MISSION VALLEY REGIONAL OCCUPATIONAL PROGRAM
ANATOMY PHYSIOLOGY *for* MEDICAL CAREERS
COURSE OUTLINE

1. Course Title:

Anatomy and Physiology for Medical Careers

2. CBEDS Title:

College Preparatory Course for Healthcare Professionals

3. Career Pathways:

Health Career Pathways:

Medical Careers	Academic
Biotechnology	Academic
Bioinformatics	Academic
Forensics	Academic
Pharmaceuticals	Academic
Psychology	Academic
Allied Health	Academic

4. Course Description:

This is a college preparatory course offered to juniors and seniors interested in health professions. This rigorous course prepares students for completing their pre-requisite in UC credit science requirement to further their education in college in health sciences and medical technology. Classroom instruction includes medical terminology and the study of body systems in detail in the healthcare point of view. The students obtain depth of concepts of anatomy and physiology that allows them to handle college level courses with reasonable comfort.

5. Course Goals and student outcomes:

The students taking this course will be able to:

- Demonstrate the mechanics of homeostasis through learning and applying the scientific method to concepts of structure and the functions of body systems that maintain the homeostasis in a clinical setting.
- Demonstrate an understanding of energy, matter and organization through experimentation, critical thinking, and problem solving and group projects.
- Demonstrate an understanding of human development and growth by applying the concepts learned in life.

6. Course Content Outline and Objectives:

The course is composed of three main concepts of Homeostasis, Energy and Growth and Development. These concepts are covered under the respective body systems. Lectures and lab activities are based on the objectives mentioned to achieve the ability of the students to demonstrate the skills gained. Each objective is linked to the state and national adopted standards.

7. Pre-requisites:

This high school class is offered to juniors and seniors that have completed Biology or Living Earth in the 9th or 10th grade with a "C" or better.

8. Hours:

The students enrolled in this course will receive the equivalent of one year of instruction that gives 10 units of credit.

9. Date Course Re-Approved:

November 11, 2020

10. Course Outline:

PART I: INTRODUCTION TO ANATOMY AND PHYSIOLOGY

I. Introduction to Anatomy and Physiology

A. What is Anatomy and Physiology?
B. Describe the Language
    1. Define the parts of medical terminology
    2. Describe the metric system
    3. Define abbreviations
C. Define the language of disease
D. Differentiate between the symptoms and signs of a disease
E. Describe the Anatomy and Physiology concepts you will encounter on your journey.

II. The Human Body

A. The Map of the Human Body

1. Describe Body Positions
2. Define Body Planes and Directional Terms
3. Name and Locate the Body Cavities
4. Describe Body Region

III. The Cells: The Raw Materials and Building Blocks

A. Identify the chemical constituents of a cell
B. Differentiate between animal and plant cell
C. Identify the cell organelles and list the functions of each organelle
D. Explain the methods of transport across a cell membrane
E. Describe and differentiate Mitosis and Meiosis

IV. Tissues and Systems

A. Identify the characteristics and functions of epithelial, connective, muscle and nervous tissues
B. Identify the organs and describe how the organs are integrated into body systems

PART II: GROWTH AND DEVELOPMENT

V. Integumentary System

A. Describe the structure and functions
B. Describe temperature regulation
C. Explain the healing process in relation to burns to the skin
D. Identify and describe the common disorders and diseases of the skin
E. Differentiation between regeneration and replication of cells

VI. Skeletal System

A. Describe the structure and functions of a bone
B. Name and classify the major bones of the skeleton
C. Diagram and label the microscopic structure of the bone
D. Describe the methods of ossification and bone growth, repair
E. Classify movements
F. Describe the joints and ligaments
G. Describe the disorders and diseases of the Skeletal system

VII. The Muscular System

A. Define the types of muscles and classify based on their shape, location, direction, size and function
B. Describe the functional unit of muscle at the cellular level
C. Describe the physical and chemical characteristics of muscle tissue
D. Describe the skeletal muscle movement at the molecular level
E. Differentiate smooth, cardiac and skeletal muscles
F. Name the major muscles of the skeletal muscular system
G. Identify and describe the disorders and diseases of the muscular system

PART III: HOMEOSTASIS

VIII. Reproductive System

A. Label the diagrams of male and female reproductive systems
B. List the functions of each reproductive structure in males and females
C. Describe the hormonal changes and influences during the menstrual cycle
D. Describe the human reproduction
E. Describe pregnancy and early development of the fetus
F. Describe the common disorders and diseases of the reproductive system

