

# BIO 111 General Biology I

## COURSE DESCRIPTION:

Prerequisites: DRB97, or ENG 002; DMA10, DMA020, DMA030, DMA040, DMA 050 or MA-D03 Tier 2

Corequisites: None

This course introduces the principles and concepts of biology. Emphasis is placed on basic biological chemistry, molecular and cellular biology, metabolism and energy transformation, genetics, evolution, and other related topics. Upon completion, students should be able to demonstrate understanding of life at the molecular and cellular levels. This course has been approved for transfer under the Comprehensive Articulation Agreement as a general education course in Natural Science.

Course Hours Per Week: Class, 3. Lab, 3. Semester Hours Credit, 4.

## LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

1. Conduct hypothesis testing, experimental design, and critical analysis of data.

traits and heritable characteristics.

processes, energy, and organization.

evolution.

## OUTLINE OF INSTRUCTION:

- I. Basic biological chemistry
  - A. Matter and bonding
  - B. Properties of water
  - C. pH and buffers
  - D. Biological molecules (carbohydrates, lipids, nucleic acids, amino acids)
- II. Molecular and cellular biology
  - A. Prokaryotic vs. eukaryotic cells
  - B. Membranes of the cell and organelles
  - C. Cellular organization
  - D. Cellular transport
  - E. Cell signaling
  - F. Mitosis
  - G. DNA replication, transcription, and translation
- III. Metabolism and energy transformation
  - A. Enzymes and enzymatic reactions/metabolism
  - B. Energy and ATP
  - C. Aerobic and anaerobic respiration
  - D. Photosynthesis
- IV. Genetics
  - A. Mendelian genetics and exceptions to Mendelian genetics
  - B. Sex Linkage
  - C. Meiosis
  - D. Mutation and genetic change

- V. Evolution
  - A. Origin of life and phylogeny
  - B.