

BIOL 0036 - INTRODUCTION TO MAMMALOLOGY

Catalog Description

Advisory: Eligibility for ENGL 1A

Hours: 54 lecture

Description: Introduction to the general ecology, evolution, and physiology of mammals, with an emphasis on species of northern California. Topics include: identifying characteristics, local species, ecological relationships, human interactions, and behavioral, structural, and physiological adaptations. Recommended for general education students or other majors interested in mammals. (CSU)

Course Student Learning Outcomes

- CSLO #1: Outline the key characteristics and evolutionary adaptations found in mammals.
- CSLO #2: Identify and describe examples of regional representatives of the major taxonomic groups.
- CSLO #3: Investigate the ways in which humans and other mammals interact with each other and their environment.

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. Synthesize the current understanding of mammal evolution and describe the major drivers of natural selection during that evolution (#2, #4)
3. List and describe the major characteristics of mammals that distinguish them from other groups (#3)
4. Identify the typical representatives of major taxonomic groups of mammals that can be found in northern California (#3, #4)
5. Analyze the unique aspects of mammalian anatomy and physiology; compare and contrast mammalian features with those of reptiles (#2, #3)
6. Evaluate the adaptiveness of unique behaviors exhibited by mammals such as primates, colonial mammals, dolphins, elephants, etc. (#5)
7. Compare and contrast the adaptiveness of the various mammalian reproductive strategies (#6)

8. Analyze the ecological roles of endangered mammal species to identify those characteristics that increase the risk of endangerment, and evaluate the effectiveness of current conservation efforts in addressing those risks (#7, #8, #9)

9. Investigate the degree of influence that humans have on other mammal species as well as the influence that other species have on humans (#9)

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)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Classroom Discussions
 - Example: To assess course objective #9, "Investigate the degree of influence that humans have on other mammal species as well as the influence that other species have on humans", students might participate in a classroom discussion about the influence of humans on the survival and evolution of other mammal species. Students could be evaluated based on participation, accuracy of information, and completeness of information.
- Essay Examinations
 - Example: To assess course objective #9, "Investigate the degree of influence that humans have on other mammal species as well as the influence that other species have on humans", students might answer an essay exam question that asks them to describe the various pathways by which humans have influenced the evolution and/or survival of other mammal species. Students could be evaluated based on accuracy and completeness of their answer.
- Objective Examinations
 - Example: To assess course objective #4, "Identify the typical representatives of major taxonomic groups of mammals that can be found in northern California", students might answer an objective quiz or exam question asking them to correctly identify examples of local mammal species from major taxa (rodents, carnivores, etc.) or the identifying features of such taxa. Students could be evaluated based on accuracy of answer.
- Projects
 - Example: To assess course objective #4, "Identify the typical representatives of major taxonomic groups of mammals that can be found in northern California", students might complete a project, either individually or in groups, that includes the compilation of information about the major mammalian taxa (rodents, carnivores, etc.) found in northern California and their identifying features, a visual presentation with this information and examples of local species, and the sharing of 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 #9, "Investigate the degree of influence that humans have on other mammal species as well as the influence that other species have on humans", students might research information about the various pathways by which humans have influenced the evolution and/or survival of other mammal species and document this information in a written report, providing examples of each pathway. Students could be evaluated based on quality of writing, accuracy and completeness of information.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. To address course objective #3, "List and describe the major characteristics of mammals that distinguish them from other groups", the instructor might prepare a lecture that explains what the diagnostic features of mammals are, how these features evolved from and are different than those features exhibited by the reptilian ancestors of mammals, and provides examples of these features in various taxa (supplemented by images and/or video). Students will then be able to successfully complete a homework assignment about the character differences between mammals and their reptilian ancestors.
2. To address course objective #8, "Analyze the ecological roles of endangered mammal species to identify those characteristics that increase the risk of endangerment, and evaluate the effectiveness of current conservation efforts in addressing those risks", the instructor might lead an in-class discussion asking students to consider the ecological characteristics exhibited by endangered species and the relationship between the possession of those characters and the risk of endangerment.

Distance Learning

1. To address lecture course objective #4, "Identify the typical representatives of major taxonomic groups of mammals that can be found in northern California", the instructor might prepare a lecture to post online that describes the major categories of local mammals, providing examples of each. This online lecture might include text, audio (with transcript), and/or captioned video presentation of information. The students will be listening and/or watching this lecture, taking notes, asking clarifying questions (via chat, Zoom, email, etc.), making connections to previous lecture topics and/or prior knowledge they are bringing to the class, and applying this information to successfully complete homework assignments and quiz/exam questions that ask them to distinguish between the major mammalian taxa and to identify examples of local fauna. A student can demonstrate mastery of this objective in multiple ways. One example is to successfully answer an online multiple choice or essay exam question that asks them to match examples of local fauna with the correct major taxonomic group. Another example is to ask students to write a short paper or discussion board post describing the diagnostic features of a typical representative of a major mammalian taxon.

2. To address lecture course objective #7, "Compare and contrast the adaptiveness of the various mammalian reproductive strategies", the instructor might guide students in an online discussion of the various strategies, asking students to consider specific examples of species that use those strategies, and the costs and benefits to the species of that strategy.

Typical Out of Class Assignments Reading Assignments

1. Read the chapter in the textbook on the evolution of mammals from therapsid reptiles and be prepared to discuss in class.
2. Read a published scientific paper about a topic, such as the complex hunting behaviors exhibited by pack animals, and be prepared to discuss the topic in class.

Writing, Problem Solving or Performance

1. Write a 2-4 page paper about a mammalogy topic, such as the evolutionary adaptations exhibited by marine mammals or a life history account for a local mammal species.
2. Answer an essay question on an exam about a topic covered in class, such as comparing and contrasting the adaptive value of marsupial and placental reproduction.

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

Required Materials

- Mammalogy
 - Author: Vaughan, Ryan, and Czaplewski
 - Publisher: Jones & Bartlett
 - Publication Date: 2015
 - Text Edition: 6th
 - Classic Textbook?:
 - OER Link:
 - OER:
- Mammalogy
 - Author: Feldhamer, Merritt, Krajewski, Rachlow and Stewart
 - Publisher: Johns Hopkins University Press
 - Publication Date: 2020
 - Text Edition: 5th
 - Classic Textbook?:
 - OER Link:
 - OER:
- Mammals of California
 - Author: Jameson and Peeters
 - Publisher: University of California Press
 - Publication Date: 2004
 - Text Edition: Revised
 - Classic Textbook?:
 - OER Link:
 - OER:

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