South Central College

HC 1914 Anatomy & Physiology and Disease Conditions I

Common Course Outline

Course Information

Description This course is designed to provide two approaches to assist the student in learning about the human body. The first is in developing a basic understanding of the normal structure and function of the human body and secondly to discuss disease processes that affect each body system. (Prerequisite: HC 1000)

Total Credits 4

Total Hours 64

Types of Instruction

Instruction Type	Credits/Hours
Lecture	4/64

Pre/Corequisites

HC 1000

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Outcomes

1. Define terminology related to anatomy, physiology and the structure of the human body.

Learning Objectives

Define terms related to anatomy and physiology.
List the levels of organization of the human body.
Describe the 12 major organ systems.
List common terms used for relative positions of the body.
Describe the three major planes of the body.
List anatomical terms for quadrants and regions of the body.
Describe the major cavities of the body.

2. Describe the basic chemistry of living things.

Learning Objectives

Define the terms related to basic chemistry.
Differentiate among ionic, covalent, and hydrogen bonds.
Explain ions, including the differences among electrolytes, cations, and anions.
Explain the difference between a molecule and a compound, and list five reasons why water is essential to life.
Explain the role of catalysts and enzymes.
Define pH and differentiate between an acid and a base.
List the six forms of energy and describe the role of adenosine triphosphate (ATP) in energy transfer.
Differentiate between a mixture, solution, suspension, colloidal suspension, and a precipitate.

3. Describe cellular structure.

Learning Objectives

Define the terms related to cellular structure and function.
Label a diagram of the main parts of a typical cell.
Describe the phases of the cell cycle.
Explain what is meant by cell differentiation.
Explain the processes and consequences of uncontrolled and disorganized cell growth and apoptosis.

4. Describe cellular metabolism.

Learning Objectives

Define the terms related to cellular metabolism.
Explain the use of carbohydrates in the body, and differentiate between the anaerobic and aerobic metabolism of carbohydrates.
Explain the use of fats and protiens in the body.
Describe the roles of DNA and RNA in protein synthesis, the structure of a nucleotide, and the steps in protein synthesis.

5. Describe the basics of microbiology.

Learning Objectives

Define the terms related to microbiology.
List the characteristics of the different types of pathogens, including the types of bacteria by shape.
Describe the types of bacteria by staining characteristics.
Define portals of exit and portals of entry.
List common ways by which infections are spread.
Identify the microbiological principles described in” Five Germ-Laden Stories”.

6. Explain the structure and function of tissues and membranes.

Learning Objectives

Define the terms related to tissues and membranes.
Label a diagram of the main types of tissues and membranes.
List the types of tissues and tissue membranes.
Describe the characteristics and functions of the epithelial tissue.
Explain how epithelial tissue is classified.
Differentiate between endocrine and exocrine glands.
Describe the characteristics and functions of connective tissue, and list the types of connective tissue membranes.
Describe the characteristics and functions of nervous and muscle tissues.
Explain the process of tissue repair after an injury.
Differentiate between mucous and serous membranes.
Discuss common disease conditions of tissues and membranes.

7. Describe the structure and function of integumentary system.

Learning Objectives

Define the terms related to the integumentary system.
Label a diagram of the parts of integumentary system.
List seven functions of the skin.
Describe the two layers of skin.

List the two major functions of the subcutaneous layer.
List the factors the influence the color of the skin.
Describe the accessory structures of the skin.
Discuss heat production in the body.
Explain four processes whereby the body loses heat.
Describe how the skin helps regulate body temperature.
Describe how burns are classified and list ways to protect the skin.
Discuss common disease conditions of the integumentary system.

8. Describe the structure and function of the skeletal system.

Learning Objectives

Define the terms related to skeletal system.
Label a diagram of the skeletal system.
List the functions of the skeletal system and the classification of bones by size and shape.
Differentiate between the composition and location of compact and spongy bone.
Describe the structure of a long bone.
Describe the roles of osteoblasts and osteoclasts, and how bones grow in length and width.
List the bones of the axial skeleton and label important landmarks on selected bones.
List the bones of the appendicular skeleton and label important landmarks on selected bones.
List the main types and functions of joints and describe the type of joint movement.
Discuss common disease conditions of the skeletal system.

