SPORTS MEDICINE 1
ANATOMY & PHYSIOLOGY

ACADEMIC CONTENT & WORKPLACE EMPLOYABILITY STANDARDS

CATALINA FOOTHILLS SCHOOL DISTRICT

Approved by Governing Board on May 24, 2018

Catalina Foothills School District
Sports Medicine 1: Anatomy & Physiology
Grades: 10-12

Sports Medicine 1: Anatomy & Physiology is designed to introduce students to the basics of sports medicine and rehabilitation therapies. It is a hands-on inquiry-based laboratory course that helps students discover the wonders of the human body. The structures and functions of the major body systems will be explored from a sub-cellular level to a multi-cellular organism level. Students will gain extensive knowledge of the human body through lecture, research and reading, and laboratory investigations, including two major dissections. They will learn the basics of anatomy and physiology, CPR, first aid, types and prevention of sports-related injuries, and rehabilitation. Students will also explore medical and allied health care careers. This course is a good introduction for students who are interested in a career in sports medicine athletic training, health and wellness, and physical therapy, and applies to any student interested in discovering the inner workings of the human organism.

SCIENTIFIC INQUIRY	
SP1-A-P.1.1	Apply the essential skills of scientific inquiry to develop knowledge and understanding of scientific ideas and how scientists study the natural world. ○ ask or respond to scientifically-oriented questions ○ develop a testable question or hypothesis based upon evidence of scientific principles, probability and/or modeling appropriate to the scientific domain being investigated ○ formulate explanations based on evidence ○ connect explanations to scientific knowledge ○ communicate and justify explanations
SP1-A-P.1.2	Describe and be able to use tools related to investigation of anatomy and physiology (required: (i.e. scalpels, probes, forceps, scissors (sharp and blunt), blood pressure cuff, stethoscopes, Vernier equipment).
SP1-A-P.1.3	Perform labs and dissections in a safe manner, selecting appropriate tools and equipment.
SYSTEMS THINKING	
SP1-A-P.2.1	Explain how a system's components change over time (for example: human development) (Change Over Time).
SP1-A-P.2.2	Explain the causal relationships in a system as being either positive or negative feedback relationships (for example: hormonal regulation) (Interdependencies).
SP1-A-P.2.3	Explain reasons why specific behaviors result from the organization of a system (for example: effect of neural transmitters on human behavior) (System-as-Cause).
MACROMOLECULES	
SP1-A-P.3.1	Compare the properties and functions of proteins, lipids, nucleic acids, carbohydrates, water, atoms, molecules, macromolecules.
SP1-A-P..3.2	Describe the spatial relationship and interaction of an organism's components from atom to organism.
SP1-A-P.3.3	Describe the nutritional concepts used to evaluate dietary intake and physical composition (e.g., 6 basic components of food [proteins, carbohydrates, fats, vitamins, minerals, water]).
SP1-A-P.3.4	Explain nutritional concepts in relation to basic nutrient caloric intake.
SP1-A-P.3.5	Explain nutrition and exercise as related to special populations (for example: diabetics, vegetarianism, and athletes who gain and lose weight).
HISTOLOGY	
SP1-A-P.4.1	Compare tissue types, structures and functions (epithelial, connective, muscular, nervous).

