

# BIOL 125: EVOLUTION, ECOLOGY & BIODIVERSITY

## Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2024
Credits:	5
Total Contact Hours:	126
Lecture Hours :	72
Lab Hours:	54
Hours Arranged:	0
Outside of Class Hours:	144
Total Student Learning Hours:	270
Prerequisite:	Intermediate algebra or higher or direct placement based on multiple measures.
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

A principles of biology course designed for biology majors and pre-med students. Detailed study of the structure and function of living material, with emphasis on the diversity of living material, animal and plant form, function, reproduction and development, evolution, and ecological relationships. 72 lecture hours, 54 lab hours.

## Course Objectives

- integrate life processes throughout the different levels of organization: atomic-molecular through ecosystems and the biosphere
- identify the function and structure of the various plant bodies
- demonstrate a thorough understanding of form and function in plants and animals
- demonstrate a general appreciation for the diversity of life forms
- demonstrate a thorough understanding of plant and animal reproductive processes
- describe in depth the structural detail of cells and organisms, and to analyze the relationship of this structure to normal function
- compare processes of reproduction and development in representative groups of organisms
- compare major organ systems in representative organisms
- demonstrate a thorough understanding of the basic biological principles important for success in more advanced biology courses
- demonstrate an ability to use equipment commonly available in a teaching biological laboratory
- follow experimental procedures, and gather, analyze and present data in an organized, meaningful manner

- recognize those emergent properties that are appropriate for a given evolutionary transition in both vertebrates and invertebrates
- analyze a scientific hypothesis on the basis of objective criteria

## Major Course Content

- Evolution and the Diversity of Life
- Prokaryotic/Protistan Forms
- Characteristics and Classification of Fungi, Plants and Animals
- Reproduction
- Plant and Animal Structure and Function
- Development in Living Organisms
- Plant and Animal Transport Mechanisms
- Plant and Animal Control Mechanisms (neural, sensory and hormonal)
- Nutrient Processing (Autotrophs and Heterotrophs)
- Basic Ecological Principles
  - Population ecology & growth, including intraspecific interactions
  - Community ecology, including interspecific interactions, invasive species and extinction
  - Ecosystems ecology

## Lab Content

- Prokaryotic and Eukaryotic Diversity
- Evolutionary Processes related to the Origin and Evolution of Cells
- Plant, Fungi, Animal (Invertebrate and Vertebrate) Diversity
- Plant Structure, Transport, and Nutrition
- Plant Reproduction, Development and Control
- Animal Structure and Function
- Animal Reproduction and Development
- Population and Community Ecology
- Population Growth Modeling, including statistical analysis of percent survivorship

## Suggested Reading Other Than Required Textbook

Reading as recommended by the course schedule from the required textbook.

## Examples of Required Writing Assignments

Lab notebooks and papers. Also written responses required on quizzes and exams.

Example: Lab notebooks

Lab notebooks will be based on the laboratory experiments. The notebook will consist of the following sections: objectives, materials and methods, results, and conclusion.

Prior to the lab, students are required to read the lab protocol, and write the objectives and any hypotheses. They will also briefly write down the materials and methods in preparation for the lab.

During the lab, students will keep an active record of the data they obtain. At the end of the lab, students will be required to critically think about their data and write their conclusion in their lab notebook, including any issues they encountered during the experiment.

## **Examples of Outside Assignments**

Students are required to present a 10 minute presentation on a topic selected at the beginning of the semester. The presentation must be supported with either PowerPoint or html. The student must account for the reliability of sources that they accessed to prepare and the relevance to our class and to biology as a field.

Students are required to look up and review primary research articles related to course concepts and make either oral or written presentations on the articles.

Students are required to complete practice questions using on-line resources that accompany the textbook.

## **Instruction Type(s)**

Lab, Lecture, Online Education Lab, Online Education Lecture

## **IGETC Area 5: Physical and Biological Sciences**

5C. Science Laboratory, 5B. Biological Science