

Murrieta Valley Unified School District
High School Course Outline
April 2004

Department: Science

Course Title: Anatomy and Physiology

Course Number: 3040

Grade Level: 11 - 12

Prerequisite: Successful completion of CP Biology with a grade of B or better.

Length of Course: Year

UC/CSU (A-G) Requirement: D

I. Goals

The student will:

- A. Identify and explain primary functions and interrelationships of each of the body's systems (*Life Science Standard 9 a-i*)
- B. Distinguish between the tissue types that form organs and organ systems in the human body (*Life Science Standard 9a*)
- C. Identify the majority of the 206 bones (and their related skeletal structures), their relations to each other, and the types of movement they contribute to
- D. Identify muscles on a large vertebrate (such as a cat) and relate their location to their function and to the corresponding muscle on a human (*Life Science Standard 9 h*)
- E. Understand the sliding filament mechanism of muscle contraction, including the role of various ions, proteins, and the nervous system (*Life Science Standard 9 h*)
- F. Recognize the integration of nutrients, enzymes, and organs and the breakdown of food into energy and waste (*Life Science Standard 9 a, f*)
- G. Identify the major components of the cardiovascular system and how these components provide nutrients and oxygen to the rest of the body (*Life Science Standard 9 a*)

- H. Understand the roles of various types of neurons in transmitting electrochemical impulses in response to various internal and external stimuli
(*Life Science Standard 9b,d,e*)

II. Outline of Content for Major Areas of Study

Semester I

A. Body Plan

1. Anatomical directions
2. Body planes, regions and cavities

B. Histology

1. Epithelial, muscular, connective and nervous tissues
2. Microscopic identification

C. The Skeletal System

1. Bone structure
2. Locations of all bones
3. Identification of bone processes
4. Joints, types of bone breaks and repair

D. The Muscular System

1. Muscle energy and physiology
2. Cat dissection and identification of the major muscle groups

Semester II

A. The Digestive System

1. Anatomy and physiology of the major organs
2. Enzyme types and functions

B. Nutrition & Metabolism

1. Role of the major food nutrients
2. Identification and role of various vitamins and minerals

C. The Cardiovascular System

1. Anatomy and dissection of the heart
2. Major blood vessels and tissues/organs served
3. Cardiovascular diagnostic tests including heart rate and blood pressure

D. The Nervous System

1. Anatomy and dissection of the brain
2. Function of the major brain systems
3. Neural anatomy and the physiology of the nerve impulse
4. Integration of the nervous and other body systems

III. **Accountability Determinants**

- A. Daily work assessments
- B. Performance based laboratory experiences, including several dissections.
- C. Project based assessments; posters, children's books, lab experiments
- D. Individual performance; lab and dissection practicals, quizzes and exams

IV. **Required Text**

Shier, David; Butler, Jackie; and Lewis, Ricki: *Essentials of Human Anatomy and Physiology*, 7th Ed., Boston, Massachusetts: McGraw Hill Company, 2000.