Course Outline

2026-2027 Catalog

BIOL 42 - Organismal Biology

Catalog Description

Transfer Status: CSU/UC

Prerequisite: Intermediate Algebra or equivalent

Unit(s): 5.00

Lecture: 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)
Lab: 102.00 Contact hours/0.00 Out of class hours/102.00 Total hours/2.00 Unit(s)
Total: 153.00 Contact hours/102.00 Out of class hours/255.00 Total hours/5.00 Unit(s)

Course Description: This course is intended for majors and includes a survey of the biology and diversity of organisms and emphasizes classification, structure and function of organisms. (C-ID BIOL 130S/BIOL 135S).

Objectives

Upon successful completion of this course, the student should be able to:

1. Apply the processes of scientific inquiry including experimental design.
2. Carry out an experiment to test a specific hypothesis using appropriate controls.
3. Explain the essential elements of life, major hypotheses for life's history, mechanisms for the diversification of life, and evolution.
4. Explain fundamental prokaryotic replication, metabolism, and cellular structure in relationship to evolution of diversity.
5. Apply knowledge of fundamental biological principles such as evolution and physiological processes.
6. Compare and contrast differences in animal development and life cycles.
7. Compare and contrast differences in plant development and life cycles.
8. Describe how plants and animals maintain homeostasis: water and ion balance, gas exchange, energy and nutrient acquisition, temperature regulation.
9. For major taxa of protists, fungi, plants and animals, a. Identify major groups and arrange them within currently recognized taxa; b. Compare and evaluate different phylogenies in terms of relationships amongst taxa; c. Describe structural organization/morphology; d. Identify and describe structures and relate them to their functions; e. Classify individual representative specimens to phylum.

Course Content

Topic Titles / Suggested Time Topic

Lecture

Topics	Lec Hrs
Plant systems function: physiology	4.25
Plant systems structure: anatomy	4.25
Animal Systems Function: Physiology	4.25
Animal Systems Structure: Anatomy	4.25
Survey of plant phyla	5.25
Survey of animal phyla	5.25
Fungi	4.25
Protists	4.25
Prokaryotes	2.25
Systematics and Taxonomy: Classification schemes	4.25
Phylogeny/Evolutionary History of major taxa	4.25
Overview of tree of life	4.25
Total Hours:	**51.00**

Lab

Topics	Lab Hrs
Systematics and Taxonomy: Classification schemes	3.00
Microscope and Cells	1.50
Application of Scientific Method, Experimental Design, Library Research Techniques	1.50
Kingdom Protista: Microscopic and gross comparative anatomy (including dissection)	4.00
Kingdom Protista: Comparative study of functional morphology, comparative physiology	4.00
Kingdom Protista: Comparative study of developmental stages and life cycles, including survey	4.00

Topics	Lab Hrs
Kingdom Fungi: Microscopic and gross comparative anatomy (including dissection), comparative study of functional morphology, comparative physiology, and comparative study of developmental stages and life cycles, including survey	6.00
Kingdom Animalia: Microscopic and gross comparative anatomy (including dissection)	11.00
Kingdom Animalia: Comparative study of functional morphology, comparative physiology	11.00
Kingdom Animalia: Comparative study of developmental stages and life cycles, including survey	11.00
Kingdom Plantae: Microscopic and gross comparative anatomy (including dissection)	11.00
Kingdom Plantae: Comparative study of functional morphology, comparative physiology	11.00
Kingdom Plantae: Comparative study of developmental stages and life cycles, including survey	11.00
Exploratory activities such as field trips, collection projects, field observations and identification of members in Kingdom Plantae, Kingdom Animalia, Kingdom Protista, and Kingdom Fungi	12.00
Total Hours:	**102.00**

Methods of Instruction

A. Discussion
B. Field Trips
C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
D. Laboratory Experiments
E. Lecture
F. Reading Assignments
G. Biology Majors Sequence

Methods of Evaluation

A. Exams/Tests
B. Quizzes
C. Written Assignments
D. Essays and research papers

Examples of Assignments

Reading Assignments

1. Read through the textbook and current scientific findings regarding the biological origins of life on Earth. Be prepared to discuss these papers and findings in class.
2. Read and discuss the three major sexual lifecycles. Be prepared to discuss each in class and give example organisms for each lifecycle.

Writing Assignments

1. Write a 750-word paper regarding the physiological and morphological adaptations to life on land in Kingdom Plantae and Kingdom Animalia.
2. Research any Eukaryotic organism, writing a 1000-word species account paper.

Out-of-Class Assignments

1. Craft a detailed review of the steps of the scientific method as presented in a primary research paper from current literature. Student analysis will include a written synthesis for the instructor and an oral presentation to class. This project will be completed over a 6-week period. The instructor will review potential papers a student has selected, and will approve one before the student proceeds to the written report.
2. Take home diagram of a plant, protist, fungi, and animal anatomical structures with their functions. Label the cells, tissues, organs, and provide functions of each.

Recommended Materials of Instruction

Raven, P. et al. (2023). Biology. *McGraw Hill, 13th.* 9781264097852.
Ali, N. (2021). BIOL 42 Lab Handouts. *Biology Department.*

Minimum Qualifications

Biological Sciences (Masters Required)

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