

**Course Code:** BIO 107 (IAI L1 907L)

**Course Title:** Introduction to Evolution

**Department:** Natural Sciences

**Effective Date:** Summer 2026

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

**CIP Code:** 26.0101

**Repeatability:** 0

---

## Credit Hours

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

**Credit Hour Distribution:**

Lecture: 3

Lab: 3

Clinical: 0

**Total: 4**

---

## General Course Information

### Catalog Description

Topics include the philosophy of science, molecular bases of genetic variation, inheritance, speciation, geological and astronomical bases of biological evolution, history of evolutionary thought, origin of life, and application of evolution on modern society.

### General Course Objectives

- To provide students with an introduction to the basic principles of evolution.
- To develop a biological and scientific literacy, i.e., provide students with the biological knowledge they need to become productive, contributing citizens.
- To access the internet and use it as a resource to gather information.

### Minimum Placement Levels

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

### Prerequisites

None

### Methods of Evaluation

13-15 module quizzes, one 2-5 page essay exam, 13-15 lab reports, 13-15 discussion posts, and 13-15 reading assignments.

### Instructional Materials and Additional Supplies

Custom book compiled from [Hoefnagels Biology: The Essentials](#) and [Brooker Biology](#), Various Authors; Mc-Graw-Hill Create

## Course Content

### General Learning Outcomes (GLOs)

- 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
What Is Science	<ol style="list-style-type: none"> <li>Describe why Creationism is not science.</li> <li>Differentiate between science and pseudoscience.</li> <li>Explain why falsifiability is important in science.</li> <li>Identify at least three instances in American culture where an organization or individual claims to have scientific backing but is false science. Explain why their claims may not be scientific.</li> <li>Formulate a hypothesis regarding a contrived situation, collect data, graph the data using a spreadsheet program, and formulate a conclusion regarding the hypothesis.</li> </ol>	3	3	0
Historical Basis of Modern Biological Evolution	<ol style="list-style-type: none"> <li>Describe the cultural and scientific advancements that brought about the development of modern evolutionary theory (emphasis on the 19th century).</li> <li>Describe the major cultural and religious principles that impeded the acceptance of evolutionary theory (emphasis on the 19th century).</li> </ol>	3	3	0
Biological Molecules and Chemical Evolution	<ol style="list-style-type: none"> <li>Recognize basic chemistry regarding proteins, lipids, carbohydrates, and nucleic acids.</li> <li>Describe how the early Earth's conditions may have contributed to the evolution of biological macromolecules.</li> <li>Identify the major chemical and structural components of DNA by building a model of DNA. Describe this in a short presentation.</li> <li>Describe some chemicals that organisms have evolved to make that have significant impacts on our society.</li> </ol>	3	3	0
Cells and Cellular Evolution	<ol style="list-style-type: none"> <li>State the structure of cells and explain how they function.</li> <li>Create two model cells (prokaryotic and eukaryotic) that illustrate the similarities and differences between the two cell types.</li> <li>Describe how eukaryotic cells and multicellularity may have evolved among life.</li> <li>Describe how a faulty organelle may cause a disease in a person.</li> <li>Process a data set containing sizes of various cell types and convert that data into an appropriately formatted graph illustrating size differences between prokaryotes and eukaryotes.</li> </ol>	3	3	0
DNA and Gene Expression	<ol style="list-style-type: none"> <li>Describe the flow of genetic information within the cell pertaining to the production of proteins.</li> <li>Evaluate the effect a mutation has upon a protein and ultimately the physical features or functioning of a person's physiology.</li> <li>Make and record observations about the function of the genetic code. Based on these observations, make appropriate conclusions as to how modifying the genetic code may affect a protein.</li> </ol>	3	3	0
DNA Replication and Asexual Reproduction	<ol style="list-style-type: none"> <li>Explain the roles and stages of mitotic cell division among eukaryotes.</li> <li>Describe the function of binary fission among prokaryotes.</li> <li>Assess the advantages and disadvantages of asexual reproduction.</li> <li>Describe the difference between somatic and germ-line mutations.</li> <li>Provide examples of common mutagens found in society today.</li> </ol>	3	3	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Sexual Reproduction and Genetic Variation	<ol style="list-style-type: none"> <li>Describe the movement of chromosomes during meiosis and how the movements contribute to genetic variation.</li> <li>Identify an agriculturally important crop, and then illustrate and evaluate the importance of maintaining its genetic variation in agricultural practices and conservation.</li> <li>Generate a hypothesis regarding the reproductive rates of asexual reproducers and sexual reproducers. Collect data regarding their reproductive rates. Make a graph and formulate a conclusion regarding the hypothesis based on the data. Go through a similar process regarding the genetic variation between asexual and sexually reproducing organisms.</li> </ol>	3	3	0
Patterns of Inheritance	<ol style="list-style-type: none"> <li>Describe the basic principles of genetics as it applies to evolution.</li> <li>Identify the inheritance pattern of a medically significant heritable disease.</li> <li>Describe how meiosis plays a role in inheritance of traits and genetic variation.</li> </ol>	3	3	0
Species Interactions	<ol style="list-style-type: none"> <li>Discuss the major ways organisms interact with each other (largely at community and ecosystem levels) and how evolution has shaped those interactions.</li> <li>Describe what an evolutionary arms race is and provide examples.</li> <li>Describe how the idea of an evolutionary arms race can be applied to modern agricultural practices today.</li> </ol>	3	3	0
Micro-evolution	<ol style="list-style-type: none"> <li>Describe how mutations, migrations, genetic drift, nonrandom mating, and natural selection can each change allele frequencies in a population over time.</li> <li>Identify examples of micro-evolution occurring in medically significant bacteria and viruses.</li> <li>Generate hypotheses regarding the role random chance plays between two mechanisms of evolution: Natural Selection and Genetic Drift. Collect data and generate graphs based on that data, and formulate a conclusion regarding the relative roles of random chance on each process.</li> </ol>	3	3	0
Evidence for Evolution	<ol style="list-style-type: none"> <li>Identify several evidences for evolution across all levels of life (from molecular to ecological levels).</li> <li>Describe examples of how the human body is not perfectly adapted for walking upright.</li> </ol>	3	3	0
Speciation and Extinction	<ol style="list-style-type: none"> <li>Describe the origin of a species.</li> <li>Differentiate between sympatric and allopatric speciation.</li> <li>Describe why many biologists think life is currently undergoing a mass extinction event.</li> <li>Identify examples of human activity in the news that negatively impact an ecosystem's diversity (i.e. genetic, species, habitat).</li> <li>Collect data and organize the data into data tables showing how the distance of an island from the mainland affects speciation events within a taxonomic group of lizards.</li> </ol>	3	3	0
Taxonomy and Systematics	<ol style="list-style-type: none"> <li>Differentiate between taxonomy, a phylogeny, and systematics.</li> <li>Explain the hierarchy of life (three domains to species).</li> <li>Identify the major principles of systematic analysis.</li> <li>Construct cladograms/phylogenies from a data set using cladistical principles.</li> </ol>	3	3	0

