

Course Title:	Anatomy and Physiology
Grade(s):	11-12

Course Description
The goal of Anatomy and Physiology (A&P) is to blend the traditional study of the human body structures and processes with the exploration of human phenomena and case studies. Through the explanation of these phenomena and case studies students will learn about the complexities of the many wonders of the human body. This course will expand upon concepts learned in biology by differentiating between the many types of tissues and cells that make up the major organ systems. Each system will be examined through a variety of lenses: levels of anatomical organization, the language of anatomy, feedback mechanisms, pathology, diagnostic practices, medical techniques and technologies, and homeostatic regulation.

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: Intro to A&P	Students will explore the human body by investigating its major organ systems, their structures, and their functions. They will examine how cells, tissues, and organs are organized and how these systems work together to maintain homeostasis and support life processes such as circulation, respiration, digestion, and movement. Students will model and analyze the relationships between structure and function, investigate feedback mechanisms, and use scientific practices—such as observation, experimentation, and data analysis—to construct evidence-based explanations. By the end of the unit, students will be able to explain how the body's anatomy supports its physiology and how system interactions sustain health and function.	2 weeks (September)
Unit 2: Human Chemistry	Students will investigate the chemical principles that underlie human biology, including the structure and properties of atoms and molecules, chemical reactions, and the behavior of water and other biomolecules in the body. They will explore how carbohydrates, proteins, lipids, and nucleic acids function as building blocks of cells and how enzymes and other biochemical processes enable metabolism, energy transfer, and regulation of physiological functions. Students will model and analyze chemical interactions within cells and tissues, and apply	3 weeks (September-October)

	scientific practices—such as experimentation, data analysis, and evidence-based reasoning—to explain biological phenomena. By the end of the unit, students will be able to describe how chemistry governs the structure and function of the human body and supports life processes at the molecular and cellular levels.	
Unit 3: Human Genetics and Cytology	Students will investigate how genetic information is stored, expressed, and transmitted across generations, beginning with classical inheritance patterns and extending through the central dogma of molecular biology. They will explore how DNA, RNA, and proteins interact to determine traits, and how mutations and recombination contribute to variation within populations. Students will also examine modern genetic technologies—including CRISPR, cloning, and other gene-editing techniques—to understand how scientists can read, modify, and apply genetic information. Through modeling, data analysis, and evidence-based reasoning, students will explain how genes influence cellular function and organismal traits. By the end of the unit, students will be able to construct explanations connecting inheritance, gene expression, and biotechnological applications, while evaluating the ethical and societal implications of modern genetics.	8 weeks (October-November)
Unit 4: The Nervous System and Senses	Students will investigate how the human nervous system detects, processes, and responds to information from both the internal and external environment. They will explore the structure and function of neurons, the brain, spinal cord, and peripheral nerves, as well as the mechanisms of signal transmission and integration. Students will examine how sensory organs detect stimuli—including vision, hearing, taste, smell, and touch—and how this information is processed to guide behavior and maintain homeostasis. Through modeling, experimentation, and data analysis, students will explain the relationships between nervous system structure and function and construct evidence-based explanations for how the body senses and responds to its environment. By the end of the unit, students will be able to describe how the nervous system coordinates perception, decision-making, and action, and how it interacts with other body systems to support overall function.	6 weeks (December-January)
Unit 5: Endocrine System	Students will investigate how the endocrine system regulates body functions through the production and release of hormones. They will explore the structure and function of major glands, how hormones travel through the bloodstream, and	2 weeks (February)

	how target cells respond to chemical signals. Students will analyze feedback mechanisms that maintain homeostasis, such as those regulating growth, metabolism, blood sugar, and reproductive processes. Through modeling, data analysis, and scientific investigation, students will construct evidence-based explanations for how hormonal communication coordinates activities across multiple organ systems. By the end of the unit, students will be able to explain how the endocrine system controls and integrates physiological processes to maintain balance and support overall health.	
Unit 6: Integumentary System	Students will investigate the structure and function of the integumentary system, including the skin, hair, nails, and associated glands. They will explore how this system protects the body from physical, chemical, and microbial threats, regulates temperature, prevents water loss, and supports sensory perception. Students will examine the cellular and tissue organization of the skin and model how its components interact to maintain homeostasis. Through observation, experimentation, and data analysis, students will construct evidence-based explanations for how the integumentary system responds to environmental changes and injury. By the end of the unit, students will be able to explain how the integumentary system protects, senses, and regulates the body, and how it integrates with other systems to support overall health.	2 weeks (March)
Unit 7: Skeletal and Muscle System	Students will investigate the structure, function, and organization of the skeletal system and connective tissues. They will explore how bones, cartilage, ligaments, and other connective tissues provide support, enable movement, protect vital organs, store minerals, and produce blood cells. Students will examine the microscopic and macroscopic structures of bones and connective tissues, model how they interact with muscles and joints, and analyze how remodeling and repair maintain skeletal integrity. Through observation, experimentation, and data analysis, students will construct evidence-based explanations for how these systems support body structure, facilitate movement, and contribute to overall homeostasis. By the end of the unit, students will be able to explain how skeletal and connective tissue systems function individually and together, and how they integrate with other body systems to maintain health and mobility.	4 weeks (April)
Unit 8: Digestion and Excretion	Students will investigate the structure and function of the human digestive and excretory systems and how they work together to provide nutrients, remove	5 weeks (April-May)

	waste, and maintain homeostasis. They will explore the roles of major organs, accessory structures, and chemical processes in breaking down food, absorbing nutrients, filtering blood, and eliminating metabolic wastes. Students will analyze how the digestive and excretory systems interact with other body systems and how feedback mechanisms regulate processes such as enzyme secretion, urine production, and water and electrolyte balance. Through modeling, experimentation, and data analysis, students will construct evidence-based explanations for how these systems support energy production, nutrient use, and overall health. By the end of the unit, students will be able to explain how the digestive and excretory systems function individually and together, and how they respond to internal and external changes.	
Unit 9: Circulatory System	Students will investigate the structure and function of the human circulatory system and how it transports materials throughout the body. They will explore the roles of the heart, blood vessels, and blood in delivering oxygen and nutrients, removing waste products, and supporting immune function. Students will analyze how the circulatory system interacts with other body systems and how feedback mechanisms regulate blood pressure, heart rate, and oxygen delivery to maintain homeostasis. Through modeling, experimentation, and data analysis, students will construct evidence-based explanations for how the circulatory system sustains life and responds to internal and external demands. By the end of the unit, students will be able to explain how the circulatory system functions, coordinates with other systems, and supports overall health.	4 weeks (May-June)