

PRINCIPLES OF BIOLOGY I

Catalog data:

The first half of a comprehensive study of contemporary biology, this semester covers biochemistry, cytology, photosynthesis, energy metabolism, cell division, genetics, evolution, systematics and taxonomy of viruses, bacteria, protists, and fungi.

Objectives:

To provide a basic understanding of the concepts of modern biology, emphasizing the flow of energy in living systems, transmission of information, correlation between structure and function at all levels of biological organization, evolution and diversity of life.

- Lecture: 3 credits.
- Discussion: 1 meeting per week.
- Prerequisites: none
- Corequisite: BIOL 111L laboratory
- Course designed for biology majors and it is a prerequisite to all other biology courses.

Text: Biology, 8th. Ed., 2008, by N. A. Campbell and J. B. Reece. Benjamin Cummings.

Prerequisites by topics:

- The student should have developed the necessary skill in reading and writing.
- Basic knowledge of biology (high school biology).
- Basic knowledge of chemistry (high school chemistry).

TENTATIVE LECTURE AND EXAM SCHEDULE

LECTURE TOPIC	CHAPTER
Introduction: themes in the study of life.	1
Chemical basis of life.	2
Water and the fitness of the environment.	3
Carbon: its importance, functional groups	4
Macromolecules: structure and function.	5
Cell structure and function.	6
Cell membranes: structure and function.	7
Metabolism, enzymes and metabolic control.	8
Cellular respiration: glycolysis, etc.	9

Photosynthesis: Light and dark reaction.	10
Cell communication: signal reception, etc.	11
Cell cycle: mitosis.	12
Meiosis.	13
Mendelian genetics.	14
Chromosomal basis of inheritance.	15
Molecular basis of inheritance: DNA.	16
Genes and proteins: transcription, etc.	17
Regulation of gene expression	18
Viruses	19
Evolution: Darwinian concepts	22
Population genetics	23
Speciation and macroevolution	24
Bacteria and Archaea	27
Protists	28
Fungi	31