NorthWest Arkansas Community College
Science Division Course Outline

ACSK 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. Students may take this course to demonstrate proficient knowledge of biological concepts required for human anatomy and physiology. Lecture three hours per week for 10 weeks.

Prerequisite:

none

Credit hours/ Contact hours/ Load hours:

2/3 (for 10 weeks)/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 Test). The presentation of essential chemical and cellular concepts should increase student success in college level biology courses. The biology faculty feel 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 for college credit.

Support of Institutional Outcomes:

Upon completion of this course, students should be able to:

Knowledge:

1. Use their knowledge basic chemical concepts to help students understand cellular metabolism and human physiology.

2. Describe the basic structure and function of the cell.

3. Define and use basic biological and chemical terminology.

Academic skills:

4. Employ study skills that enhance success in science courses.

Required Text(s):

Lewis, Ricki, Beginnings of Life, 2th edition.
Dubuque, IA. : Wm. C. Brown Publishers, 1995.*

* The A&P text is also acceptable for those concurrently enrolled in A&P

Optional Text(s):

None

Topics:

I. Organization of Matter
   - A. Chemical elements
   - B. Structure of atoms
   - C. Radiation and the atom

II. Chemical Bonding
   - A. Ionic
   - B. Covalent
   - C. Hydrogen
   - D. Hydrophobic interactions

II. Chemical Reactions

A. Synthesis
B. Decomposition
C. Exchange
D. Oxidation and Reduction
E. Equilibrium
F. Energy
G. Catalysts

IV. Solution Chemistry
A. Properties of Water
B. Properties of Solutions
C. Electrolytes
D. Acids, Bases, Salts
E. pH and Buffers

V. Organic Chemistry
A. Carbohydrates
B. Proteins
C. Lipids
D. Nucleic Acids
E. Enzyme function

VI. Cell Membrane
A. Structure
B. Movements across
1. Passive
2. Active
C. Tonicity

VII. Cellular Organelles

VIII. Cell Respiration

IX. Protein Synthesis
A. Transcription
B. Translation
C. Mutation

X. Cell Division
A. DNA Replication
B. Mitosis
C. Meiosis

XI. The Metric System

Required Methods of Instruction:
None required. A lecture outline with objectives and worksheets are available.
Students receive a Satisfactory or Unsatisfactory instead of a letter grade.

Required Forms of Assessment:
Chemistry and Cell competency exam will be given as a final. Students must score at least a 23 on the exam to earn a satisfactory mark.

Resources
Library holdings include numerous videos over course content.
The learning lab has interactive CDs that students may use to enhance their learning.