

Topic List for Anatomy & Physiology I Credit-By-Exam

The following is a list of topic areas that are tested on the Anatomy & Physiology I (Bio*H211) Credit-By-Exam available through the Math/Science Division. In order to receive credit for Anatomy & Physiology I by taking this exam, you must score a minimum of 73%, i.e., you must correctly answer 73/100 questions.

The following topic list was generated using Topic Guidelines for A & P I published by the Human Anatomy & Physiology Society (2007). These topics represent knowledge and concepts that every A & P I student should have mastered.

Any **two-semester** Anatomy & Physiology textbook may be used to prepare for the exam. (NVCC currently uses *Hole's Human Anatomy & Physiology*, 11th edition, McGraw Hill, 2007.)

Body Plan & Organization

1. Anatomical Position
2. Body planes and sections
3. Body cavities and regions
4. Directional terms
5. Basic terminology
6. Levels of organization
7. Survey of body systems

Homeostasis

1. Definition
2. General types of homeostatic mechanisms
3. Examples of homeostatic mechanisms

Chemistry and Cell Biology Review

1. Atoms and molecules
2. Chemical Bonding
3. Inorganic compounds and solutions
4. Organic compounds
5. Energy transfer using ATP
6. Membrane structure and function
7. Mechanisms for movement of materials across plasma membranes
8. Organelles of the cell
9. Protein synthesis
10. Cellular respiration (introduction)
11. Somatic cell division

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Histology

1. Microscopic anatomy, location, functional roles of epithelial tissue
2. Microscopic anatomy, location, functional roles of connective tissue
3. Microscopic anatomy, location, functional roles of muscular tissue
4. Microscopic anatomy, location, functional roles of nervous tissue
5. Membranes (mucous, serous, cutaneous, and synovial)
6. Glands (exocrine and endocrine)

Integumentary System

1. General functions of the skin & subcutaneous layer
2. Gross and microscopic anatomy of skin
3. Roles of specific tissue layers and the subcutaneous layer
4. Anatomy and functional roles of accessory structures

Skeletal System and Articulations

1. General functions of the skeletal system
2. Structural components – microscopic anatomy
3. Structural components – gross anatomy
4. Physiology of embryonic bone formation (ossification, osteogenesis)
5. Physiology of bone growth, repair, and remodeling
6. Organization of the skeletal system
7. Gross anatomy of bones
8. Classification, structure, and function of joints (articulations)

Muscular System

1. General functions of muscle tissue
2. Identification, general location, and comparative characteristics of smooth, skeletal, and cardiac muscle tissue
3. Details gross and microscopic anatomy of skeletal muscle tissue
4. Physiology of skeletal muscle contraction
5. Skeletal muscle metabolism
6. Principles and types of whole muscle contraction
7. Nomenclature of skeletal muscles
8. Group actions of skeletal muscles (prime movers, antagonists, synergists)
9. Location and function of the major skeletal muscles

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Nervous System

1. General functions of the nervous system
2. Organization of the nervous system from both the anatomical and functional perspectives
3. Gross and microscopic anatomy of nerve tissue
4. Neurophysiology, including the mechanism of resting membrane potential, production of action potentials, and impulse transmission
5. Neurotransmitters and their roles in synaptic transmission
6. Division, origin, and function of component parts of the brain
7. Protective roles of the cranial bones, meninges, and cerebrospinal fluid
8. Structure and function of cranial nerves
9. Anatomy of the spinal cord and spinal nerves
10. Reflexes and their roles in nervous system function
11. Physiology of sensory and motor pathways in the brain and spinal cord
12. Functions of the autonomic nervous system
13. Comparisons of somatic and autonomic nervous systems

Special Senses

1. Gross and microscopic anatomy of the eye
2. Roles of specific tissue of the eye in vision and accommodation
3. General gross and microscopic anatomy of the hearing structures of the ear and accessory structures
4. Roles of the organs of equilibrium
5. Sensory receptors and their roles (touch, pressure, pain, temperature, joint/body position)

Laboratory Topics

Given photomicrographs, photographs, and figures, you will be expected to identify the structures and functions (where appropriate, e.g., muscles) for topics in the following areas:

1. Animal cell mitosis
2. Histology (epithelial, connective, muscle, nervous)
3. Major bones of the skeletal system
4. Major skeletal muscles (and their actions)
5. Nervous system (brain, spinal cord, cranial nerves)
6. The eye and ear