

BIOL 110: FIELD BIOLOGY

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2021
Credits:	4
Total Contact Hours:	108
Lecture Hours :	54
Lab Hours:	54
Hours Arranged:	0
Outside of Class Hours:	108
Strongly Recommended:	High school biology or chemistry; high school algebra 1 or Integrated Math 1 or equivalent; ENGL 101.
District General Education:	B1. Natural Sciences - Life Sciences, B3. Natural Sciences - Laboratory
Transferable to CSU:	Yes
Transferable to UC:	Yes - Approved
Grading Method:	Standard Letter

Catalog Course Description

This general biology course is a hybrid lecture and laboratory course for non-majors. Lecture topics include: cell structure and function, energy relationships, nutrient processing, reproduction and development, evolution, and ecological interrelationships. The laboratory provides the student with expanded first-hand experience in specific areas of course content. Laboratory work will involve identification, analysis and ecological methods of observing and recording birds, mammals, amphibians, reptiles, trees and shrubs of Southern California. Required instructional trips. 54 lecture hours, 54 lab hours.

Course Objectives

- demonstrate an understanding of the nature of scientific inquiry, especially the role of the scientific method
- demonstrate an understanding of the basic processes common to all living forms
- demonstrate an understanding of relationships among living organisms on the basis of common form and function
- evaluate the effects of contemporary technological developments upon life forms
- demonstrate the proper use of equipment and procedures commonly used in the biology laboratory
- organize and interpret biological data
- compare scientific to non-scientific systems of methodology and analysis

Major Course Content

1. Being a Naturalist, Scientific Field Studies
2. Geology, Soils, and Climate
 - a. Geological Past, rock cycle, soil formation and function, and climate
 - b. Comparison of Bacteria, Protists, and Fungi
 - c. Role of microbes, lichens, and fungi in soil formation and function

3. Biogeochemical cycles, water and nutrients role of microbes, fungi, and protists in biogeochemistry
4. Stewardship and Citizen Science
 - a. Energy and global challenges
 - b. Conservation
 - c. Interpretation, Communication
 - d. Citizen Science projects
5. Plants
 - a. Forests and Woodland resources
 - b. Survey and Identification of Mosses, Ferns, Conifers, Shrubs and Trees
 - c. California floristic province and Biomes
6. Animals – Vertebrates: Birds, Reptiles, Amphibians and Mammals
 - a. Identification of common Amphibians, Reptiles, Birds, and Mammals in California
 - b. Identification of common Invertebrates found in rocky, sandy and muddy shores
 - c. Identification of common Fishes
 - d. Animal Behavior
7. Evolution and Ecology
 - a. Evolutionary processes: Natural Selection, Speciation, Plasticity
 - b. Populations and Communities: Trophic webs, Succession, Population Dynamics, Diversity
 - c. Interactions: Mutualism, Competition, Territoriality, Predation etc.

Lab Content

1. Scientific method in field studies
 - a. Question and hypotheses
 - b. Sampling design and techniques
 - c. Data analysis
2. Geology, Soils, and Climate
 - a. Identification of rocks and geologic formations
 - b. Analysis of soil types and structure
 - c. Documenting slope aspect effect on plant communities
3. Biogeochemical cycles, water and nutrients
 - a. Water testing
 - b. Water quality, nutrients and aquatic ecology
4. Stewardship and Citizen science
 - a. Local environmental and conservation challenges
 - b. Local conservation groups and missions: getting involved
 - c. Survey of citizen science opportunities: doing it
5. Plants
 - a. Using a key to identify common plants
 - b. Survey of major plant groups
 - c. Analysis of forest structure and plant community diversity
6. Animals – Vertebrates: Birds, Reptiles, Amphibians and Mammals
 - a. Survey of animal diversity
 - b. Using keys and field guides to identify common animals
 - c. Conduction and animal behavior study
 - d. Quantifying animal community diversity
7. Evolution and Ecology
 - a. Interactions: mutualism, competition, territoriality, predation etc
 - b. Conduct analysis and comparison of community diversity

- c. Document and produce a trophic web based upon field study
- d. Analyze adaptations of organism of different environments

Suggested Reading Other Than Required Textbook

None

Examples of Required Writing Assignments

Writing is examined through digital lab portfolio, poster presentations, and written reports

Examples of Outside Assignments

Conduct a comparison of at least 5 local communities surveying the plant and animal diversity and basic physical characteristics to determine what conditions might influence species diversity. This project incorporates species identification, diversity quantification and physical environmental sampling and culminates in a formal scientific paper or poster presentation.

Instruction Type(s)

Lecture, Lab, Online Education Lecture, Online Education Lab

IGETC Area 5: Physical and Biological Sciences

5B. Biological Science, 5C. Science Laboratory