

Principles of Biology Bio101 – SUNY Mandated Culliculum -

Survey of the key concepts including biological chemistry, cell structure and function, organization of multicellular organisms, genetics, evolution and ecology.

Course Goals:

Upon completion of the course the student will have a basic understanding of the field of Biology, including:

1. An understanding of the basic chemistry of life.
2. A knowledge of the basic processes and energetics of living organisms, including cellular metabolism and photosynthesis.
3. An understanding of cell structure and function
4. An understanding of the six different kingdoms of organisms and their evolutionary relationships.
5. A basic knowledge of genetics and DNA.
6. An appreciation of ecology and major world biomes.
7. An understanding of evolutionary processes that have lead to biodiversity.

Course Objectives (can not be adjusted or rephrased)

By means of lectures, laboratory exercises, demonstrations and readings, the students will be able to:

1. Explain and describe the major organic molecules that living organisms are composed of.
2. Explain, interpret and integrate the concepts of matter and energy as they relate to the functions of biological systems.
3. Describe cell structure and function of both prokaryotic and eukaryotic organisms.
4. Explain and interpret the idea that DNA and its related molecules (The Central Dogma) is sufficient to explain the physical and chemical functioning of a living system.
5. Explain, interpret and integrate the interrelationships of biological systems and processes from the perspective of evolutionary theory.
6. Explain and compare the similarities and differences seen in life's major structural and metabolic adaptations.
7. Use the scientific method to perform laboratory experiments and quantitatively analyze data.

Programs that require this course:

None

Major Topics with Approximate Time Distribution

Topic	# Weeks
Introduction to Biology, Characteristics of Life Scientific Method	1
Chemistry-Inorganic, chemical bonds, Chemical molecules of life Enzymes	2.0
Cell Structure & function Membrane structure & function	2
Energetics, Photosynthesis & Cellular Respiration	3
Genetics-DNA Structure, DNA Replication, Protein Synthesis, Mendelian Genetics Biotechnology to optional.	3
Classification, Survey of the Domains and kingdoms of living organisms	1
Evolution	2.0
Ecology	<u>1.0</u>
Total	15

Prerequisites:

MA07 or equivalent

Courses that require BIO101 as prerequisite:

BY18 Topics in Human Biology, BY29 Biotechnology in our fast growing world and BY20, Field Biology.

External Jurisdiction:

None

Supporting Information:**Optional topics:**

In addition to the standard topics, the instructor could add any of the following to their curriculum to complete the curricular semester:

Concepts in:

Human biology

Plant Biology

Conservation Biology

Comparative Biology

Biology in the News

Biotechnology

Evaluation of Student Performance:

See assessment document. Student performance will be evaluated through lecture exams, quizzes, laboratory practicals, homework, lab write-ups, and research papers at the discretion of the instructor. See assessment guidelines.