South Central College

BIOL 220 Human Anatomy

Common Course Outline

Course Information

Description  This course takes an in-depth look at the anatomy of the human body systems. The course emphasizes structure and anatomical function at the cellular, tissue, organ and systemic level. Dysfunctions are included but the body in homeostasis is emphasized. This course includes a lab with dissection. Pre-requisite- Accuplacer Reading Comprehension Score of 78 or above or READ0090. (MNTC goal area 3)

Total Credits  4.00
Total Hours  80.00

Types of Instruction

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<td>Lecture</td>
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Pre/Corequisites

Prerequisite  Accuplacer Reading Comprehension Score of 78 or above or READ0090.

Institutional Core Competencies

1  Analysis and inquiry: Students will demonstrate an ability to analyze information from multiple sources and to raise pertinent questions regarding that information.

2  Critical and creative thinking: Students will develop the disposition and skills to strategize, gather, organize, create, refine, analyze, and evaluate the credibility of relevant information and ideas.

3  Foundations and skills for lifelong learning: Students will display an understanding of learning as a lifelong process through demonstration of a desire to learn, the willingness to apply learning to other areas of their lives, the ability to think and act independently, be willing to take the initiative to get projects done, and demonstrate the ability to reflect upon what has occurred and how it impacts the student and others.

4  Teamwork and problem-solving: Students will demonstrate the ability to work together cohesively with diverse groups of persons, including working as a group to resolve any issues that arise.

External Standards

Title  MN Transfer Goals

Target Standards
Goal 3: Natural Sciences - To improve students' understanding of natural science principles and of the methods of scientific inquiry, i.e., the ways in which scientists investigate natural science phenomena. As a basis for lifelong learning, students need to know the vocabulary of science and to realize that while a set of principles has been developed through the work of previous scientists, ongoing scientific inquiry and new knowledge will bring changes in some of the ways scientists view the world. By studying the problems that engage today's scientists, students learn to appreciate the importance of science in their lives and to understand the value of a scientific perspective. Students should be encouraged to study both the biological and physical sciences.

3a - Demonstrate understanding of scientific theories.

3b - Formulate and test hypotheses by performing laboratory, simulation, or field experiments in at least two of the natural science disciplines. One of these experimental components should develop, in greater depth, students' laboratory experience in the collection of data, its statistical and graphical analysis, and an appreciation of its sources of error and uncertainty.

3c - Communicate their experimental findings, analyses, and interpretations both orally and in writing.

3d - Evaluate societal issues from a natural science perspective, ask questions about the evidence presented, and make informed judgments about science-related topics and policies.

Course Competencies

1. Use anatomical terms to describe the body.
   Learning Objectives
   - Explain the principles that drive structure and function.
   - Identify the major levels of structural organization from chemical to organ systems and their interactions.
   - Demonstrate the use of terms to describe body sections, body regions, relative positions and the anatomical position.

2. Describe the foundations of the cell.
   Learning Objectives
   - Summarize the basic concepts of the cell theory.
   - Identify cellular organelles and explain their functions.
   - Explain how cells can be interconnected to maintain structural stability in body tissues.
   - Describe how materials move across the membrane.
   - Summarize the cell life cycle and how cells divide.

3. Classify the four major categories of tissues.
   Learning Objectives
   - Analyze the relationship between structure and function for each epithelial tissue type.
   - Describe the general characteristics and locations of different connective tissue types.
   - Compare and contrast the three types of muscle tissue.
   - Outline the basic structure and function of neural tissue.

4. Describe and identify components of the skeletal system.
   Learning Objectives
   - Describe the functions of the skeletal system.
   - Describe the types of cells found in bone.
   - Distinguish between compact and spongy bone.
   - Discuss the steps in the process of bone development.
   - Identify the histological features of hyaline cartilage, fibrocartilage, elastic cartilage and compact bone.
   - Identify the bones of the appendicular skeleton.
   - Identify the bones of the axial skeleton.
Classify bones according to their shapes and give examples of each.
Describe different types of fractures and explain how fractures heal.
Distinguish among the different types of joints.
Explain the generalized effects of aging on the skeletal system.

5 Identify and describe the major features and functions of the integument.

Learning Objectives
Describe the primary cell types of the different layers of the integument.
Compare the structure and functions of the skin with the underlying connective tissue.
Discuss the anatomy and functions of the skin's accessory structures: hair, glands and nails.
Describe basal cell carcinoma, squamous cell carcinomas and malignant melanomas.
Explain how skin responds to injuries and repairs itself.

6 Describe skeletal muscle tissue and muscle organization.

Learning Objectives
Summarize the distinguishing characteristics of muscle tissue.
Outline the organization of connective tissues, blood supply and innervation of skeletal muscle.
Characterize the structure of the neuromuscular synapse and summarize events that occur at the junction.
Relate the distribution of various types of skeletal muscle fibers (fast, slow and intermediate) to muscular performance.
Identify skeletal muscles by name and location.
List the steps involved in muscle contraction.
Explain how muscles interact to produce or oppose movements.

