboratory/Field Outline #6)

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Classroom Discussions
  - Example: To address Course Lecture Objective #3, "Investigate the interactions that local organisms have with the biotic and abiotic factors of their ecosystems", students might take part in a classroom discussion about the major characteristics of representative species of plants and animals occurring in a marine ecosystem and their role in the ecosystem. Students could be evaluated based on participation, accuracy of information, and completeness of information.
- Projects
  - Example: To address Course Lecture Objective #3, "Investigate the interactions that local organisms have with the biotic and abiotic factors of their ecosystems", students might complete a project, either individually or in groups, that includes researching the major characteristics of a species of plant or animal occurring in a marine ecosystem and its role in the ecosystem, compiling this information in written or graphical form, and sharing this information in an oral classroom presentation. Students could be evaluated based on the completeness of the project, participation in all aspects of the project, accuracy of information presented, and overall quality of the project.
- Reports
  - Example: To address Course Lab Objective #5, "Create a detailed field journal or summary report documenting the field experience", students might be asked to write a report summarizing the ecosystems visited, geological and hydrological features observed, and species encountered. Students could be evaluated based on accuracy of information, attention to detail, and completeness of summary.
- Skill Demonstrations
  - Example: To address Course Lab Objective #1, "Demonstrate the use of a taxonomic key or field guide to identify species", students might be asked to use a taxonomic key to correctly

identify an organism. Students could be evaluated on the correctness of the answer, technique, and understanding of terminology in the key.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion

Lab:

1. To address Course Lab Objective #1, "Demonstrate the use of a taxonomic key or field guide to identify species", the instructor might lead the class in a demonstration of the use of a dichotomous key for a known specimen, and then guide students as they attempt the identification of an unknown specimen.
2. To address Course Lab Objective "2, "Identify geological and hydrological features that impact the formation and function of communities of marine ecosystems", the instructor might point out such key features in the field, making comparisons to other such features observed in the field or described in the classroom. Students will then make and record their own observations and comparisons.

Lecture:

1. To satisfy Course Lecture Objective #4, "Explain the role that geology plays in the formation and delineation of communities of marine ecosystems", the instructor might present a lecture (supplemented by images and/or video) that explains the geological processes of seafloor spreading, subduction zones, coastal erosion, etc, and how those have influenced the development of soils and species assemblages. Students will then make and record their own observations of geological influences on marine ecosystems.
2. To satisfy Course Lecture Objective #5, "Analyze the past and present effects that humans have on marine mammals and birds", the instructor might lead an in-class discussion about the historical impacts of humans on marine ecosystems (e.g. whaling, fishing, shipping, recreation, etc.).

Typical Out of Class Assignments

Reading Assignments

1. To address Course Lecture Objective #2, students might be asked to read a handout that describes basic ecological terminology or to read the Ecology unit from the OpenStax Biology online textbook and then apply this knowledge to descriptions of observations in the field. 2. To address Course Lecture Objective #3 and Course Lab Objective #3, students might be asked to review life history information for a marine species that is available in a field guide, handout, or a natural resource agency website and be prepared to discuss this in class.

Writing, Problem Solving or Performance

1. To address Course Lecture Objective #4 and Course Lab Objective #2, students might be asked to write and/or prepare a short oral presentation about a geologic or hydrologic feature occurring in a marine ecosystem. 2. To address Course Lab Objective #5, students might be asked to document their observations in the field in a journal, using any combination of text, sketches, photos, and/or other media.

Other (Term projects, research papers, portfolios, etc.)

Required Materials

- Ocean Birds of the Nearshore Pacific
  - Author: Rich Stallcup
  - Publisher: Point Reyes Bird Observatory
  - Publication Date: 1990
  - Text Edition: 1st
  - Classic Textbook?:
  - OER Link:
  - OER:
- The Natural History of Ano Nuevo
  - Author: Burney Boeuf, ed.
  - Publisher: Otter B Books
  - Publication Date: 1981
  - Text Edition: 1st
  - Classic Textbook?:
  - OER Link:
  - OER:
- The Sibley Field Guide to Birds of Western North America
  - Author: David Allen Sibley
  - Publisher: Knopf
  - Publication Date: 2016
  - Text Edition: 2nd
  - Classic Textbook?:
  - OER Link:
  - OER:
- The Laws Guide to Nature Drawing and Journaling
  - Author: Laws, John Muir
  - Publisher: Heyday Books
  - Publication Date: 2016
  - Text Edition: 1st
  - Classic Textbook?:
  - OER Link:
  - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.