

# Curriculum Outline



**Campbell High School**

Character – Courage – Respect – Responsibility

Course & Level: Anatomy and Physiology (Honors)

Department: Science

Teacher: Linda Frost

Grade level: 11 and 12

## Description of Course:

The purpose of this course is to provide a detailed study of the structure and function of all the human body systems. Disorders and diseases associated with the systems will be emphasized. Scientific anatomical terminology will be applied to diagrams, models, and dissection specimens. The dissection of the cat will be used to reinforce the anatomy of the human body systems. The skills of scientific problem solving, critical thinking, laboratory observations, and reporting techniques will be emphasized. Students will be expected to apply concepts acquired in class to all laboratory work. Students will research, review and interpret current scientific developments, especially relating to the medical field.

## School – Wide Expectations:

### Academic:

1. Read, write and speak effectively
2. Exhibit critical thinking and problem solving skills
3. Use resources to obtain information and facilitate learning

### Civic/Social:

1. Exhibit personal responsibility
2. Work cooperatively in an atmosphere of mutual respect

*The school-wide expectations are incorporated into all courses at Campbell High School. Underlined words in the following text illustrate this alignment between the school-wide expectations and the course curriculum.*

## Core Competencies and State Standards:

**Levels of Organization** Students will identify and articulate the importance of the structural and functional organization of the body. They are to be able to describe and discuss the human body as it increases in complexity for the level of the atom to the whole organism. This complexity will include an understanding of the chemical, metabolic, cellular and tissue levels.

**Integration and Coordination** Students will distinguish and recall the systems of the body important in integration and coordination. They will identify the divisions and the structure and function of the nervous system and sense organs. Students will be able to describe and explain the endocrine system and appraise how it operates within the whole body.

**Transport** Students will describe the importance of transportation within the body, including the structure and function of the blood, cardiovascular system and the lymphatic system. They are to describe and show critical thinking skills when understanding the protective purposes of the transport systems and their common diseases.

**Absorption and Excretion** Students will recognize and explain the importance of absorption and excretion of the human body. They will identify the structural and functional components of the digestive, respiratory, and urinary system. Students will discuss and be able to analyze homeostatic relationships within the body, especially between these systems.

**Support and Movement** Students will identify the structural and functional components of the skeletal, muscular and integumentary systems of the body and understand and be able to articulate their importance in support and movement. They will compare and contrast, locate, identify and memorize skin, bones and muscles within the body and appraise how they produce body movement and support.

**LS 1** All living organisms have identifiable structures and characteristics that allow for survival (organisms, populations, and species).

**LS 2** Matter cycles and energy flows through an ecosystem.

**LS 3** Groups of organisms show evidence of change over time (structures, behavior, and biochemistry).

**LS 4** Humans are similar to other species in many ways, and yet are unique among Earth's life forms.

**LS 5** The growth of scientific knowledge in Life Science has been advanced through the development of technology and is used to identify, understand and solve local and global issues.

### Scientific Technique and Investigation – Semester 1 and 2

Students will demonstrate scientific inquiry and analysis in a laboratory investigation. They will exhibit personal responsibility and work cooperatively and safely during laboratory investigations, including dissections. They are to demonstrate correct handling and safety techniques of laboratory equipment including accuracy in the dissection and drawing of specimens.

**SPS1** – Scientific Inquiry and Critical Thinking Skills (INQ) **SPS2** – Unifying Concepts of Science **SPS3** – Personal, Social, and Technological Perspectives **SPS4** – Science Skills for Information, Communication and Media Literacy

### Scientific Research – Semester 1 and 2

Students will research, review and interpret current scientific developments and its ethical implications.

