

Des Moines Area Community College

Academic Achievement Center

2006 DMAACC Boulevard

Ankeny, Iowa 50023-3993

Phone: (515) 965-7148

Course: **Preadmission Biology I** (First of two parts)

CRN: **12349**

Prerequisites: None

Textbook: Structure and Function of the Body, 12th edition.

Author: Thibodeau and Patton

Publisher: Mosby, Inc.

Course Description: This is a noncredit, independent study course. It is designed to prepare students who lack a high school biology course or are under prepared for college level course(s) in human anatomy and physiology.

In Biology I the topics covered include: an introduction to the structure and function of the human body, cells and tissues, the skeletal system, the muscular system, the nervous system and the senses.

The student will be tested at the end of each chapter.

Course Competencies: The student successfully completing this course has mastered the following competencies:

- 1 Examine and describe anatomical concepts and landmarks.**
 - 1.1 List and discuss in order of increasing complexity the levels of organization.**
 - 1.2 List and describe anatomical positions.**
 - 1.3 Identify and describe anatomical planes and directional terms relating to the human body.**
 - 1.4 List the major cavities of the human body and their subdivisions.**

- 1.5 Identify the nine abdominopelvic regions of the human body.
- 1.6 Apply the correct anatomical term to given medical/surgical examples.
- 1.7 Explain homeostasis and provide an example of a homeostatic mechanism.

2 Identify the chemistry associated with life.

- 2.1 Define the terms atom, element, molecule and compound.
- 2.2 Describe the structure of an atom.
- 2.3 Compare and contrast ionic and covalent types of chemical bonding.
- 2.4 Distinguish between inorganic and organic chemical compounds.
- 2.5 Discuss the chemical characteristics of water.
- 2.6 Explain the concept of pH.
- 2.7 Discuss the structure and function of the following types of biochemical molecules: carbohydrate, lipid, protein and nucleic acid.

3 Examine and describe the structures and functions of generalized human cell and of various tissues.

- 3.1 Identify and describe the three major components of a cell.
- 3.2 Identify the cell's organelles and describe their function.
- 3.3 Identify and describe the stages of mitosis.
- 3.4 Describe active and passive molecular transport systems.
- 3.5 Identify the types of epithelial tissue and describe each of their functions.
- 3.6 Identify the types of connective tissue and describe each of their functions.
- 3.7 Identify the types of muscle tissue and describe each of their functions.
- 3.8 Identify the types of nervous tissue and describe each of their functions.

6 Examine and describe the skeletal system.

- 6.1 List and discuss the generalized functions of the skeletal system.
- 6.2 Identify the major anatomical structures found in a long bone.

6.3 Identify the parts of the skeletal system.

6.4 Explain how bones are formed, grow and are remodeled.

6.5 Identify and describe the two major subdivisions of the human skeleton and list the bones found in each subdivision.

7 Examine and describe the muscular system.

7.1 Compare the three major types of muscle tissue.

7.2 Identify and describe the microscopic structure of a sarcomere and motor unit.

7.3 Discuss how a muscle is stimulated and compare the major types of skeletal muscle contractions.

7.4 Identify the major muscles.

7.5 Describe the functions of each major muscle.

7.6 Explain the common types of movement produced by skeletal muscles.

8 Examine and describe the nervous system.

8.1 Describe the organs and divisions of the nervous system.

8.2 Describe the generalized functions of the nervous system as a whole.

8.3 Identify and describe the major types and functions of the cells in the nervous system.

8.4 Identify the components of a three neuron reflex arc.

8.5 Describe the propagation of a nerve impulse along a nerve fiber and across a synapse.

8.6 Identify the major anatomical components of the brain and briefly describe their function.

9 Examine and describe the senses.

9.1 Classify sense organs as special or general and explain the basic differences between these two groups.

9.2 Discuss how stimuli are converted to sensation.

9.3 Identify the structural components of the eye and ear and describe the function of each component.

