

Anoka-Ramsey Community College

BIOL 1106: Principles of Biology I

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 3

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

(MnTC Goal 3)

Corequisites: CHEM 1020 or 1050 or 1061 with a grade of C or better or HS chemistry within the last three years

Recommended Skills, Abilities, or Coursework: College-level reading, writing, and math skills. Strongly recommended that Chem 1020 or 1050 or 1061 be completed with a grade of "C" or higher PRIOR to BIOL 1106

This course is intended for students interested in biology-related majors, including environmental science and the health sciences. This course is also the first of a two-semester sequence intended for Biology majors. This course includes topics in the process of science, chemistry of life, metabolism, cell structure and processes, inheritance patterns, the molecular basis of inheritance, and evolution. Corequisite course may be taken at any time prior to, or along with, this course. The course meets for three lecture hours and three laboratory hours per week. This course is not intended for non-majors.

B. COURSE EFFECTIVE DATES: 06/01/1998 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Science as a process
 - a. observing, generating hypotheses, and predictions
 - b. application of experimental design
 - c. analyzing and reporting experimental findings
 - d. use of tools of biological investigation
2. Chemical context of life
 - a. characteristics of atoms, molecules, and bonding in living organisms
 - b. properties of aqueous solutions
 - c. the properties and categories of biological macromolecules
3. Cells
 - a. cell theory
 - b. prokaryotic and eukaryotic cells
 - c. structure and generalized function of cells (cytoplasm, organelles, nucleus)
 - d. membrane structure and function
 - e. membrane transport, including osmosis, facilitated diffusion, and active transport
 - e. general themes of metabolism, including cellular respiration and photosynthesis, enzyme function and control
4. Cell division and control
 - a. mitosis
 - b. meiosis
5. Inheritance
 - a. Mendelian patterns of inheritance
 - b. the chromosomal basis of heredity
 - c. genetic mechanisms
6. DNA
 - a. the nature of DNA
 - b. gene expression/protein synthesis
 - c. DNA technology
7. Evolution
 - a. the evidence for descent with modification
 - b. the process of natural selection

D. LEARNING OUTCOMES (General)

1. Understand and apply knowledge of biochemistry, general cell structure and physiology, metabolism, genetics, and evolution
2. Recall, explain and apply concepts, knowledge, and vocabulary of biology at the level necessary for success in a second semester general biology course for science majors
3. Demonstrate understanding of scientific theories in biology
4. Demonstrate quantitative reasoning skills at a level appropriate for second semester science majors
5. 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
6. Communicate experimental findings both orally and in writing
7. 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

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

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