



6TH GRADE SCIENCE ADVANCED COURSE OVERVIEW

This course is designed to provide students with an opportunity for entry into Advanced and Advanced Placement courses at the high school level. This science course is interdisciplinary in nature. Enduring understandings in science transcend disciplinary boundaries and include change and patterns, cycles, systems, models, and scale. As students engage in inquiry-based scientific investigations and reasoning they will learn science in the following conceptual strands: Matter and Energy; Force, Motion and Energy; Earth and Space Science; and Organisms and Environments. The Curriculum will be taught with an introduction to advanced strategies incorporated throughout the course. Students will engage in learning activities with increased depth and complexity.

SCIENCE TEKS

TIMEFRAME	UNIT SUMMARY	TEKS
20 Days	<p>Unit 1: Classification of Matter In this unit, students will...</p> <ul style="list-style-type: none">• compare the structure, shape, volume and kinetic energy of the particles of various solids, liquids, and gasses.• learn that solids have a definite shape and volume, strong attractive forces between particles, and low kinetic energy. Liquids have a definite volume, take the shape of their container, and have weaker attractive forces between particles and more kinetic energy than solids. Gases have no definite shape or volume. They have the weakest attractive forces between particles and the most kinetic energy.• understand that density is a physical property of matter that does not depend on the size or amount of the sample.• learn that density is useful when identifying unknown substances because it is constant for a given substance, regardless of the size of the sample.• compare the densities of different gases and liquids and investigate how to identify a fluid by its density.• identify elements and understand the organization of the periodic table. Students learn about the physical properties of metals, nonmetals, metalloids, and rare Earth elements. They explore how these different elements are important to modern life.	6.6A, 6.6C, 6.6D

17 Days	Unit 2: Interactions of Matter In this unit, students will... <ul style="list-style-type: none"> investigate physical properties of matter, including those of homogenous and heterogenous mixtures. study strategies for separating mixtures using different physical properties. learn how to distinguish between pure substances and mixtures using physical properties. explore several examples of physical and chemical changes, both of which follow the law of conservation of mass. learn to identify evidence that a chemical change may have occurred, including the production of a gas, a change in thermal energy, the production of a precipitate, and color changes. 	6.6B, 6.6E
17 Days	Unit 3: Forces & Their Interactions In this unit, students will.... <ul style="list-style-type: none"> Identify and explain how forces act on objects, including gravity, friction, and magnetism Calculate the net force on an object in a horizontal or vertical direction Determine if forces are balanced or unbalanced Identify force pairs using Newton's Third Law of Motion 	6.7A, 6.7B, 6.7C
20 Days	Unit 4: Conservation of Energy In this unit, students will.... <ul style="list-style-type: none"> compare kinetic energy and gravitational potential energy compare and contrast elastic and chemical potential energy explain how energy is transferred in transverse and longitudinal waves describe how energy is conserved in different systems 	6.8A, 6.8B, 6.8C
12 Days	Unit 5: The Sun, Earth, & Moon Systems In this unit, students will.... <ul style="list-style-type: none"> model, illustrate and describe how Earth's tilt and revolution around the Sun causes seasons. learn how the positions of Earth, the Sun, and the Moon cause the cycle of daily, spring and neap tides. 	6.9A, 6.9B
18 Days	Unit 6: Earth's Structures In this unit, students will.... <ul style="list-style-type: none"> learn to differentiate among the biosphere, hydrosphere, atmosphere, and geosphere. identify how the components of each sphere interact. become familiar with Earth's four layers and describe their different characteristics. explore how sedimentary, metamorphic, and igneous rocks form and change through the rock cycle. 	6.10A, 6.10B, 6.10C

13 Days	Unit 7: Earth's Resources In this unit, students will.... <ul style="list-style-type: none"> • explore how human activities can impact air, water and soil resources. • investigate how managing these resources is important to the health of the planet and living things. • investigate how soil management can help reduce poverty and malnutrition. • explore how renewable and nonrenewable resources can be managed using conservation strategies, technology and increased efficiency. 	6.11A, 6.11B
20 Days	Unit 8: Living Systems & the Environment In this unit, students will... <ul style="list-style-type: none"> • learn about the hierarchical organization of organisms, populations, and community within an ecosystem. • understand that a population is all members of the same species living together in an area. • become familiar with the ways organisms compete for abiotic and biotic factors. • investigate the interactions organisms and populations have, such as predation and symbiotic relationships. • discover that organisms have genetic and environmental variations that can influence the survival of populations. 	6.12A, 6.12B, 6.12C
18 Days	Unit 9: Organisms & Variations In this unit, students will.... <ul style="list-style-type: none"> • learn about the many scientists who contributed to our understanding of cells and the development of cell theory. • describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells, and are the basic unit of structure and function. • discover that living things grow, develop and reproduce. • identify and compare the basic characteristics of organisms, including prokaryotic and eukaryotic, unicellular and multicellular, autotrophic and heterotrophic. 	6.13A, 6.13B, 6.13C