IX. Nervous System

A. Diagram and label a neuron
B. Classify Neurons and list the cranial nerves and their functions
C. Describe the structure and function of parts of brain
D. Describe the structure of spinal cord
E. Identify the peripheral nerves and describe their distribution
F. Label the parts of reflex arc and describe their functions
G. Integrate the brain, spinal cord and PNS in the functioning of Nervous system
H. Describe the common disorders and diseases of the Nervous system

X. Endocrine System

A. Identify the endocrine glands and describe their location and function
B. List the hormones produced by the endocrine glands and describe their function
C. Describe the homeostasis and how the hormones play a major role in homeostasis
D. Describe the negative and positive feedback
E. Describe the common disorders and diseases of the Endocrine system

XI. Circulatory System

A. Diagram and label the parts of the heart
B. Describe the circulation of blood through the heart and the body
C. Describe the physical and chemical composition of blood
D. Describe the cardiac cycle and demonstrate the electrocardiography of the heart
E. Name the major arteries and veins of the vascular system
F. Explain the process of clotting
G. Describe the basis and inheritance blood groups and discuss Rh incompatibility
H. Describe the common disorders and diseases of the Cardiovascular system
I. Identify the risk factors for heart disease

XII. Lymphatic System

A. Identify the major parts of lymphatic system and explain their functions
B. Describe the role of white blood cells in the immunity
C. Compare different types of immunity
D. Describe the T cell deficiency in HIV caused AIDS
E. Describe the disorders of immune system

XIII. Respiratory System: Objectives

A. Identify the organs of respiratory system and describe their functions

B. Define the respiratory volumes and capacities
C. Describe the mechanics of external and internal respiration
D. Describe the common disorders and diseases of the Respiratory system

XIV. Urinary System

A. Diagram and label a nephron
B. Label the Urinary System and describe the function of each part
C. Describe the secretion of urine, filtration and reabsorption process
D. Describe the acid base balance and kidney's role in homeostasis mechanism
E. Describe the common disorders and diseases of the Urinary system
F. Apply the concept of filtration in dialysis in a clinical setting

PART IV: ENERGY

XV. Digestive system

A. Label the alimentary canal and describe the functions
B. List the enzymes secreted and their functions
C. Describe the chemical bonds of food molecules
D. Describe the process of digestion, absorption, assimilation and elimination
E. Do a dietary analysis and nutritional pyramid
F. Identify the accessory organs of digestion and describe their function
G. Describe the common disorders and diseases of the Digestive system

11. Additional Items:

a. Articulation: This class is articulated with Ohlone College. Students that earn a B- or better can earn 4.0 credits of BIOL 104: Basic Human Anatomy and Physiology.

b. UC/CSU a-g Credit: This counts as a UC/CSU Area "g": elective credit.

c. Instructional Strategies:
-lecture -multi-media -virtual simulations -group discussion -CD-guided -cooperative groups -brainstorming -practice -guest speakers -projects -demonstration -work-based learning -reading assignments -labs include dissections -oral reports - Guest Speakers- field trips -critical thinking and problem solving scenarios -role-playing

d. Instructional Materials:

Anatomy & Physiology for Health Professionals: An Interactive Journey, 4th Edition, by Colbert and Ankney, Pearson 2020

Anatomy & Physiology for Health Professions: An Interactive Journey by Bruce J. Colbert, Jeff Ankney student workbook to accompany textbook

-Power points -realia and models -demonstrations -handouts -video tapes -Internet research

e. Assessment Methods and/or Tools:

-Warm ups	-Research papers	-Labs
-Workbook assignments	-Demonstrations	-Projects
-Presentations	-Peer assessments	
-Quizzes/Tests	-Final Exams	

f. Key Assignments:

- Design and conduct scientific experiments to assess, evaluate and communicate the problems
- Incorporation of mathematics to analyze the data
- Animal dissections to visualize the structures and understand the concepts
- Understanding the physiology and disease process in humans by experimenting and application
- Virtual stimulatory labs to provide depth to understanding the concepts
- Application of concepts in relation to clinical settings
- Using technology and modern methods to understand the clinical approach in health care industry

g. Course Certificate

Required proficiency level for certificate of Completion:

1. Overall grade of a "B" (84%) or higher for each of the quarter semesters.
2. Minimum student mastery level for each proficiency; perform correctly with direct supervision.
3. Demonstrate occupational specific and general workplace skills based on OSHA guidelines and JACOH standards

Competency List:

- Demonstrate the mechanics of homeostasis through learning the structure and the functions of body systems in depth and applying the concepts in a clinical setting.
- Demonstrate an understanding of energy, matter and organization through experimentation, critical thinking, and problem solving and group projects.
- Master the medical terminology component of each system.
- Identify the components of Universal Precautions and Standard precautions.
- Demonstrate an understanding of various careers in the healthcare industry including the education, personal qualities and skills necessary for the career.