9. Describe the structure and function of muscles.

Learning Objectives

Define the terms related to the muscular system.
Label a diagram of the muscles.
Identify three types of muscle tissue.
Compare the structure of a whole muscle and the structure of a single muscle fiber.
Describe the sliding filament mechanism of a muscle contraction.
Explain the role of calcium and adenosine triphosphate (ATP) in muscle contraction.
Describe the relationship between skeletal muscles and nerves.
Describe the process of muscle contraction.
Define the basis for naming muscles.
Discuss common disease conditions of muscles.

10. Describe the structure and function of the nervous system.

Learning Objectives

Define the terms related to cellular composition of the nervous system.
Define the two divisions of the nervous system.
List three general functions of the nervous system.
Discuss the cellular composition of the nervous system.
Describe the structure and function of a synapse.
Describe the functions of the four major areas of the brain and the four lobes of the cerebrum.
Describe how the skull, meninges, cerebrospinal fluid, and blood–brain barrier protect the central nervous system.
Discuss common disease conditions of the nervous system.

11. Explain the structure and function of the spinal cord and peripheral nerves.

Learning Objectives

Define the terms related to spinal cord and peripheral nerves.
Label a diagram of the main parts of the spinal cord and peripheral nerves.
Describe the anatomy of the spinal cord and list its three functions.
Discuss reflexes and list four components of the reflex arc.
List and describe the functions of the 12 pairs of cranial nerves.
Identify the classification of spinal nerves.
List the functions of the three major plexuses.
Describe a dermatome.
Provide the functional classification of the peripheral nervous system.
Discuss common disease conditions of the nervous system.

12. Describe the structure and function of autonomic nervous system.

Learning Objectives

Define the terms related to autonomic nervous system.
Label a diagram of the main parts of the autonomic nervous system.
Describe the function and pathway of autonomic (visceral) reflexes.
Describe the function of the autonomic nervous system.
Identify the two divisions of the autonomic nervous system.
State the anatomical and functional differences between the sympathetic and parasympathetic nervous systems.
Differentiate between autonomic tone and vasomotor tone.
Define cholinergic and adrenergic fibers.
Name the major neurotransmitters of the autonomic nervous system.
Name and locate the cholinergic and adrenergic receptors.
Explain the terms used to describe the effects of neurotransmitters and drugs on autonomic receptors.

13. Explain the structure and function of special senses.

Learning Objectives

Define the terms related to special senses.
Label a diagram of the main parts of the eye, ear and tongue.
State the functions of the sensory system.
Define the five types of sensory receptors.
Describe the four components involved in the perception of a sensation and two important characteristics of sensation.
Describe the five general senses.
Describe the structure of the eye.
Explain the movement of the eyes.
Describe how the size of the pupils changes.
Describe the three divisions of the ear.
Describe the functions of the parts of the ear involved in hearing.
Explain the role of the ear in maintaining the body's equilibrium.
Discuss common disease conditions of special senses.

14. Describe the structure and function of endocrine system.

Learning Objectives

Define the terms related to endocrine system.
Label a diagram of the endocrine system.
List the functions of the endocrine system.
Discuss the role and function of hormones in the body.
Explain the process by which hormones bind to the receptor sites of specific tissues (targets).
Explain the three mechanisms that control the secretion of hormones.
Describe the relationship of the hypothalamus to the pituitary gland.
Describe the location, regulation, and hormones of the pituitary gland.
Identify the other major endocrine glands and their hormones, and explain the effects of hyposecretion and hypersecretion.
Discuss common disease conditions of the endocine system.

SCC Accessibility Statement

Disability Services provides accommodations and other supports to students with permanent and temporary disabilities that affect their SCC experience. Disabilities may include mental health (anxiety, depression, PTSD), ADHD, learning disabilities, chronic health conditions (migraine, fibromyalgia), sensory disabilities, and temporary disabilities (broken arm, surgery). Common accommodations are extended test time, private room for testing, audiobooks, and sign language interpreter.

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