Effective Implementation date: Summer 2018, 201910

Required Syllabus Information – all must be included in the course syllabus

BIO 201
Course Title: Human Anatomy and Physiology I with Lab:GT-SC1
Course Credits: 4
Course Description: Focuses on an integrated study of the human body including the histology, anatomy, and physiology of each system. Examines molecular, cellular, and tissue levels of organization plus integuments, skeletal, articulations, muscular, and nervous systems. Includes a mandatory hands-on laboratory experience covering microscopy, observations, and dissection. This is the first semester of a two-semester sequence.

GT Pathways Requirements:

Guaranteed Transfer (GT) Pathways Course Statement:
Guaranteed Transfer (GT) Pathways Course Statement: The Colorado Commission on Higher Education has approved BIO 201 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT- SC1 category. For transferring students, successful completion with a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to CDHE GT Pathways Information.

NATURAL & PHYSICAL SCIENCES (N&PS) CONTENT CRITERIA – GT-SC1

1. The lecture content of a GT Pathways science course (GT-SC1)
    a. Develop foundational knowledge in specific field(s) of science.
    b. Develop an understanding of the nature and process of science.
    c. Demonstrate the ability to use scientific methodologies.
    d. Examine quantitative approaches to study natural phenomena.

2. The laboratory (either a combined lecture and laboratory, or a separate laboratory tied to a science lecture course) content of a GT Pathways science course (GT-SC1)
    a. Perform hands-on activities with demonstration and simulation components playing a secondary role.
    b. Engage in inquiry-based activities.
    c. Demonstrate the ability to use the scientific method.
    d. Obtain and interpret data, and communicate the results of inquiry.
    e. Demonstrate proper technique and safe practices.

COMPETENCIES & STUDENT LEARNING OUTCOMES FOR GT-SC1

Inquiry & Analysis:

4. **Select or Develop a Design Process**
    a. Select or develop elements of the methodology or theoretical framework to solve problems in a given discipline.
5. **Analyze and Interpret Evidence**

a. Examine evidence to identify patterns, differences, similarities, limitations, and/or implications related to the focus.
b. Utilize multiple representations to interpret the data.

6. **Draw Conclusions**
    a. State a conclusion based on findings.

Quantitative Literacy:

1. Interpret Information
    a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
2. Represent Information
    a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).

SYSTEM REQUIREMENTS:

REQUIRED COURSE LEARNING OUTCOMES

1. Develop a vocabulary of appropriate terminology to effectively communicate information related to anatomy and physiology.
2. Identify the anatomical structures and explain the physiological functions of body systems.
3. Explain the principle of homeostasis and the use of feedback loops to control physiological systems in the human body.
4. Use anatomical knowledge to describe physiological consequences, and use knowledge of function to describe the features of anatomical structures.
5. Explain the interrelationships within and between anatomical and physiological systems of the human body.
6. Synthesize ideas to make a connection between knowledge of anatomy and physiology in real-world situations, including healthy lifestyle decisions and homeostatic imbalances.
7. Demonstrate laboratory procedures used to examine anatomical structures
8. Evaluate physiological functions of each organ system including pro-dissection of human or dissection mammalian specimens.
9. Interpret graphs of anatomical and physiological data.

*Adapted from material copyrighted by the Human Anatomy and Physiology Society (HAPS)

REQUIRED TOPICAL OUTLINE

The required topical outline information MUST be included in the syllabi. It may be incorporated using one of the following variations: copying the topical outline as written below, integrating the topics within the assignment schedule, or listing the topics to be covered.