SP1-A-P.4.2	Classify tissue types.
SP1-A-P.4.3	Compare fiber types (collagen, elastic, reticular).
SP1-A-P4.4	Explain the purpose of each tissue in areas throughout the body.
DISEASE AND DISORDERS	
SP1-A-P.5.1	Explain the effects of diseases and disorders on a part, system and/or organism as a whole.
SP1-A-P.5.2	Connect the effects of a disease or disorder to various systems and their reactions.
SP1-A-P.5.3	Apply genetic effects on the overall performance of body systems.
ORGANIZATION AND HOMEOSTASIS	
SP1-A-P.6.1	Infer the function of a body part (organ, tissue, etc.) based on its structure.
SP1-A-P.6.2	Explain the interaction of the components within a body system and between systems to maintain homeostasis.
SP1-A-P.6.3	Determine the effects of disorders or malfunctions of a body part on the homeostasis of the part, system and/or organism.
SP1-A-P.6.4	Describe how organs can perform functions in multiple body systems.
SP1-A-P.6.5	Explain cause, signs, symptoms, and treatment of environmentally-related emergencies (e.g., effects of heat and cold).
MEDICAL TERMINOLOGY	
SP1-A-P.7.1	Compare terms based on their context within the body system.
SP1-A-P.7.2	Use anatomical terms correctly based on information provided.
SP1-A-P.7.3	Define terms associated with disease and body systems.
SP1-A-P.7.4	Determine locations of organs, symptoms, etc., using directional terms, planes and sections.
PROTECTION, SUPPORT, AND MOVEMENT: INTEGUMENTARY SYSTEM	
SP1-A-P.8.1	Analyze the pathologies of the integumentary system and how the system works to repair itself.
SP1-A-P.8.2	Relate the structures of the integumentary system to maintenance of body temperature and safe boundaries.
SP1-A-P.8.3	Explain the effects of the sun and aging on the integumentary system.
PROTECTION, SUPPORT, AND MOVEMENT: SKELETAL SYSTEM	
SP1-A-P.9.1	Apply the functions of bone cells to the formation, growth and remodeling of bone tissue.
SP1-A-P.9.2	Differentiate variations in skeletal structure between male and females and age-related changes.
SP1-A-P.9.3	Categorize joint types based on their range of motion.
SP1-A-P.9.4	Explain how bone structure relates to the five functions of bone (support, protection, movement, storage and blood cell formation).
SP1-A-P.9.5	Construct a skeleton based on an understanding of bone type and function.
SP1-A-P.9.6	Describe the purpose of various compounds and minerals in bone formation (e.g., calcium, vitamins).
PROTECTION, SUPPORT, AND MOVEMENT: MUSCULAR SYSTEM	
SP1-A-P.10.1	Explain anabolic and catabolic processes involved in exercise, muscle growth and atrophy.
SP1-A-P.10.2	Outline the sliding filament theory and its key structures.
SP1-A-P.10.3	Apply understanding of muscle types to the functioning of various organs.
SP1-A-P.10.4	Describe key structures and events that take place within the neuromuscular junction.
INTEGRATION AND REGULATION: SPECIAL SENSES	
SP1-A-P.11.1	Explain the physiological basis of olfactory (smell) and gustatory (taste) discrimination.
SP1-A-P.11.2	Articulate the roles of the structures of the ear in hearing and equilibrium.
SP1-A-P.11.3	Explain the functions of the internal and accessory structures of the eye.
SP1-A-P.11.4	Outline the pathways of the senses to the brain.
INTEGRATION AND REGULATION: ENDOCRINE SYSTEM	
SP1-A-P.12.1	Describe how hormones help to maintain homeostasis.
SP1-A-P.12.2	Differentiate between the actions of steroid hormones and nonsteroid hormones.
SP1-A-P.12.3	Explain negative feedback and its role in regulating blood levels of hormones.

