

BIOL 9L: ENVIRONMENTAL BIOLOGY LABORATORY

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2025
Units:	1
Hours:	3 laboratory per week (36 total per quarter) In-class field trips.
Corequisite:	BIOL 9.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Area 5: Natural Sciences w/ Lab
Transferable:	CSU/UC
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- Students will be able to apply the scientific process to evaluating environmental issues.
- Students will demonstrate proficiency in research and sampling techniques to evaluate a local ecosystem and impacts upon that ecosystem.

Description

An introduction to environmental biology through laboratory and field experiments, examination of local examples illustrating ecological concepts, use of sampling techniques to assess environmental quality, and student research of environmental topics.

Course Objectives

The student will be able to:

- Describe and apply the scientific method and explain its uses and limitations as it pertains to environmental biology.
- Explain the classification of biodiversity in the three domain system.
- Explain biological and ecological concepts using specific examples from the local flora and fauna.
- Employ simple field methods for analyzing and evaluating environmental quality.
- Discuss local issues related to urbanization and environmental justice.
- Research an environmental topic and prepare the results for public and/or classroom presentation.

Course Content

- Scientific method
 - Components of the scientific method
 - Application and limitations in environmental biology
 - Implementation of the scientific method during lab exercises
 - Develop and test hypotheses that test causes and outcomes of environmental damage
- Biodiversity

- Characteristics of the three domains of life and identification of representatives from each the four eukaryotic kingdoms
 - Laboratory exercises to identify microscopic organisms
 - Identification of representative organisms from each kingdom in the field
- Biological and ecological concepts
 - Evolution, natural selection, and adaptation
 - Experimental examination of factors affecting population growth
 - Examination of local examples illustrating ecological concepts, such as:
 - Symbiosis
 - Predation
 - Competition
 - Succession
 - Trophic structure
 - Environmental quality
 - Basic vegetation survey and sampling techniques
 - Water quality assessment techniques
 - Air quality assessment techniques
 - Data analysis of field data collected on field trips
 - Urbanization
 - Problems associated with urbanization - access to green spaces/nature and parks; clean, safe water and air; and access to healthy, safe food - especially as related to underrepresented and marginalized populations
 - Field trips to locations illustrating urbanization issues, such as a recycling center, water treatment facility, and/or ecological restoration site
 - Conducting research on an environmental topic
 - Use of library and internet resources
 - Development and implementation of project design
 - Synthesis and presentation of information for public or classroom display
 - Peer-critiques of research presentations

Lab Content

Labs will include:

- Introduction to the process of science and development of experiments and scientific research.
- Identification of plants and animals and biodiversity assessment of Foothill campus.
- Introduction to biological monitoring.
- The hydrologic cycle - watershed ecology, stream ecology.
- Field trip to a water treatment facility.
- Field trip to an organic farm.
- Field trip to participate in an ecological restoration project.

Special Facilities and/or Equipment

- Fully equipped multi-media laboratory.
- Students need internet access.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Frequent quizzes
Completion of lab exercises
Research project on a local environmental issue

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture
Discussion
Field work
Laboratory
Field trips

Representative Text(s) and Other Materials

Schultz, G.. Environmental Biology Lab Manual. 2024.

Supplemental readings as provided by the instructor.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Students will keep a field journal.
2. Students will be required to complete background reading assignments related to laboratory topics.
3. Students will engage in a biodiversity assessment of the Foothill campus and evaluate the campus for organismal diversity.

Discipline(s)

Biological Sciences or Ecology