

Inver Hills Community College

BIOL 1155: Principles of Biology II

A. COURSE DESCRIPTION

Credits: 5

Lecture Hours/Week: 4

Lab Hours/Week: 3

OJT Hours/Week: *.*

Prerequisites:

This course requires the following prerequisite

BIOL 1154 - Principles of Biology I (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: Goal 02 - Critical Thinking, Goal 03 - Natural Science

Introduces important biological principles and is intended for biology and biology-related majors. It is the second of a 2-semester course series and, also serves as a prerequisite for several other subsequent biology courses that are part of the Biology Minnesota State Transfer Pathway (AS-P). There is an emphasis on organism to ecosystem levels of biology surrounding the core theme of evolution. Topics include the origin of life, population evolution, phylogenetic classification, ecology, and biodiversity. Labs emphasize the process of scientific inquiry where students study organisms, their comparative anatomy, and their interrelationship with the environment through research projects. Lab exercises involve individual and group work in campus lab facilities and field studies off-campus. Students will gain hands-on experience in the safe handling and use of living and preserved organisms as well as laboratory instruments and equipment.

B. COURSE EFFECTIVE DATES: 08/01/2007 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Evolution - Mechanisms 21%
2. Ecology - Environmental factors and interdependence (3%), Population ecology and growth (7%), Community ecology (7%), Ecosystem energy flow and nutrient cycling (7%), Human impact on resources and conservation (3%)
3. Phylogenetic classification: Macrodiversity: prokaryotes, protists, plants, fungi and animals (30%).
4. Biodiversity - Morphologic diversity/adaptations and influence of environment (17%)
5. Origin of Life - Prebiotic earth; Initiation of Life (12%)

D. LEARNING OUTCOMES (General)

- 1) Understand and apply knowledge of plant biology, animal biology, evolution and diversity, and ecology.
- 2) Recall, explain, and apply concepts, knowledge, and vocabulary of biology at the level necessary for success in subsequent biology courses for science majors.
- 3) Demonstrate understanding of scientific theories in biology.
- 4) Demonstrate quantitative reasoning skills at a level appropriate for subsequent courses in biology for science majors.
- 5) Distinguish between and demonstrate appropriate use of primary and secondary scientific literature.
- 6) Formulate and test hypotheses by performing laboratory experiments in biology that include the collection of data, statistical analysis, graphical presentation of results, and interpretation of sources of error and uncertainty.
- 7) Communicate experimental findings both orally and in writing.
- 8) Understand and apply knowledge of use of the microscope and other biological laboratory equipment, and apply that knowledge in the proper conduct and interpretation of laboratory investigations.
- 9) Demonstrate current standard lab /field safety practices and procedures.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 02 - Critical Thinking

1. Gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected.
2. Imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives which can give alternative meanings or solutions to given situations or problems.
3. Analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim; generate and evaluate implications that follow from them.
4. Recognize and articulate the value assumptions which underlie and affect decisions, interpretations, analyses, and evaluations made by ourselves and others.

Goal 03 - Natural Science

1. Demonstrate understanding of scientific theories.
2. Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.
3. Communicate their experimental findings, analyses, and interpretations both orally and in writing.
4. Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted