Syllabus

BIO 171 Human Anatomy and Physiology I

General Information

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Course Prefix BIO

Course Number 171

Course Title Human Anatomy and Physiology I

Course Information

Catalog Description This course provides an in depth analysis of the structure and function of the human body dealt with at the following levels of organization: chemical, biochemical, cellular, tissue, organ and organ system. Students discuss anatomical and physiological interrelationships and homeostatic mechanisms as they pertain to normal health and disease. Organ systems covered include the integumentary, skeletal, muscular, nervous and closely related special senses. A laboratory component is included and involves analysis done at both microscopic and macroscopic levels. Students obtain hands-on experience with disarticulated bones, muscle models, and selected dissections.

Credit Hours 4

Lecture Contact Hours 3

Lab Contact Hours 2

Other Contact Hours 1 (Seminar)

Grading Scheme Letter

Prerequisites

Successful completion of all required remedial courses.

Co-requisites

None

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
Natural Sciences (and Scientific Reasoning)

FLCC Values

Institutional Learning Outcomes Addressed by the Course
Vitality, Inquiry, Perseverance, and Interconnectedness

Course Learning Outcomes

Course Learning Outcomes

1. Begin using fundamental anatomical and physiological language.

2. Describe in depth the normal anatomy and physiology of major body divisions (ie. chemistry, cells, tissues, integumentary system, musculoskeletal systems, and the nervous system).

3. Analyze how body systems interact with one another incorporating the foundational concept of homeostatic regulation.

4. Demonstrate standardized anatomical and physiological laboratory techniques (eg. lab safety, tissue histology, bone and muscle identification, organ dissection).

Outline of Topics Covered

    I.   Orientation to the Human Body
        a.   Homeostasis and feedback mechanisms
        b.   Anatomical language
        c.   Regional terms
        d.   Directional terms
        e.   Body cavities
    II.   Chemistry/Biochemistry
        a.   Matter composition
        b.   Atom structure
        c.   Chemical reactions
        d.   Metabolism

e. **Anatomy and physiology of major inorganic compounds**

f. **Anatomy and physiology of major organic compounds**

III. **Cytology**

    a. **Membrane structure and function**

    b. **Membrane transport mechanisms**

    c. **Cellular organelles**

    d. **Nucleic acids**

    e. **Structure**

    f. **Roles in protein synthesis**

    g. **Transcription, translation, and posttranslational modification**

- IV. Tissues

    a. **Anatomy and physiology of the four major classes of tissues**

    b. **Epithelia**

    c. **Connective**

    d. **Muscle**

    e. **Nervous**

    f. **Histology**

V. **Skeletal system**

    a. **Bone tissue anatomy (microscopic and macroscopic)**

    b. **Skeletal physiology**

    c. **Bone development**

    d. **Remodeling**

    e. **Fracture repair**

    f. **Major bones and bone markings of the human skeleton**

- VI. Muscular system

    a. **Major muscle types**

    b. **Muscle tissue anatomy (microscopic and macroscopic)**

    c. **Contraction dynamics**

    d. **Muscle mechanics**

    e. **Muscle metabolism**

    f. **Major muscle identification**

VII. **Nervous system**

    a. **Nervous system organization**

    b. **Microscopic nervous tissue anatomy and physiology**

    c. **Neurons**

    d. **Neuroglia**

    e. **Electrical signaling**

VIII. **Spinal cord organization and major anatomy**

      a.   **Spinal nerves**

      b.   **Organization**

      c.   **Reflexes**

- IX. Human brain organization
    - **a.**   **Protective mechanisms**
    - **b.**   **Major lobes**
    - **c.**   **Gray and white matter**
    - **d.**   **Integrative centers**
    - **e.**   **Physiology of major brain regions**

X.   **Special Senses**

      a.   **Vision**

      b.   **Hearing**

      c.   **Touch**

      d.   **Taste**

      e.   **Smell**