



BAKER COLLEGE
STUDENT LEARNING OUTCOMES

BIO1210 Anatomy and Physiology I
3 Semester Credit Hours

Student Learning Outcomes and Enabling Objectives

1. Describe the organization of the human body.
 - a. Differentiate between structure and function.
 - b. List the levels of organization in the human body.
 - c. Identify anatomical planes.
 - d. Identify the anatomical quadrants.
 - e. Identify the abdominopelvic regions.
 - f. Identify body cavities.
 - g. Identify the anatomical directions.
 - h. Identify the organ systems.

2. Investigate the role of cells in the human body.
 - a. Describe the major characteristics of life.
 - b. Identify the major structures and functions of cells.
 - c. Describe the role of the cell membrane in cellular homeostasis.
 - d. Differentiate between positive and negative feedback loops.
 - e. Explain mitosis, apoptosis, and necrosis.
 - f. Describe the role of mitosis in tissue growth and cancer.
 - g. Describe cell differentiation.

3. Distinguish the general characteristics of tissues.
 - a. Identify the major tissue types and where they are located in the body:
epithelial, connective, muscle and nervous.
 - b. Describe intercellular junctions.
 - c. Describe the general structures and characteristics of the epithelial tissues.
 - i. Shape and Organization
 - ii. Glands
 - iii. Membranes
 - d. Describe the characteristics of connective tissues
 - i. Shape and organization

ii. Extracellular matrix

4. Examine the structures and functions of the integumentary system.
 - a. Describe the general structure of skin:
 - i. Hypodermis
 - ii. Dermis
 - iii. Epidermis
 - b. Describe the role of skin in temperature regulation.
 - c. Compare accessory structures of the integumentary system: hair, nails, and glands.
 - d. Describe lifespan changes associated with the integumentary system.
 - e. Describe how skin regenerates after being damaged.

5. Examine the structures and functions of the skeletal system.
 - a. Describe the organization of the skeletal system and identify the major bones:
 - i. Axial
 - ii. Appendicular
 - b. Classify shapes of bones.
 - c. Identify the microscopic and macroscopic structures of bones.
 - d. Identify the role of bones in homeostasis:
 - i. Site of hematopoiesis
 - ii. Ion storage
 - e. Describe the process of bone growth: intramembranous and endochondral ossification.
 - f. Describe how bones are maintained: remodeling.
 - g. Define the major bony landmarks.
 - h. Identify the structural and functional classifications of joints.
 - i. Describe lifespan changes associated with bones and joints.

6. Examine the structures and functions of the muscular system.
 - a. Describe the major macroscopic structures of skeletal muscle.
 - b. Define major muscle groups.
 - c. Describe the major microscopic structures of skeletal muscle.
 - d. Describe the neuromuscular junction.
 - e. Describe current understanding of how muscles contract.
 - i. Sliding filament model
 - ii. Cross bridge cycle
 - iii. Summation and recruitment
 - iv. Motor units
 - f. Describe how skeletal muscles use oxygen.
 - g. Describe the structure and function of cardiac muscle tissue

- h. Describe smooth muscle tissue and its location in the body.
 - i. Describe lifespan changes associated with the muscular system.
7. Examine the structures and functions of the nervous system.
- a. Describe microscopic structures and functions of the nervous system.
 - i. Neurons
 - ii. Neuroglial cells
 - iii. Receptors
 - b. Describe neuron cell function including:
 - i. Action potential
 - ii. Inhibition
 - iii. Excitation
 - iv. Neuromodulators
 - c. Describe the organization of the nervous system
 - i. Central
 - ii. Peripheral
 - iii. Autonomic system
 - iv. Somatic system
 - d. Describe major structures and functions of the central nervous system:
 - i. Meninges
 - ii. Brain
 - iii. Spinal cord
 - e. Describe the major structures and functions of the peripheral nervous system:
 - i. Cranial nerves
 - ii. Spinal nerves
 - iii. Major plexuses
 - f. Describe major neural pathways:
 - i. Reflex arcs
 - ii. Ascending tracts
 - iii. Descending tracts
 - g. Differentiate between sensation, adaptation, perception and projection.
 - h. Describe the structure and function of general senses.
 - i. Pressure and touch
 - ii. Stretch
 - iii. Proprioception
 - iv. Pain
 - v. Temperature
 - vi. Visceral
 - i. Describe the structure and function of the special senses.
 - i. Taste
 - ii. Vision

- iii. Hearing
 - iv. Smell
 - v. Equilibrium
 - j. Describe general lifespan changes associated with the nervous system.
8. Examine the structures and functions of the endocrine system.
- a. Distinguish between endocrine and exocrine glands.
 - b. Distinguish between steroid and nonsteroid hormones.
 - c. Describe the microscopic and macroscopic structure of the major endocrine glands and their associated hormones:
 - i. Hypothalamus
 - ii. Pituitary gland
 - iii. Thymus
 - iv. Thyroid
 - v. Parathyroid glands
 - vi. Adrenal
 - vii. Pancreas
 - viii. Pineal
 - ix. Thymus
 - d. Explain how the secretion of hormones are regulated.
 - e. Distinguish between physical and psychological stress.
 - f. Describe general lifespan changes associated with the endocrine system.

Big Ideas and Essential Questions

Big Ideas

- Anatomical Directions and Organization
- Cell Structure
- Tissues
- Integumentary System
- Skeletal System
- Muscular System
- Nervous System
- Endocrine System

Essential Questions

1. How is the body organized?
2. How do cells contribute to body function?
3. What are tissues?
4. What are the structures and functions of the integumentary system?

5. What are the structures and functions of the skeletal system?
 6. What are the structures and functions of the muscular system?
 7. What are the structures and functions of the nervous system?
 8. What are the structures and functions of the endocrine system?
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These SLOs are not approved for experiential credit.

Effective: Fall 2024