

## Study Guide

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### **CCD BIO 202 Placement Test for entry into Human Anatomy and Physiology II - Comprehensive exam**

**Topics: introduction, biochemistry, cells, histology, osteology/arthrology, Muscular system, Nervous system**

#### **Introduction to Anatomy and Physiology**

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Explain the importance of studying anatomy and physiology.

Identify basic study skill strategies to use in this course.

Define anatomy and physiology, describe the origins of anatomical and physiological terms, and explain the significance of *Terminologia Anatomica (International Anatomical Terminology)*.

Explain the relationship between anatomy and physiology, and describe various specialties of each discipline.

#### **Chemical Organization**

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Discuss the importance of pH and the role of buffers in body fluids.

Describe the physiological roles of inorganic compounds.

Discuss the structures and functions of carbohydrates.

#### **Cellular Organization**

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List the functions of the plasma membrane and the structural features that enable it to perform those functions.

Describe the organelles of a typical cell, and indicate the specific functions of each.

Explain the functions of the cell nucleus and discuss the nature and importance of the genetic code.

Summarize the role of DNA in protein synthesis, cell structure, and cell function.

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## Tissues

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- Identify the four major types of tissues in the body and describe their roles.
- Discuss the types and functions of epithelial tissue.
- Describe the relationship between form and function for each type of epithelium.
- Compare the structures and functions of the various types of connective tissues.
- Describe how cartilage and bone function as a supporting connective tissue.
- Explain how epithelial and connective tissues combine to form four types of tissue membranes, and specify the functions of each.
- Describe how connective tissue establishes the framework of the body.
- Describe the three types of muscle tissue and the special structural features of each type.
- Discuss the basic structure and role of neural tissue.
- Describe how injuries affect the tissues of the body.
- Describe how aging affects the tissues of the body.

## Skeletal System

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- Identify the bones of the axial skeleton, and specify their functions.
  - Identify the bones of the cranium and face, and explain the significance of the markings on the individual bones.
  - Identify the foramina and fissures of the skull, and cite the major structures using the passageways.
  - Explain the significance of the articulations between the thoracic vertebrae and the ribs, and between the ribs and sternum.

## Articulations

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- Contrast the major categories of joints, and explain the relationship between structure and function for each category.
    - Describe the basic structure of a synovial joint, and describe common synovial joint accessory structures and their functions.
    - Describe how the anatomical and functional properties of synovial joints permit movements of the skeleton.
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## **Muscle System**

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Specify the functions of skeletal muscle tissue.

Describe the organization of muscle at the tissue level.

Explain the characteristics of skeletal muscle fibers, and identify the structural components of a sarcomere.

Identify the components of the neuromuscular junction, and summarize the events involved in the neural control of skeletal muscle contraction and relaxation.

Relate the types of muscle fibers to muscle performance, and distinguish between aerobic and anaerobic endurance.

Identify the structural and functional differences between skeletal muscle fibers and cardiac muscle cells.

Identify the structural and functional differences between skeletal muscle fibers and smooth muscle cells, and discuss the roles of smooth muscle tissue in systems throughout the body.

## **Nervous System**

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Describe the anatomical and functional divisions of the nervous system.

Sketch and label the structure of a typical neuron, describe the functions of each component, and classify neurons on the basis of their structure and function.

Describe the locations and functions of the various types of neuroglia.

Explain how the resting potential is created and maintained.