

Alexandria Technical and Community College

BIOL 1450: General Biology I

A. COURSE DESCRIPTION

Credits: 4

Lecture Hours/Week: 3

Lab Hours/Week: 1

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: Goal 03 - Natural Science

This course meets Minnesota Transfer Curriculum (MnTC) goal area 3. This course is designed as an introduction to the basic life process at the cellular level, including biological molecules, energy and enzyme metabolism, cell types, cell structure and function, cell communication division and regulation, and classical and molecular genetics. Laboratory work including microscopy will be performed.

Prerequisite: Previous courses in biology and a basic knowledge of chemistry is recommended.

B. COURSE EFFECTIVE DATES: 08/22/2016 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Recognize the structure and properties of biological molecules and their interactions within the cell.
2. Describe the synthesis as well as the cellular destination and purposes of biomolecules within the cell.
3. Discuss several cellular metabolic processes including enzymatic roles and regulations in metabolism.
4. Compare and contrast archaea, prokaryotic and eukaryotic cell types.
5. Compare and contrast eukaryotic cells types: animal, plant, fungi.
6. Discuss and understand different types of microscopy and the workings and components of the compound microscope.
7. Perform microscopy experiments and explore the microscopic appearances of cellular structures.
8. Discuss and understand the structure and function of cellular components such as plasma membrane, cytoplasmic organelles and the nucleus.
9. Describe cellular communication and cell to cell interaction.
10. Illustrate the stages of mitosis, meiosis, the cell cycle and observe mitosis microscopically.
11. Interpret Mendelian genetics.
12. Demonstrate an understanding of the chromosomal basis of inheritance.
13. Understand apoptosis mechanisms and pathways.
14. Perform techniques, develop skills and explore methods common to cell biology including microscopy and molecular biology labs and experiments.

D. LEARNING OUTCOMES (General)

1. The learner will demonstrate knowledge of the biological chemistry and molecular interactions within the cell.
2. The learner will demonstrate knowledge of enzymes, cellular metabolism and photosynthesis.
3. The learner will demonstrate a basic knowledge of prokaryotic, eukaryotic and archaea cell types.
4. The learner will demonstrate knowledge of cell component structure and function as well as cell communication.
5. The learner will demonstrate knowledge of the cell cycle and apoptosis.

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.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted