Northwest Arkansas Community College
Division of Science & Mathematics

BIOL 0112 Introduction to Life Science

Catalog Description: Basic concepts in chemistry, and cellular structure and function are presented. This course benefits any student who wishes to refresh his/her basic knowledge and understanding of life science. Successful completion of this course demonstrates prerequisite proficient knowledge of biological concepts necessary for success in human Anatomy and Physiology (BIOL 2214 & 2224)

Prerequisite: none

Credit / Contact / Load hours: 2/2/2

Target Audience & Transfer: This course is designed for students wishing to enter Anatomy and Physiology I (BIOL 2214) but do not have a strong background in the life sciences (if, for example, they score below 23 on the Biological Concepts Proficiency Test). The presentation of essential chemical and cellular concepts should increase student success in college level biology courses. The biology faculty feels this course should be considered a second alternative to taking college level biology in preparation for Anatomy & Physiology. Students with weak science backgrounds may also take this course to prepare for Principles of Biology. The course is developmental and does not transfer.

Student Learning Outcomes: Students completing this course will:

- Use their knowledge basic chemical concepts to help students understand cellular metabolism and human physiology.
- Describe the basic structure and function of the cell.
- Define and use basic biological and chemical terminology.
- Employ study skills that enhance success in science courses.

Required Text(s):

- Martini, Fundamentals of Anatomy & Physiology, 8th edition, 2010, Pearson

Topics:

- Organization of Matter
  - Chemical elements
  - Structure of atoms
  - Radiation and the atom
- Chemical Bonding
  - Ionic
  - Covalent
  - Hydrogen
  - Hydrophobic interactions
- Chemical Reactions
  - Synthesis
  - Decomposition
  - Exchange
  - Oxidation and Reduction

    - Equilibrium
    - Energy
    - Catalysts
- Solution Chemistry
    - Properties of Water
    - Properties of Solutions
    - Electrolytes
    - Acids, Bases, Salts
    - pH and Buffers
- Biological Molecules
    - Carbohydrates
    - Proteins
    - Lipids
    - Nucleic Acids
    - Enzyme function
- Cell Membrane
    - Structure
    - Movements across
        - Passive
        - Active
    - Tonicity
- Cellular Organelles
- Cell Respiration
- Protein Synthesis
    - Transcription
    - Translation
    - Mutation
- Cell Division
    - DNA Replication
    - Mitosis
    - Meiosis
- The Metric System

Required Methods of Instruction: None required.

Forms of Assessment Students receive a Satisfactory or Unsatisfactory instead of a letter grade. A satisfactory grade is based on student performance on a comprehensive final exam.