

**Course Code:** BIO 142 (IAI L1 910L, BIO 910)

**Course Title:** Organismal, Ecological, and Evolutionary Biology

**Department:** Natural Sciences

**Effective Date:** Summer 2026

**PCS Code:** 1.1 - Baccalaureate/Transfer

**CIP Code:** 26.0101

**Repeatability:** 0

---

## Credit Hours

**Catalog Notation:** 4-3-5

**Credit Hour Distribution:**

Lecture: 4

Lab: 3

Clinical: 0

**Total: 5**

---

## General Course Information

### Catalog Description

Part of a two-semester sequence of general biology principles for students concentrating in life sciences or in a pre-professional health program. Topics include experimental design, data analysis, evolution, speciation, ecology, conservation of biodiversity, microorganisms, fungi, botany, zoology, and animal physiology with emphasis on human physiology. Credit not given for both BIO 101 and the BIO 141/BIO 142 sequence.

### General Course Objectives

Provide a knowledge base of general biological concepts; provide opportunities for the development of critical thinking and problem solving skills; develop some of the basic operational skills necessary to perform successfully in a biology laboratory.

### Minimum Placement Levels

English	Reading	Math
Placement out of ENG 099	Placement out of CCS 098	None

### Prerequisites

Credit in high school or college level chemistry within the last three years with a grade of C or higher

### Methods of Evaluation

10-14 objective tests, 1 objective final exam, 2 lab practicals, 3-5 formal lab reports, 1-2 movie reviews, 4 lab handouts to fill in. Independent Study Project (topic proposal, experimental design proposal, written report, PowerPoint/oral presentation).

### Instructional Materials and Additional Supplies

Biology 2e, M. Clark, M. Douglas, and J. Choi; OpenStax, 2018;

<https://openstax.org/details/books/biology-2e>

A Handbook of Biological Investigation, 7th edition; Ambrose and Ambrose, 2007

## Course Content

### General Learning Outcomes (GLOs)

- Critical Thinking and Information Literacy: Students will demonstrate the ability to evaluate perspectives, evidence, and implications, and to locate, assess, and use information effectively.

### Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Evolution	1. Describe the emergence of evolutionary thought, historical support for macroevolution, and mechanisms of evolution.	7	3	0
Speciation	1. Describe how new species can arise.	4	0	0
Animal Behavior	1. Describe the evolutionary, ecological, physiological, and genetic lineages to animal behaviors.	4	3	0
Ecology	1. Describe general principles of ecology and identify the ways in which species interact with each other.	4	3	0
Environmental and Conservation Biology	1. Describe the ways humans affect this planet and their effect on biodiversity.	4	3	0
Infectious Particles, Viruses, Bacteria, Protists, and Fungi	1. Describe the major characteristics of each taxon and their evolutionary relationships to each other.	4	6	0
Plant Anatomy and Physiology	1. Describe the major taxonomic groups; anatomy of flowering plants; and the mechanisms of growth, nutrient transport, and water transport.	7	3	0
Animal Diversity	1. Describe the major taxonomic groups within the animal kingdom and their evolutionary relationships to each other.	4	3	0
Internal Transport and Nutrition in Vertebrates	1. Describe the structure and function of the digestive, respiratory, and circulatory systems (emphasis on humans).	4	0	0
Sensing and Responding in Vertebrates	1. Describe the structure and function of the nervous system (emphasis on humans).	6	3	0
Internal Defense in Vertebrates	1. Describe the function of the immune system (emphasis on humans).	4	0	0
Embryonic Development	1. Describe the major events in embryonic development (emphasis on humans).	4	0	0
Homeostasis of Ions	1. Compare and contrast how various animals deal with nitrogenous wastes and maintain ion balances.	4	0	0
Biological Literature	1. Apply the methods most useful for finding literature in the biological sciences.	0	2	0
Experimental Design	1. Design and operate an experiment to answer a question, and evaluate its effectiveness at answering that question.	0	1	0
Introduction to Biostatistics	1. Examine raw data and identify patterns or trends in that data by choosing the statistics and graphs that best illustrate those trends.	0	3	0

<b>Course Segment</b>	<b>Learning Outcomes</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Clinical Hours</b>
Independent Study Project	1. Identify a scientific problem, propose a solution, and design and manage an experiment to solve that problem. 2. Prepare a presentation. 3. Evaluate the effectiveness of research methods used.	0	9	0
Lab Practicals	1. Demonstrate competence in use of instrumentation and in analyzing the resultant outputs.	0	3	0

**Total Contact Hours**

<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Clinical Hours</b>
60	45	0