

Course Description

BSC2085 | Human Anatomy and Physiology I | 3.00 credits

This course is the first part of a two-semester sequence in which students examine human anatomy and physiology through a systems approach based on the interaction between form and function, from the microscopic components of cells and tissues to the organismal level. Emphasis is placed on histology and the integumentary, skeletal, muscular, and nervous systems. Student learning outcomes: students will identify cell structures and describe their functions; students will distinguish tissues by structure, location in the body, and contrast their normal physiology; students will demonstrate an understanding of anatomical structure, organization of the body, cavities, planes, and directional terms; students will identify and describe structures of integumentary, skeletal, muscular, and nervous systems; students will interpret the functions of the integumentary, skeletal, muscular, and nervous systems; students will explain how the components of the human body maintain homeostasis; and students will analyze and interpret physiological data. Corequisite: BSC2085L

Course Competencies:

Competency 1: The student will be able to understand the general structure and function of the human body by:

1. Defining anatomy and physiology, and explaining how they are related
2. Defining homeostasis and its mechanisms, and explaining its importance for survival
3. Differentiating between positive and negative feedback control systems in humans

Competency 2: The student will be able to describe how the body is organized by:

1. Distinguishing the major anatomical regions of the human body by utilizing appropriate anatomical terminology
2. Applying directional terms, anatomical position, and body planes to locate organs and structures in the human body
3. Describing the locations of the major body cavities and the relationship of the organs in each cavity

Competency 3: The student will be able to understand the basic knowledge of chemical principles as these apply to human structure and function by:

1. Distinguishing between atoms, molecules, compounds, and mixtures
2. Explaining the functions of water, acids, bases, electrolytes, pH, and buffers
3. Differentiating among carbohydrates, lipids, proteins, nucleic acids, and their role in human metabolism

Competency 4: The student will be able to understand the structure and function of cells and tissue types by:

1. Identifying the major cellular organelles
2. Explaining how substances move into and out of cells
3. Describing how cells divide
4. Distinguishing the four tissue types and membranes of the human body and their relationships to organ systems
5. Explaining the response to tissue injury and repair

Competency 5: The student will be able to understand the integumentary system and its function by:

1. Differentiating the structure and function of the skin layers and accessory structures
2. Interpreting the homeostatic imbalances of the integumentary system

Competency 6: The student will be able to understand the skeletal system by:

1. Describing the structure and function of osseous tissues
2. Explaining ossification and bone growth
3. Describing the classification and functions of the skeletal system
4. Explaining calcium metabolism to bone growth and remodeling

5. Describing the homeostatic imbalances of the skeletal system

Competency 7: The student will be able to demonstrate knowledge of the structural and functional classification of joints by:

1. Describing the structure and function of the clinically relevant joint types
2. Explaining joint structure to its function and movement
3. Explaining the homeostatic imbalances of joints

Competency 8: The student will be able to understand the muscular system by:

1. Distinguishing the structure and function of skeletal, cardiac, and smooth muscle
2. Explaining the major events that occur during skeletal muscle contraction how force is generated
3. Differentiating muscle metabolism about structural type and physical activity
4. Explaining the homeostatic imbalances of the muscular system

Competency 9: The student will be able to understand the basic structure and function of nervous tissue by:

1. Describing the basic components and general functions of the nervous tissue
2. Comparing the structure and function of neurons and supporting cells
3. Explaining how nerve impulses are generated and transmitted
4. Differentiating the structure and function of the central and peripheral nervous systems
5. Describing the structure and functions of significant regions of the brain and spinal cord
6. Contrasting the structure and function of the divisions of the autonomic nervous system
7. Explaining homeostatic imbalances of the nervous system

Competency 10: The student will be able to understand the structure and function of the special senses by:

1. Explaining how special sensory structures allow perception of those senses
2. Explaining the homeostatic imbalances of the special senses

Learning Outcomes:

- Solve problems using critical and creative thinking and scientific reasoning