

Colorado High School Physical Science Standards

Green indicates a chemistry topic.

Blue indicates a physics topic.

Yellow indicates topics that may be taught in either or both physics and chemistry.

High School	
	HS.PS.1a Gather, analyze and interpret data and create graphs regarding position, velocity and acceleration of moving objects
	HS.PS.1b Develop, communicate and justify an evidence-based analysis of the forces acting on an object and the resultant acceleration produced by a net force
	HS.PS.1c Develop, communicate and justify an evidence-based scientific prediction regarding the effects of the action-reaction force pairs on the motion of two interacting objects
	HS.PS.1d Examine the effect of changing masses and distance when applying Newton's law of universal gravitation to a system of two bodies
	HS.PS.1e Identify the limitations of Newton's laws in extreme situations
	HS.PS.1NS.1 Use an inquiry approach to answer a testable question about an application of Newton's laws of motion. (DOK 1-4)
	HS.PS.1NS.2 Share experimental data, respectfully discuss conflicting results, and analyze ways to minimize error and uncertainty in measurement. (DOK 2-3)
	HS.PS.1NS.3 Differentiate between the use of the terms "law" and "theory" as they are defined and used in science compared to how they are used in other disciplines or common use. (DOK 1-2)
	HS.PS.1NS.4 Use technology to perform calculations and to organize, analyze and report data. (DOK 1-2)
	HS.PS.2a Develop, communicate, and justify an evidence-based scientific explanation supporting the current model of an atom
	HS.PS.2b Gather, analyze and interpret data on chemical and physical properties of elements such as density, melting point, boiling point, and conductivity
	HS.PS.2c Use characteristic physical and chemical properties to develop predictions and supporting claims about elements' positions on the periodic table
	HS.PS.2d Develop a model that differentiates atoms and molecules, elements and compounds, and pure substances and mixtures
	HS.PS.2NS.1 Recognize that the current understanding of molecular structure related to the physical and chemical properties of matter has developed over time and become more sophisticated as new technologies have led to new evidence. (DOK 1)
	HS.PS.2NS.2 Ask testable questions about the nature of matter, and use an inquiry approach to investigate it. (DOK 1-4)
	HS.PS.3a Recognize, analyze, interpret, and balance chemical equations (synthesis, decomposition, combustion, and replacement) or nuclear equations (fusion and fission)
	HS.PS.3b Predict reactants and products for different types of chemical and nuclear reactions
	HS.PS.3c Predict and calculate the amount of products produced in a chemical reaction based on the amount of reactants
	HS.PS.3d Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate the conservation of mass and energy
	HS.PS.3NS.1 Critically evaluate chemical and nuclear change models. (DOK 2-3)
	HS.PS.3NS.2 Identify the strengths and weaknesses of a model which represents complex natural phenomenon. (DOK 2-3)
	HS.PS.3NS.3 Use an inquiry approach to test predictions about chemical reactions. (DOK 1-4)

	HS.PS.3NS.4 Share experimental data, and respectfully discuss conflicting results. (DOK 2-3)
	HS.PS.4a Develop, communicate, and justify an evidence-based scientific explanation supporting the current models of chemical bonding
	HS.PS.4b Gather, analyze, and interpret data on chemical and physical properties of different compounds such as density, melting point, boiling point, pH, and conductivity
	HS.PS.4c Use characteristic physical and chemical properties to develop predictions and supporting claims about compounds' classification as ionic, polar or covalent
	HS.PS.4d Describe the role electrons play in atomic bonding
	HS.PS.4e Predict the type of bonding that will occur among elements based on their position in the periodic table
	HS.PS.4NS.1 Recognize that the current understanding of molecular structure related to the physical and chemical properties of matter has developed over time and become more sophisticated as new technologies have led to new evidence. (DOK 1)
	HS.PS.4NS.2 Employ data-collection technology to gather, view, analyze, and interpret data about chemical and physical properties of different compounds. (DOK 1-2)
	HS.PS.5a Develop, communicate, and justify an evidence-based scientific explanation regarding the potential and kinetic nature of mechanical energy
	HS.PS.5b Use appropriate measurements, equations and graphs to gather, analyze, and interpret data on the quantity of energy in a system or an object
	HS.PS.5c Use direct and indirect evidence to develop predictions of the types of energy associated with objects
	HS.PS.5d Identify different energy forms, and calculate their amounts by measuring their defining characteristics
	HS.PS.5NS.1 Critically evaluate scientific claims made in popular media or by peers regarding the application of energy forms, and determine if the evidence presented is appropriate and sufficient to support the claims. (DOK 2-3)
	HS.PS.5NS.2 Use the historical context and impact of early energy research and consider the potential implications for current energy studies on science and our society. (DOK 1-3)
	HS.PS.6a Use direct and indirect evidence to develop and support claims about the conservation of energy in a variety of systems, including transformations to heat
	HS.PS.6b Evaluate the energy conversion efficiency of a variety of energy transformations
	HS.PS.6c Describe energy transformations both quantitatively and qualitatively
	HS.PS.6d Differentiate among the characteristics of mechanical and electromagnetic waves that determine their energy
	HS.PS.6e Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate energy conservation and loss
	HS.PS.6NS.1 Critically evaluate scientific claims made in popular media or by peers regarding the application of energy transformations, and determine if the evidence presented is appropriate and sufficient to support the claims. (DOK 2-3)
	HS.PS.6NS.2 Ask testable questions and make a falsifiable hypothesis about the conservation of energy, and use an inquiry approach to find an answer. (DOK 1-4)
	HS.PS.6NS.3 Share experimental data, and respectfully discuss conflicting results emulating the practice of scientists. (DOK 2-3)