INTEGRATION AND REGULATION: CARDIOVASCULAR SYSTEM	
SP1-A-P.13.1	Explain the pathway of blood flow through the cardiovascular system.
SP1-A-P.13.2	Compare the types of blood vessels based on their structure and function.
SP1-A-P.13.3	Explain the function(s) of the heart valves.
SP1-A-P.13.4	Apply knowledge of diffusion to gas exchange through the body.
SP1-A-P.13.5	Perform simulations of standard tests used in blood type identification and determine the correct blood type.
SP1-A-P.13.6	Summarize blood cell formation and disorders that can increase or decrease the number of cells produced.
INTEGRATION AND REGULATION: LYMPHATIC SYSTEM AND BODY DEFENSES	
SP1-A-P.14.1	Describe the functions of the structures of the lymphatic system.
SP1-A-P.14.2	Explain the functional relationship between the lymphatic system and the cardiovascular and immune systems.
SP1-A-P.14.3	Describe the role of white blood cells, antigens and antibodies in the immune response.
SP1-A-P.14.4	Describe the mechanism of a vaccination.
INTEGRATION AND REGULATION: DIGESTIVE SYSTEM	
SP1-A-P.15.1	Describe the function of the six basic nutrients (carbohydrates, protein, lipids, water, vitamins, minerals).
SP1-A-P.15.2	Describe the enzymatic breakdown of food substrates and where this process occurs in the body.
SP1-A-P.15.3	Explain how the microvilli, villi, lacteals, and capillaries work together in absorption in the small intestine.
INTEGRATION AND REGULATION: RESPIRATORY SYSTEM	
SP1-A-P.16.1	Apply knowledge of diffusion to explain the pathway of gas exchange between the blood and the lungs, and the blood and the body tissues (internal vs. external respiration).
SP1-A-P.16.2	Explain the key phases involved in inhalation and exhalation.
FIRST AID AND CPR	
SP1-A-P.17.1	Assess vital signs (normal vs abnormal) (e.g., pulse, respirations, skin, pupils, blood pressure).
SP1-A-P.17.2	Perform CPR (cardiopulmonary respiration) and AED (automated external defibrillator) procedures for infants, children, and adults.
SP1-A-P.17.3	Demonstrate safety and infection control: ○ describe maintaining a safe and sanitary treatment area, including the use of disinfectants, antiseptics, and sanitization techniques ○ identify body fluids that require universal precaution ○ use guidelines for universal precautions to avoid contact with body fluids (for example: use of Personal Protective Equipment PPE) ○ describe how to dispose of wound care cleaning supplies and sharps ○ use proper hand-washing techniques
SP1-A-P.17.4	Describe common open and closed skin wounds, including controlled bleeding control techniques (e.g., abrasions, incisions, lacerations, punctures, and blisters).
WORKPLACE EMPLOYABILITY: PROFESSIONALISM	
SP1-A-P.18.1	Demonstrate professionalism in the workplace (being on time, proper dress, courteousness).
SP1-A-P.18.2	Represent the school [or organization] in a positive manner, demonstrating the school's [or organization's] mission and core values.
SP1-A-P.18.3	Demonstrate respect for personal and professional boundaries (distinguish between personal and work-related matters).
SP1-A-P.18.4	Interact respectfully with others; act with integrity.
SP1-A-P.18.5	Produce high quality work that reflect professional pride and contributes to organizational success.
SP1-A-P.18.6	Take initiative to develop skills and improve work performance.

WORKPLACE EMPLOYABILITY: COMMUNICATION (TRADITIONAL AND DIGITAL)	
SP1-A-P.19.1	Communicate effectively in preparation for a diverse work environment (required: style, format, and medium appropriate to audience/culture/generation, purpose and context; accuracy; use of appropriate technical/industry language; to resolve conflicts; address intergenerational differences/challenges; persuade others).
SP1-A-P.19.2	Use documentation (for example: itineraries and schedules) to plan and meet client needs.
SP1-A-P.19.3	Use appropriate technologies and social media to enhance or clarify communication.
SP1-A-P.19.4	Use a variety of interpersonal skills, including tone of voice and appropriate physical gestures (for example: eye contact, facing the speaker, active listening) during conversations and discussions to build positive rapport with others.
SP1-A-P.19.5	Pose and respond to questions, building upon others' ideas in order to enhance the discussion; clarify, verify, or challenge ideas and conclusions with diplomacy.
WORKPLACE EMPLOYABILITY: SELF-REGULATION	
SP1-A-P.20.1	Apply the skills and mindset of self-regulation to accomplish a task or project.
SP1-A-P.20.2	Select and use appropriate technologies to increase productivity.
SP1-A-P.20.3	Exercise initiative and leadership (for example: recognize and engage individual strengths, plan for unanticipated changes, pursue solutions/improvements).
WORKPLACE EMPLOYABILITY: CRITICAL THINKING AND PROBLEM SOLVING	
SP1-A-P.21.1	Identify problems and use strategies and resources to innovate and/or devise plausible solutions
SP1-A-P.21.2	Take action or make decisions supported by evidence and reasoning.
SP1-A-P.21.3	Transfer knowledge/skills from one situation/context to another.
WORKPLACE EMPLOYABILITY: COLLABORATION	
SP1-A-P.22.1	Take responsibility for any role on a team and accurately describe and perform the duties of each role, including leadership.
SP1-A-P.22.2	Integrate diverse ideas, opinions, and perspectives of the team and negotiate to reach workable solutions.
SP1-A-P.22.3	Prioritize and monitor individual and team progress toward goals, making sufficient corrections and adjustments when needed.
SP1-A-P.22.4	Submit high-quality products that meet specifications for assigned tasks.