Syllabus

BIO 121 General Biology I

General Information

Date May 18th, 2023

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Course Prefix BIO

Course Number 121

Course Title General Biology I

Course Information

Catalog Description This lab-based course is intended to provide an overview of the basic principles of biology for students pursuing degrees in science or mathematics. Topics include scientific inquiry, biochemistry, cell structure and function, cell metabolism, and genetics.

Credit Hours 4

Lecture Contact Hours 3

Lab Contact Hours 2

Other Contact Hours 0

Grading Scheme Letter

Prerequisites

Successful completion of all required remedial courses

Co-requisites

None

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed categories
Natural Sciences and Natural Sciences (and Scientific Reasoning)

FLCC Values

Institutional Learning Outcomes Addressed by the Course
Inquiry

Course Learning Outcomes

Course Learning Outcomes

1. Describe the connection between biochemical and cellular structures and their functions.
2. Explain cellular metabolic processes and the roles they play in the life of an organism.
3. Utilize basic laboratory techniques to conduct experiments.
4. Design laboratory experiments and report on conclusions based on data analysis

Outline of Topics Covered

A. Introduction
    1. Biology as a science
    2. Scientific method
B. Basic Chemistry
    1. Atomic structure
    2. Chemical bonds
    3. Chemistry of water
    4. Organic functional groups
    5. Carbohydrates: structure and function in living organisms
    6. Lipids: structure and function in living organisms
    7. Proteins: structure and function in living organisms
    8. Nucleic acids: structure and function in living organisms
C. Principles of Metabolism
    1. Energy
    2. Thermodynamics
    3. Endergonic and exergonic reactions
    4. Enzymes
D. Cell Membrane Structure and Function
    1. Membrane structure
    2. Passive and active transport mechanisms
E. Cell Structure and Function
    1. Prokaryotic vs. eukaryotic cells
    2. Eukaryotic cell organelles
    3. Animal vs. plant cells

F. Photosynthesis
    1. Light dependent reactions
    2. Light independent reactions
    3. C3 vs C4 pathway
G. Cellular Respiration
    1. Glycolysis and pyruvate formation
    2. Aerobic respiration
    3. Anaerobic respiration/fermentation
H. DNA
    1. Molecular structure
    2. DNA replication
    3. Gene expression
    4. DNA mutations and protein function
    5. Cellular Reproduction
    6. Prokaryotic cell division
    7. Chromosome structure
    8. Eukaryotic cell cycle
    9. Mitosis and cytokinesis
    10. Meiosis
    11. Genetics and Inheritance
    12. Monohybrid and dihybrid crosses
    13. Sex-linked inheritance
    14. Incomplete dominance and codominance
    15. Genetic disorders
    16. Genetic problem solving
    17. Biotechnology
    18. Recombinant DNA
    19. Methods in biotechnology