SCIENCE DEPARTMENT

ANATOMY AND PHYSIOLOGY: COURSE #436

(Alternate Year Offering; See the Program of Studies)

Contact Information

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The Department's Educational Philosophy

We believe that students should be exposed to the process of scientific inquiry so they can acquire and interpret scientific knowledge, and begin to realize the wider applicability of scientific problem-solving methods. By making the laboratory the focal point of learning, we seek to foster students' appreciation for the experience of doing science.

Guiding Principles

- Students must be able to collect and analyze data and formulate hypotheses.
- Inductive and deductive problem-solving skills are central to science education.
- An effective program in science addresses the limitations of data and conclusions.
- Students should be able to use or design a strategy for testing scientific concepts.
- A comprehensive science program will emphasize the delicate checks and balances in man's abiotic and biotic environments and the stresses upon these ecosystems, which could affect the destiny of the world.
- Science is integrally related to mathematics.
- An effective science program builds students' ability to communicate accurately and precisely.
- An effective science program stresses both cooperative and independent learning.

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Course Frequency: Semester course, six times in a six-day cycle
Credits Offered: 2.5 credits
Prerequisites: Biology and Chemistry, or recommendation by department

Background to the Curriculum

Anatomy and Physiology is an elective that was developed to supplement the required courses offered by the science department and to address the needs of students who are interested in pursuing advanced studies and/or careers in the health field. Anatomy and Physiology is heterogeneously grouped; therefore, students who are competent at the College Prep through Honors/AP levels are encouraged to participate. This course focuses on the human body systems, important structures, and their respective functions.

Core Topics/Questions/Concepts/Skills

Core Topics (Body Systems Covered)	Questions (General that apply to each system)	Concepts	Skills
1. Skeletal 2. Muscular 3. Nervous 4. Endocrine 5. Cardiovascular 6. Respiratory 7. Immune 8. Digestive 9. Urinary	• What are the major structures of the system and their corresponding functions? • What is the basic structural and functional unit of the system? • How is homeostasis maintained within the system? • What happens when homeostasis is disrupted? • What are common pathologies, their causes, symptoms, and treatments? • How are the systems of the body integrated?	• Anatomical structures • Physiological functions • Homeostasis • System integration • Disease and pathologies	• Experimental design, data collection, analysis, and laboratory write-up • Use of directional terms and body orientation • Structure identification • Use of microscopes • Use of diagnostic tools (eye chart, reflex hammer, color blind chart, % body fat calipers, lung volume bag, pulse, sphygmomanometer, etc) • Fetal pig dissection technique

Course-End Learning Objectives

Learning objective	**Corresponding state standards, *where applicable***
1] Identify the major anatomical structures of the major systems of the human body	Biology.4.1
2] Describe the major physiological functions of the major systems of the human body	Biology.4.1
3] Identify the basic structural and functional unit of the major systems of the human body	Biology.4.1
4] Describe homeostasis, and how it is maintained in each of the major systems of the human body	Biology.4.2
5] Describe the major pathologies or each of the systems of the human body	Biology.4.2

Assessment

- Tests: written based on curriculum covered; emphasis on terms, concepts, and application; generally focuses on the physiology of the anatomy that is covered in quiz format.
- Quizzes: different formats, usually on the anatomy
- Laboratory activities and reports: some formal typed with hypotheses, procedure, materials, data, discussion and conclusion; some informal with questions.
- Homework/Classwork: questions from the chapter review, anatomical coloring pages, identification sheets, and worksheet packets.
- Dissection: fetal pig dissection unit includes a series of identification quizzes
- Oral final exam: integration of body systems in an oral discussion format between student and teacher.

Technology and Health Learning Objectives Addressed in This Course

(This section is for faculty and administrative reference; students and parents may disregard.)

Course activity: skills &/or topics taught	Standard(s) addressed through this activity
1] Students utilize computers for word processing, research, and website activities to facilitate the learning of concepts in this course. Students also use body fat calipers and lung spirometers to enhance conceptual learning.	
2] Students learn about various conditions of the human body as a result of a disruption of homeostasis, such as osteoporosis, muscle atrophy, multiple sclerosis, diabetes, emphysema, atherosclerosis, and immunodeficiency disorder. Students learn about causes, treatment, and prevention of these and other human body system pathologies.	

Materials and Resources

Student text: Mariab, Elaine, N. Essentials of Human Anatomy and Physiology, 5th edition. Benjamin Cummings, 1997.

Numerous audio-visual, websites, and lab materials to supplement the material taught in this course.