BIO 163 Basic Anatomy and Physiology

COURSE DESCRIPTION:

Prerequisites: DRE-097, or ENG-002, or satisfactory score on placement test.
Corequisites: None

This course provides a basic study of the structure and function of the human body. Topics include a basic study of the body systems as well as an introduction to homeostasis, cells, tissues, nutrition, acid-base balance, and electrolytes. Upon completion, students should be able to demonstrate a basic understanding of the fundamental principles of anatomy and physiology and their interrelationships. *This course has been approved for transfer under the Comprehensive Articulation Agreement as a premajor and/or elective course requirement.*
Course Hours Per Week: Class, 4. Lab, 2. Semester Hours Credit, 5.

LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

1. Identify basic anatomical and physiological characteristics of each of the organ systems.
2. Explain interrelationships between form and function as related to maintaining homeostasis.
3. Demonstrate basic technical skills in microscopy and dissection.

OUTLINE OF INSTRUCTION:

I. Introduction to chemistry, homeostasis, acid-base balance, and electrolytes
   - A. Matter, elements, atomic structure
   - B. Molecules and types of bonds
   - C. Regulation of fluid balance
   - D. Regulation of electrolyte balance
   - E. Regulation of pH

II. Introduction to cells
   - A. Structure and function
   - B. Transport
   - C. Mitosis and meiosis

III. Introduction to structure and function of tissues
   - A. Epithelial
   - B. Connective
   - C. Muscle
   - D. Nervous

IV. Introduction to nutrition
   - A. Basic metabolism of biomolecules (i.e. carbohydrates, lipids, and proteins)
   - B. Vitamins and minerals

V. Basic study of body systems
   - A. Terminology (i.e. anatomical positions, directional terms, planes of section, body regions and body cavities)
   - B. Integumentary system
     1. Dermis, epidermis, and epidermal derivatives
     2. Functions of the integumentary system

C. Skeletal system
    1. Axial and appendicular bones
    2. Basic bone development
    3. Functions of the skeletal system
D. Muscular system
    1. Major muscles of the body
    2. Skeletal muscle contraction
    3. Neuromuscular junction
    4. Types of movement at joints
E. Nervous system
    1. Central nervous system
    2. Peripheral nervous system
    3. Autonomic nervous system
    4. Neuron anatomy and basic mechanism of neural impulse
    5. Sensory structures: eye and ear
F. Endocrine system
    1. Endocrine glands and hormone secretion
    2. Hormone actions
G. Cardiovascular system
    1. Anatomy and physiology of the heart
    2. Anatomy and physiology of the blood vessels
H. Lymphatic system and immunity
    1. Lymphatic organs and vessels
    2. Basic immunology
I. Respiratory system
    1. Functions of the respiratory system
    2. Anatomy of the respiratory tract
    3. Pulmonary anatomy and physiology
    4. Gas transport
J. Digestive system
    1. Anatomy and physiology of the gastrointestinal tract
    2. Anatomy and physiology of accessory digestive organs
    3. Nutrition (Refer to bullet IV)
K. Urinary System
    1. Functions of the urinary system
    2. Nephron and renal anatomy
    3. Urine formation and regulation
L. Reproductive System
    1. Male and female reproductive systems
    2. Embryonic and fetal development
    3. Genetics: Chromosomes, genes, and simple inheritance

REQUIRED TEXTBOOK AND MATERIAL:

The textbook and other instructional material will be determined by the instructor.