**SPS1** – Scientific Inquiry and Critical Thinking Skills (INQ) **SPS2** – Unifying Concepts of Science **SPS3** – Personal, Social, and Technological Perspectives **SPS4** – Science Skills for Information, Communication and Media Literacy

### **Suggested Texts and Media (Software, AV, etc.):**

1. Textbook and ancillary materials (Laboratory Manual, Student Study Guide): Human Anatomy and Physiology, Hole's - McGraw-Hill, Hole's Test Bank - Microtest III
2. PASCO Datastudio software
3. Simulated dissection software - Neotek Catlab v 3.0 and CatLab
4. Video and DVD's: The Standard Deviants: Anatomy part 1 and 2, The incredible human body, Transplants a gift of life, MythBusters, ER – the real drama, The major systems and organs, The Forgetting: a portrait of Alzheimers, Lorenzo's Oil

The science curriculum at Campbell High School is a dynamic document, reflecting the nature of the subject. It addresses ever-changing areas of study, such as genetics and quantum physics, as well as the fundamentals, such as the Periodic table and Newton's Laws of Motion. Scientific Research is an important component for each course at Campbell. The analysis and interpretation of recent scientific information and articles will vary appropriately with grade level and course difficulty.

We utilize a variety of instructional resources beyond the identified textbooks and materials throughout the school year to enhance your student's educational experience. Parents/Guardians are welcome to review the available resources throughout the school year by contacting their student's teacher. Due to religious or moral objections, alternative assignments may be available upon request.

### **Suggested Instructional Strategies:**

**1. Lecture, Discussion and Demonstration** – Students learn from lectures, power point presentations, labs and demonstrations. Use of demonstrations and labs have an emphasis on student inquiry. Students are encouraged to ask questions and discussion is an integral part to the inquiry process. Through this, students are encouraged to think independently and 'outside of the box'. Scientific vocabulary is stressed, especially understanding the root of words. Models are frequently used to illustrate the structure and functions of the human body, such as the human skeleton, heart structure.

**2. Lab, Investigation** – Exploratory or investigation labs allow students to ask their own questions about a particular concept. Students also use labs to identify body structure and function. Lab dissections are stressed, especially the cat dissection, which integrates the body systems, covered in class. Microscope work, emphasizing the microscopic level of the human body is frequently utilized. Material such as organs obtained from the slaughter house allow hands on understanding of the human body. Students will be accountable for both individually and cooperatively work.

**3. Projects** – Students are expected to use read, assimilate, and show knowledge, exhibit critical thinking skills and problem solving skills relating to the systems of the body. Two projects are set per semester on specific systems of the body. These projects may be group or individual work. Final product may include a written pamphlet, poster, presentation, visual display and/or power point.

**4. Research Investigation** – Students are expected to research and read recent research or current events relating to the body and/or medicine. Diseases and age-related problems for systems of the body are covered. Emphasis is placed on the ongoing development in medicine and the multifaceted approach to understanding the body and its health.

**5. Guest Speakers** – Visiting speakers are encouraged in this course. A wider spectrum of the issues relating to the body can be addressed by utilizing the expertise of visiting speakers. Guest speakers have included in the past, a respiratory therapist, nutritionist, diabetes specialist, the school nurse and a chiropractor.

### **Suggested Assessment Strategies:**

**1. Quiz / Test** – McGraw-Hill, Hole's Test Bank - Microtest III software. Multiple choice, true/false, matching, open response and essay questions. Lab technique and specimen identification are tested. Scientific vocabulary is regularly tested. Formative and summative assessments are used throughout the course.

**2. Lab Report** – In order to demonstrate competency in the Scientific Investigation requirement, students communicate lab outcomes in formats appropriate for upper classmen.

**3. Project** – Two projects are set per semester on specific systems of the body. Final product may include a written pamphlet, poster, presentation, visual display and/or power point.

**4. Informal Groupwork** – Various modes of formative assessment in which students work on a particular problem in groups of two to four. Groupwork encourages peer learning, strengthens topical skill sets through teaching, and promotes collaboration and community. Examples of groupwork include Data Analysis, oral presentations, whiteboarding and Problem Solving.