



Syllabus

BIO 110 Fundamentals of Human Anatomy and Physiology

General Information

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Author

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Department

Science and Technology

Course Prefix

BIO

Course Number

110

Course Title

Fundamentals of Human Anatomy and Physiology

Course Information

Credit Hours

3

Lecture Contact Hours

4

Lab Contact Hours

0

Other Contact Hours**Catalog Description**

This course provides an overview of the foundational concepts of human anatomy and physiology. Students investigate relationships between form and function. Major concepts include anatomical terminology, basic biochemistry, cells and tissues, and the integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic/immune, respiratory, digestive, and urinary systems. An introduction to common human disease processes is included.

Key Assessment

This course does not contain a Key Assessment for any programs

Prerequisites

Successful completion of all required remedial courses.

Co-requisites

None

Grading Scheme

Letter

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category

None

FLCC Values

Institutional Learning Outcomes Addressed by the Course

Vitality
Inquiry
Perseverance
Interconnectedness

Course Learning Outcomes

Course Learning Outcomes

1. Practice using basic anatomical and physiological terms.
2. Describe basic anatomy and physiology of the major body systems (ie. integumentary, skeletal, muscular, nervous, endocrine, cardiovascular, lymphatic/immune, respiratory, digestive, and urinary systems).
3. Describe how body systems interact with one another in human health and disease.
4. Explain the concept of homeostasis using examples of homeostatic regulatory mechanisms.

Outline of Topics Covered

- I. Introduction to the human body
 - a. Homeostasis
 - b. Levels of organization
 - c. Body cavities
 - d. Anatomical language

- II. General chemistry
 - a. The periodic table, atoms, bonding, molecules and compounds
 - b. pH and buffers
 - c. Major inorganic compounds, including electrolytes and water
 - d. Major organic macromolecules: carbohydrates, lipids, proteins, and nucleic acids; their structure and function in the human body.
- III. Cells
 - a. Major organelles
 - b. Introduction to DNA, RNA and protein synthesis
 - c. Cell membrane structure, entry and exit mechanisms.
- IV. Tissues
 - a. Characteristics, roles, and locations of the four major tissue classes found in the human body
- V. Skeletal system
 - a. Structure and function (macroscopic and microscopic) of bones and joints
 - b. Introduction to major bones of the body
- VI. Muscular system
 - a. Muscle structure and physiology
 - b. Introduction to major muscles of the body
- VII. Nervous system
 - a. Levels and divisions of organization
 - b. Neurons and generation of action potential
 - c. Human brain organization and function
 - d. Reflex arcs and the spinal cord
 - e. Overview of the autonomic nervous system
- VIII. Endocrine system
 - a. Negative feedback
 - b. Binding and signaling of lipid and peptide hormones
 - c. Hormonal regulation by the hypothalamus
 - d. Major endocrine organs
- IX. Blood
 - a. Components

- b. Functions
 - c. Structure and function of hemoglobin
 - d. Clotting
- X. Cardiovascular system
- a. Heart structure and function
 - b. Major circulatory patterns
 - c. Electrical generation of heart beat and ECG
 - d. Heart disease
 - e. Major blood vessels
 - i. Structure and function
 - f. Neural and hormonal control of blood pressure
- XI. Lymphatic system and immunity
- a. Structure and function of lymphatic circulation, lymph organs
 - b. Nonspecific and specific immunity
 - c. Steps in the generation of specific response, including T/B cell interaction for generation of antibodies
 - d. Autoimmunity and allergies
- XII. Respiratory system
- a. Anatomy of respiratory tract
 - b. Ventilation, external respiration and internal respiration
 - c. Gas exchange at the respiratory membrane
 - d. Gas transport
 - e. Neural regulation of respiration
 - f. Disease of respiratory system
- XIII. Digestive system
- a. Anatomy of the digestive tract organs and accessory organs
 - b. Functions of the digestive system
 - c. Digestion and absorption of major nutrients
 - d. Hormonal regulation of digestion
 - e. Functions of accessory digestive structures
- XIV. Renal system

- a. Structure and function of the urinary tract
- b. Kidney anatomy
 - i. Nephrons, filtration and urine production
- c. Hormones that control urine output
- d. Kidney role in homeostasis