Course Information Form (CIF)

Course Code: BIO 101 (IAI L1 900L)
Course Title: General Biology

Department: Natural Sciences
PCS Code: 1.1 - Baccalaureate/Transfer
CIP Code: 26.0101
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 3-3-4
Credit Hour Distribution:

Lecture: 3	Lab: 3	Clinical: 0	**Total: 4**

General Course Information

Catalog Description

Survey of biology for students in A.A.S. and baccalaureate-oriented programs. General principles of biology emphasizing the skills associated with the scientific method, cell and organism structure and function, evolution and ecology. Credit not given for both BIO 101 and the BIO 141-BIO 142 sequence.

General Course Objectives

- To provide students who do not intend to major in the biological sciences with an introduction to the science of living things.
- To allow students to demonstrate their ability to solve problems, by collecting and evaluating facts and using methods of scientific inquiry.

Minimum Placement Levels

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

Prerequisites

None

Methods of Evaluation

15 multiple choice quizzes, 13 short multiple choice pre-lab quizzes, 15 two-page short answer lab reports, comprehensive multiple choice final exam. 5 worksheets.

Instructional Materials and Additional Supplies

What is Life? A Guide to Biology, 5th edition by Jay Phalen, Freeman Press 2021.
General Biology Module Objectives and Lab Exercises, by Parkland College Natural Sciences Faculty, Stipes.

Course Content

General Learning Outcomes (GLOs)

- Communication: Students will demonstrate the ability to read, write, listen, and speak effectively.
- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Nature of Science	1. Formulate an understanding of ways science works with application to the biological world; distinguish science from pseudoscience within our culture. 2. Describe why a hypothesis must be testable and falsifiable. 3. Differentiate between the steps of and use the steps of the scientific method. 4. Construct a graph that effectively illustrates the data so that a conclusion regarding the hypothesis can be made.	3	3	0
Chemistry and Molecules of Life	1. Differentiate between lipids, carbohydrates, proteins, and nucleic acids. 2. Evaluate the claims seen in society today regarding the alleged health benefits of some lipids. 3. Describe how the properties of water impact everyday life.	6	6	0
Evolution	1. Express the basic principles of evolution and how they apply to the life sciences; explain why creationism and intelligent design are not science. 2. Generate a hypothesis in a natural selection simulation as to which phenotypes will increase and decrease over time. 3. Based on the data, generate an appropriate conclusion in the natural selection simulation. 4. Differentiate between mutations, natural selection, genetic drift, nonrandom mating, and migrations as mechanisms that alter allele frequencies in populations. 5. Describe the factors (found in the physiology of bacteria and factors in society) that contribute toward the evolution of antibiotic resistant bacteria.	3	3	0
Cell Structure and Function	1. State the structure of cells and explain how they function. 2. Be able to deduce which substances in an experiment can move through a dialysis tubing apparatus. 3. Differentiate between the functions of organelles found in cells and describe how the function of the cell types affect the structural features of that cell. 4. Describe how dehydration interferes with osmotic homeostasis in animals. 5. Identify the major parts of the compound microscope and be able to use each part correctly toward viewing slide specimens.	3	3	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
DNA and Genetics	1. Explain how the structure of DNA permits it to replicate and to code for proteins. 2. Based on the results of a DNA fingerprinting simulation in lab, construct a standard curve illustrating the relationship between DNA fragment size and distance the fragments move. Also be able to extrapolate an unknown DNA fragment size based on the electrophoresis results and the standard curve. 3. Describe the major structural elements in DNA and RNA.	6	6	0
Biotechnology	1. Explain the nature of basic biotechnological techniques and how biotechnology issues affect everyday life. 2. Differentiate between a hypothesis and a prediction as they pertain to how environmental factors affect an enzyme. 3. Make an accurate conclusion regarding how various environmental factors affect the rate at which an enzyme functions based on the data collected in lab. 4. Describe how PCR is used to detect human gene mutations in medical science.	3	3	0
Bioenergetics	1. Discuss the Laws of Thermodynamics and how they apply to everyday life; explain in general terms photosynthesis and cellular respiration. 2. Make effective hypotheses pertaining to photosynthetic activity and test these hypotheses in lab. 3. Make effective hypotheses pertaining to substances that affect the rate of cell respiration in yeast and test those hypotheses. 4. Construct graphs based on the data collected in each of the cell respiration labs and then draw appropriate conclusions based on the trends and patterns seen on the graph. 5. Evaluate the effectiveness of the various ingredients found in energy drinks. 6. Describe the major steps and processes of photosynthesis. 7. Describe the major steps and processes of cellular respiration.	6	6	0
Chromosomes and Cell Division	1. Describe how meiosis maintains theme and variation in the inheritance of traits. Differentiate between the inheritance patterns of some genetic conditions found throughout the world. 2. Describe how traits are passed on from parents to offspring. 3. Determine the likelihood of a man and a woman having a child that exhibits a particular trait or genetic condition.	3	3	0
Ecology	1. Discuss the interconnectedness of all living things on the planet. 2. Evaluate the issues associated with human population growth in various countries throughout the world. 3. Describe what any given species' niche is and how other organisms may affect that species' niche.	6	6	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Conservation and Biodiversity	1. Explain some of the impacts that humans have had on the biosphere. Evaluate some of the monetary and non-monetary benefits of maintaining biodiversity. Evaluate the costs and benefits of various sustainable practices in society today. 2. Formulate a hypothesis regarding the effect of sulfuric acid (acid deposition) on phytoplankton biodiversity and describe the importance of phytoplankton to an ecosystem. 3. Collect data after performing a bioassay on phytoplankton to determine how sulfuric acid impacts the biodiversity of the phytoplankton based on the data collected.	3	3	0
The Origin and Diversification of Life On Earth	1. Describe the biochemical origins of life. 2. Differentiate between sympatric and allopatric speciation. 3. Differentiate between punctuated equilibrium and gradualism. 4. Differentiate between pre-zygotic and post-zygotic isolating mechanisms. 5. Be able to identify the major concepts associated with the biological species concept and the morphological species concept.	3	3	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	45	0