

# **COURSE OUTLINE**

## **BIOL-203**

### **Anatomy and Physiology I**

**4 Semester Hours**

**Science Core Course**

## **HOWARD COMMUNITY COLLEGE**

### **Description**

Biology 203 is a course consisting of an integrated sequence of physical, chemical and biological principles relating to living systems. This course is designed for students whose curriculum requires a sequential two-semester science learning program (BIOL-203 and BIOL-204) which provides an in-depth study of the anatomy and physiology of the human body systems. The body topics studied in Biology 203 include histology, the integumentary system, skeletal system, muscular system, nervous system, endocrine system and special senses. The laboratory program will develop an understanding of the interrelationships of the human body systems. The laboratory includes animal and organ dissections as well as work with skeletons, models, slides and experimental studies of physiological processes. Prerequisite: BIOL-101 or BIOL-107. (3 hours lecture, 3 hours lab)

### **Statement on General Education and Liberal Learning**

A liberal education prepares students to lead ethical, productive, and creative lives and to understand how the pursuit of lifelong learning and critical thinking fosters good citizenship. General education courses form the core of a liberal education within the higher education curriculum and provide a coherent intellectual experience for all students by introducing the fundamental concepts and methods of inquiry in the areas of mathematics, the physical and natural sciences, the social sciences, the arts and the humanities, and composition. This course is part of the general education core experience at Howard Community College.

### **Overall Course Objectives**

Upon completion of this course, the student will be able to:

1. Define anatomy, differentiate between its subdivisions and discuss the methods used to study anatomy.
2. Define physiology and discuss how it is regulated.
3. Define and apply directional terms, regional terms, and terms related to planes, cavities and membranes of the human body.
4. Define tissue and discuss the structure, functions and location of epithelial tissue, connective tissue, muscle tissue and nerve tissue.
5. Discuss the structure, functions and location of the integumentary system and its components.
6. Discuss principles of heat loss, heat gain and the regulation of body temperature.
7. Discuss the structure, functions and location of the skeletal system and its components.
8. Discuss the process of bone formation and the factors that influence the growth and remodeling of bone.
9. Classify any joint into its proper functional and structural category and, using the proper terminology, identify the range of movement at any diarthrotic joint.

10. Discuss the structure, functions and location of the muscular system and its components.
11. Discuss the biochemical mechanisms involved in the stimulation, contraction, relaxation and fatigue of muscle tissue.
12. Differentiate between the following terms: twitch, wave summation, tetanus, asynchronous motor unit summation, treppe, isometric contraction and isotonic contraction and apply them to practical examples.
13. Identify the origin, insertion and action of skeletal muscles.
14. Discuss the structure, functions and location of the central nervous system and the peripheral nervous system and their components.
15. Discuss the biochemical mechanisms involved in the development of resting potential and action potential, the propagation of an action potential, and the transmission of impulses at synapse.
16. Compare the parasympathetic nervous system and the sympathetic nervous system with regard to structure, neurotransmitters and function.
17. Discuss the structure of the eye and the ear and the mechanisms by which they function.
18. Define hormone, identify chemical classes of hormones, discuss the regulation of hormones and discuss the cellular mechanisms that hormones use to affect target organs in the body.
19. Identify the major endocrine glands, the hormones they secrete, and discuss the effect of these hormones in the body.
20. Discuss the causes and effects of selected disorders of the integumentary system, skeletal system, muscular system, nervous system, sensory system and endocrine system.

## **Major Topics**

- I. Introduction to the Human Body
- II. Body Architecture: Microscopic View
- III. The Integumentary System
- IV. The Skeletal System
- V. The Muscular System
- VI. The Nervous System
- VII. The Special Senses
- VIII. The Endocrine System

## **Course Requirements**

Grading/exams: Grading procedures will be determined by the individual faculty member but will be calculated on the basis of exams, lab notebooks and lab practicals. Lecture and lab quizzes and summarized articles may also be required. This course includes a comprehensive final exam.

## **Other Course Information**

This course is a Science core course, a Science elective, and an Arts and Sciences elective.