

Course Objectives/Course Outline
Spokane Community College

Course Title: Majors Cell/Molecular: w/Lab

Prefix and Course Number: BIOL& 222

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Explain the importance of water in biology
- Describe the structure and function of biological macromolecules
- Describe the structure and function of cellular components
- Differentiate prokaryotic vs. eukaryotic cell structure
- Explain cellular mechanisms for harvesting energy from food
- Explain energy transfers through photosynthesis
- Describe the roles of mitosis and meiosis
- Explain the relationships between DNA, genes and proteins
- Describe chromosomal inheritance and perform calculations to predict genotypic and phenotypic ratios
- Compare and contrast viral, prokaryotic, and eukaryotic genetics

Course Outline:

- I. Introduction to Biology
 - A. Chemistry of Life
 - B. Biological Molecules
- II. Cells
 - A. Prokaryotes vs. Eukaryotes
 - B. Eukaryotic Cell Structure
 - C. Intercellular Communication
 - D. Membrane Structure and Function
- III. Cellular Respiration
 - A. Energy & ATP
 - B. Glycolysis
 - C. Krebs cycle
 - D. Electron Transport and Chemiosmosis
 - E. Fermentation
- IV. Photosynthesis
 - A. Light Reactions
 - B. Calvin Cycle
 - C. Photorespiration, C4, and CAM
- V. The Cell Cycle
 - A. Regulation
 - B. Mitosis
 - C. Meiosis
 - D. Fertilization
- VI. Genetics
 - A. Mendelian Genetics
 - B. DNA structure and replication
 - C. Gene Expression
 - D. Microbial Genetics
 - E. DNA Technology

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