<b>Course Segment</b>	<b>Learning Outcomes</b>	<b>Lecture Hours</b>	<b>Lab Hours</b>	<b>Clinical Hours</b>
History of Life on Earth and Human Evolution	<ol style="list-style-type: none"> <li>1. Describe how fossils are formed and how they are dated and used as evidence for evolution.</li> <li>2. Describe the occurrence of the major events in life on a geological timescale.</li> <li>3. Differentiate between the major events of life that occurred in the Precambrian, Paleozoic, Mesozoic, and Cenozoic time periods.</li> <li>4. Describe the major structural changes in human ancestry as humans branched off from the ape group.</li> <li>5. Hypothesize which hominin skulls are more ancestral and which are more derived.</li> <li>6. Collect data based on skull characteristics, and make a conclusion regarding the relative age of each skull.</li> </ol>	3	3	0
Biodiversity and Mass Extinction	<ol style="list-style-type: none"> <li>1. Describe why biodiversity is important to conserve at the molecular levels up to the ecological levels.</li> <li>2. Identify an example of an organism evolving as a response to human activity and evaluate its impact on humans (i.e. medically, agriculturally, etc.).</li> <li>3. Collect data and construct a data table depicting the amplification of a pollutant in an ecosystem.</li> <li>4. Assess how the pollutant may affect the evolution of organisms at different trophic levels.</li> </ol>	3	3	0

**Total Contact Hours**

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