7 Discuss the general anatomical organization and functions of the nervous system and neural tissue.

Learning Objectives
Compare and contrast the anatomical subdivisions of the nervous system.
Describe white matter and gray matter and their distribution in the CNS and PNS.
Describe the structure of a typical neuron and how neurons are classified.
Describe the microanatomy of a synapse and the steps involved in a synapse.
Explain the basic anatomical organization of the nervous system.
Identify nerves by name and location in the CNS and PNS.

8 Describe the central nervous system.

Learning Objectives
Identify and describe the meninges of the brain and spinal cord.
Describe the structural and functional characteristics of the spinal cord.
Describe the structures that constitute the blood-brain barrier and indicate their functions.
Identify the anatomical structures of the brain and list their functions.
Name and describe the 12 pairs of cranial nerves and the structures they stimulate.
Identify various dysfunctions of the central nervous system.

9 Describe the autonomic nervous system.

Learning Objectives
Identify the ANS basic functions and its effectors.
Compare the autonomic and somatic motor systems.
Compare and contrast the anatomy of the sympathetic and parasympathetic systems.
Compare and contrast the effects of parasympathetic and sympathetic divisions.

10 Define and describe the general and special senses.
Learning Objectives
Define sensation and discuss the origins of sensations.
Identify the receptors for the general senses and briefly describe how they function.
Classify receptors according to the stimulus detected, body location and histological structure.
Describe visceral pain and referred pain.
Identify, describe and discuss the receptors and neural pathways involved in the special senses.
Identify the structures and describe the function of the sensory organs.
Describe disorders of the sensory system.

11 Compare and contrast the basic organization and functions of the endocrine system.

Learning Objectives
Describe the major chemical classes of hormones and explain how hormones control their target cells.
Describe how hormone levels are regulated by negative and positive feedback.
List the major endocrine glands, their locations and relative functions.
Locate the major endocrine glands and their target tissues.
Discuss the results of abnormal hormone production.

12 List and describe the components and functions of the blood.

Learning Objectives
Describe the function of blood.
Discuss the composition of blood and the physical characteristics of plasma.
Explain what determines a person's blood type and why blood types are important.
Discuss the structure of platelets and their role in blood clotting.

13 Explain the basic design and function of the cardiovascular system.

Learning Objectives
Identify the anatomy and histology of the heart and vascular components of the cardiovascular system.
Describe the structural coverings of the heart.
Trace a drop of blood through the heart.
Compare and contrast the various types of blood vessels.
Name and trace the components of the conduction pathway of the heart.
Discuss the events that take place during the cardiac cycle.
Discuss dysfunctions of the cardiovascular system.
Discuss the fetal cardiovascular system and the changes that occur at birth.

14 Describe the lymphatic system.

Learning Objectives
Identify the major components of the lymphatic system.
Describe the origin of lymph and its relationship with blood.
Contrast the structure of lymphatic vessels and veins.
Trace the pattern of lymph circulation.
Discuss the importance of lymphocytes and describe where they are found in the body.

15 Describe the primary structures and functions of the respiratory system.

Learning Objectives
Describe the structural organization of the respiratory system.
Distinguish between the conducting and respiratory portions of the respiratory tract.
Describe the histology and function of the respiratory epithelium.
Identify the gross anatomy and functions of structures of the respiratory tract.
Describe the pleural cavities and pleural membranes.
Identify disorders of the respiratory system.

16 Identify the structures and functions of the digestive system.

Learning Objectives
Identify the gross anatomy, histology and functions of the digestive system and its accessory organs.
Summarize the events of digestion.
Describe the peritoneum and the locations and functions of the mesenteries.
Describe disorders of the digestive system.

17 Describe the urinary system.

Learning Objectives
Describe the functions of the urinary system.
Name and locate the anatomical structures of the urinary system.
Discuss the blood vessels that supply blood to nephrons.
Compare and contrast the histological organization of the nephron and the functions of each segment.
Outline the micturition reflex and its control.

18 Compare and contrast the structures and functions of the male and female reproductive systems.

Learning Objectives
Outline the function of the reproduction system.
Compare and contrast the general organization of the male and female reproductive systems.
Describe the location, gross anatomy and functions of the principal structures of the reproductive system.
Describe and identify the stages of gametogenesis.
Describe the ovarian and uterine cycles and the major characteristics of each phase.
Identify disorders of the reproductive system.

19 Adhere to safety rules in the anatomy laboratory.

Learning Objectives
Locate safety equipment and describe its proper use.
Explain the hazards associated with working with preserved specimens in the lab.
Follow housekeeping procedures and chemical hygiene practices as outlined in the lab.

SCC Accessibility Statement
If you have a disability and need accommodations to participate in the course activities, please contact your instructor as soon as possible. This information will be made available in an alternative format, such as Braille, large print, or cassette tape, upon request. If you wish to contact the college ADA Coordinator, call that office at 507-389-7222.

Disabilities page [http://southcentral.edu/academic-policies/disability-rights.html](http://southcentral.edu/academic-policies/disability-rights.html)