I. Human Body Atlas
    a. Human Body Organization
        i. Scope and Overview of Anatomy & Physiology
        ii. Levels of Structural Organization

        iii. Organ Systems
        iv. Maintaining Life
        v. Homeostasis
    b. Language of Anatomy / Anatomical Terminology
        i. Anatomical Position
        ii. Directional Terms
        iii. Major Body Regions
        iv. Body Planes and Sections
        v. Body Cavities and Membranes

II. (Review) Chemistry
    a. Basic Chemistry
        i. Matter, Energy, and Chemical Reactions
        ii. Atoms, Ions, Elements, Molecules
    b. Water and Mixtures
    c. Energy & Chemical Reactions
        i. Molecules
        ii. Chemical Bonds and Reactions
        iii. Types of Chemical Bonds
        iv. Enzymes
    d. Biochemistry
        i. Inorganic Compounds
        ii. Organic Compounds

III. Cell Structure and Function (Review)
    a. Concepts of Cellular Structure
    b. Cell Surface / Plasma Membrane Structure
    c. Membrane Transport – Passive and Active
    d. Cellular Cytoplasm and Organelles – Structures and Functions

IV. Histology - Tissues
    a. Study of Tissues
        i. Epithelial Tissue
        ii. Connective Tissue
        iii. Muscle Tissue
        iv. Nervous Tissue
    b. Cellular Junctions
    c. Cellular Membranes
    d. Tissue Growth, Development, and Aging/Degeneration

V. Integumentary System
    a. Composition and Functions of the Integument
    b. Skin and Subcutaneous Tissue
    c. Cutaneous Glands
    d. Hair
    e. Nails
    f. Repair of the Integumentary System

VI. Skeletal System
    a. Osseous Tissue and Organs of the Skeletal System
        i. Gross Anatomy of Bones
        ii. Microscopic Anatomy of Bone Tissue
        iii. Microscopic Anatomy of Cartilages

b. Bone Growth and Remodeling
    i. Ossification and Bone Growth
    ii. Regulation of Blood Calcium
    iii. Bone Fractures and Repair
c. Bones and Markings of the
    i. Skull and Facial Bones
    ii. Vertebral Column
    iii. Thoracic Cage
    iv. Pectoral Girdle and Upper Limb
    v. Pelvic Girdle and Lower Limb
d. Joints / Articulations
    i. Joints and their Classifications
    ii. Fibrous Joints
    iii. Cartilaginous Joints
    iv. Synovial Joints General Structure
    v. Synovial Joint Types and Movements

VII. Muscular System
a. Types and Characteristic of Muscle Tissue
b. Gross and Microscopic Anatomy of Muscle Tissue
c. Muscle Physiology/ Muscle-Nerve Relationship
d. Classification of Skeletal Muscle Fiber Types
e. Measurement of Skeletal Muscle Tension
f. Muscle Metabolism
g. Major Musculature of the
    i. Head and Neck
    ii. Vertebral Column and Abdominal Wall
    iii. Pectoral Girdle and Upper Limbs
    iv. Pelvic Girdle and Lower Limbs

VIII. Nervous System
a. Nerve Tissue
    i. Properties of Neurons
    ii. Neuroglia
    iii. Axon Regeneration
    iv. Electrophysiology of Neurons
    v. Characteristics of Action Potentials
    vi. Synapses and Neurotransmitters
    vii. Neural Integration
b. CNS & PNS
    i. Overview of the Brain
    ii. Meninges, Ventricles, CSF and Blood Supply
    iii. Brainstem, Cerebellum, Cerebrum, Diencephalon
    iv. Integrative Functions of the Brain
    v. Cranial Nerves
    vi. Anatomy of Spinal Cord
    vii. Spinal Nerves and Plexuses
    viii. Somatic Reflexes
c. ANS
    i. General Properties and Divisions of ANS

ii. Anatomy of the ANS
iii. Effects on Target Organs
iv. Control of ANS

d. Special Senses
i. Properties and Types of Sensory Receptors
ii. General Senses
iii. Anatomy & Physiology of Olfaction and Gustation
iv. Anatomy & Physiology of Hearing and Equilibrium
v. Anatomy & Physiology of Vision

Syllabi requirements, including legal compliance information must be included. Individual College syllabi guidelines may include additional information. Please contact your VPI/CAO for specific College requirements.