

BIOL 0030 - INTRODUCTION TO ORNITHOLOGY

Catalog Description

Advisory: Eligibility for ENGL 1A

Hours: 54 lecture

Description: Introduction to the general ecology, evolution, and physiology of birds, with an emphasis on northern California avifauna. (CSU, UC)

Course Student Learning Outcomes

- CSLO #1: Outline the key characteristics and evolutionary adaptations found in birds.
- CSLO #2: Investigate common field and laboratory techniques used in ornithology.
- CSLO #3: Identify and describe examples of regional representatives of the major taxonomic groups.
- CSLO #4: Evaluate the effectiveness of current local, state, and federal bird conservation programs.

Effective Term

Fall 2022

Course Type

Credit - Degree-applicable

Contact Hours

54

Outside of Class Hours

108

Total Student Learning Hours

162

Course Objectives

Course objectives are linked to items listed in the course content outline (in parentheses)

1. Outline general steps of scientific discovery; distinguish between hypothesis, prediction, and theory (#1)
2. Explain how natural selection can lead to speciation; outline major drivers of natural selection (#2)
3. List basic characteristics of birds, outline their general adaptations and list the major taxonomic groups (#1, #3, #5)
4. Identify the typical representatives of major taxonomic groups of birds that can be found in northern California (#3, #4, #5)
5. Synthesize the current understanding of bird evolution; compare and contrast techniques used in reconstructing phylogenies (#2, #4, #5)
6. Analyze the unique aspects of avian anatomy and physiology; compare and contrast bird anatomy and physiology with that of mammals, and correlate the differences with the unique adaptations of birds (#4, #6, #7, #8)
7. Analyze adaptive value of bird song as a means of communication (#9)
8. Evaluate the evidence for avian cognition (#9)

9. Describe typical avian annual cycles and explain their adaptive significance (#10, #11)
10. Evaluate the different social behaviors exhibited by birds, providing examples from birds of northern California (#12)
11. Differentiate among mating systems found in birds; compare and contrast altricial and precocial modes of development (#13, #14, #15)
12. Summarize examples of annual fluctuations in population numbers and density of local bird species, explaining the implications for conservation efforts (#10, #11, #16, #17)
13. Analyze the effect of habitat destruction on local bird populations and evaluate the role of California and Federal Refuge Systems in local avian conservation efforts (#16, #17)

General Education Information

- Approved College Associate Degree GE Applicability
 - AA/AS - Life Sciences
- CSU GE Applicability (Recommended-requires CSU approval)
 - CSUGE - B2 Life Science
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)
 - IGETC - 5B Biological Science

Articulation Information

- CSU Transferable
- UC Transferable

Methods of Evaluation

- Classroom Discussions
 - Example: To assess course objective #3, "List basic characteristics of birds, outline their general adaptations and list the major taxonomic groups", students might participate in a classroom discussion about the evolutionary innovations exhibited by birds. Students could be evaluated based on participation, accuracy of information, and completeness of information.
- Essay Examinations
 - Example: To assess course objective #3, "List basic characteristics of birds, outline their general adaptations and list the major taxonomic groups", students might answer an essay exam question that asks them to explain how basic characteristics of birds differentiate birds from other groups of animals. Students could be evaluated based on accuracy and completeness of their answer.
- Objective Examinations
 - Example: To assess course objective #3, "List basic characteristics of birds, outline their general adaptations and list the major taxonomic groups", students answer an objective question on a quiz or exam that asks them to identify the basic characteristics of birds. Students could be evaluated based on the accuracy of their answer.
- Projects
 - Example: To assess course objective #10, "Evaluate the different social behaviors exhibited by birds, providing examples from birds of northern California", students might complete a project, either individually or in groups, that includes researching avian social behaviors and their adaptiveness, using specific examples from local bird species, 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 assess course objective #10, "Evaluate the different social behaviors exhibited by birds, providing examples from birds of northern California", students might research various avian social behaviors and their adaptiveness and document this information in a written report, using specific examples from local bird species. Students could be evaluated based on quality of writing, accuracy and completeness of information, and the selection of appropriate example species.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. To address course objective #8, "Evaluate the evidence for avian cognition", the instructor might prepare a lecture that explains how cognitive ability is measured in non-human animals, describes the physiological evidence for the cognitive ability of birds, and provides examples (possibly supplemented by images or video) of avian cognitive behaviors. Students would then be able to answer homework or exam questions asking them to describe aspects of avian cognition.
2. To address course objective #13, "Analyze the effect of habitat destruction on local bird populations and evaluate the role of California and Federal Refuge Systems in local avian conservation efforts", the instructor might lead an in-class discussion about the history of the refuge system in California and the effectiveness of this system in migratory bird conservation.

Distance Learning

1. To address course objective #2, "Explain how natural selection can lead to speciation; outline major drivers of natural selection", the instructor could design and moderate an online discussion with students about various examples of evolution (e.g. flightlessness on islands).
2. To address course objective #11, "Differentiate among mating systems found in birds; compare and contrast altricial and precocial modes of development", the instructor might prepare lecture materials to be posted on the CMS site that could include text, images (with alt text), and/or videos (with captioning) to explain and illustrate the topic.

Typical Out of Class Assignments Reading Assignments

1. Read the chapter in the textbook about conservation and compare that to state or local efforts to protect bird species and/or habitat.
2. Read a published scientific paper about a topic, such as the evolutionary origins of the penguin family, and be prepared to discuss the topic in class.

Writing, Problem Solving or Performance

1. Write a 2-4 page paper about an ornithological topic, such as the evolutionary adaptations exhibited by a group of birds or a life history account for a local bird species.
2. Answer an essay question on an exam about a topic covered in class, such as distinguishing between the various wing shapes and how those shapes affect the flight ability of the bird.

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

- Essential Ornithology
 - Author: Scott
 - Publisher: Oxford University Press
 - Publication Date: 2010
 - Text Edition: 1st
 - Classic Textbook?:
 - OER Link:
 - OER:
- Sibley's Birding Basics
 - Author: Sibley
 - Publisher: Knopf
 - Publication Date: 2002
 - Text Edition: 1st
 - Classic Textbook?:
 - OER Link:
 - OER:
- The Sibley Field Guide to Birds of Western North America
 - Author: Sibley
 - Publisher: Knopf
 - Publication Date: 2016
 - Text Edition: 2nd
 - Classic Textbook?:
 - OER Link:
 - OER:
- Ornithology: Foundation, Analysis, Application
 - Author: Morrison, Rodewald, Voelker, Colon, Prather
 - Publisher: Johns Hopkins University Press
 - Publication Date: 2018
 - Text Edition: 1st
 - Classic Textbook?:
 - OER Link:
 - OER:

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