

Unit 0

Experimental Design

Duration	2 weeks	Assessed
Priority Standard(s)	Design, conduct, communicate, and defend a valid experiment.	
Supporting Standard(s)	9-12.PS1.A.3 Plan and conduct an investigation to gather evidence to compare physical and chemical properties of substances.	
	9-12.PS2.A.1 Analyze data to support and verify the concepts expressed by Newton's second law of motion.	
	9-12.ESS2.C.1 Plan and conduct an investigation of the properties of water and its effects on earth materials and surface processes.	

Unit 1
Motion

Duration	3.5 weeks (September)		Assessed
Priority Standard(s)	9-12.PS2.A.1	Analyze data to support and verify the concepts expressed by Newton's 2nd law of motion, as it describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.	
Supporting Standard(s)	9-12.PS2.A.2	Use mathematical representations to support and verify the concepts that the total momentum of a system of objects is conserved when there is no net force on the system.	
	9-12.PS2.A.3	Apply scientific principles of motion and momentum to design, evaluate, and refine a device that minimizes the force on a macroscopic object during collision.	

Unit 2

Forces and Newton's Laws

Duration	3.5 weeks (September)		Assessed
Priority Standard(s)	9-12.PS2.A.3	Apply scientific principles of motion and momentum to design, evaluate, and refine a device that minimizes the force on a macroscopic object during collision.	
Supporting Standard(s)	9-12.PS2.A.1	Analyze data to support and verify concepts expressed by Newton's laws of motion.	
	9-12.PS2.B.1	Use mathematical representations of Newton's law of gravitation to describe and predict the gravitational forces between objects.	

Unit 3

Energy

Duration	2 weeks (October/November)		Assessed
Priority Standard(s)	9-12.PS3.A.1	Create computational model to calculate the change in the energy of one component in a system when the changes in energy are known.	
Supporting Standard(s)	9-12.PS3.A.2	Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associate with the motions of particles (objects) and energy associated with the relative position of particles (objects).	
	9-12.PS3.B.1	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in more uniform energy distribution among the components in the system.	

Unit 4

Classification of Matter

Duration		2.5 weeks (November)	Assessed
Priority Standard(s)	9-12.PS1.A.3	Plan and conduct an investigation to gather evidence to compare physical and chemical properties of substances, such as melting point, boiling point, vapor pressure, surface tension, and chemical reactivity, to infer the relative strength of attractive forces between particles.	
Supporting Standard(s)	9-12.PS1.A.2	Construct and revise an explanation for the products of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.	

Unit 5**Properties of Atoms and the Periodic Table**

Duration	2.5 weeks (November/December)		Assessed
Priority Standard(s)	9-12.PS1.A.1	Use the organization of the periodic table to predict the relative properties of elements based on the patterns of electrons in the outer most energy level of atoms.	
Supporting Standard(s)	9-12.PS1.A.2	Construct and revise an explanation for the products of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.	

Unit 6**Elements and Their Properties**

Duration		2.5 weeks (January)	Assessed
Priority Standard(s)	9-12. PS1.A.2	Construct and revise an explanation for the products of a simple chemical reaction based on the outer-most electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.	
Supporting Standard(s)	9-12.PS1.A.1	Use the organization of the periodic table to predict the relative properties of elements based on the patterns of electrons in the outer most energy level of atoms.	

Unit 7

Chemical Bonds

Duration	3.5 weeks (January/February)		Assessed
Priority Standard(s)	9-12.PS1.A.5	Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.	
Supporting Standard(s)	9-12.PS1.A.2	Construct and revise an explanation for the products of a simple chemical reaction based on the outer-most electron states of atoms, trends in the periodic table, and knowledge of chemical properties.	

Unit 8

Chemical Reactions

Duration		4 weeks (February/March)	Assessed
Priority Standard(s)	9-12.PS1.B.3	Use symbolic representations and mathematical calculations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.	
Supporting Standard(s)	9-12.PS1.B.1	Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.	

Unit 9

Plate Tectonics and Rocks

Duration		2 weeks (March)	Assessed
Priority Standard(s)	9-12.ESS1.C.1	Evaluate evidence of the past and current movements of continental and oceanic crusts, the theory of plate tectonics, and relative densities of oceanic and continental rocks to explain why continental rocks are generally much older than rocks of the ocean floor.	
Supporting Standard(s)	9-12.ESS.C.2	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history.	

Unit 10

Biogeochemical Cycles

Duration	2 weeks (April)		Assessed
Priority Standard(s)	9-12.ESS2.D.1	Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.	
Supporting Standard(s)	9-12.ESS2.C.1	Plan and conduct an investigation of the priorities of water and its effects on Earth materials and surfaces processes.	

Unit 11

Weather and Climate

Duration	2 weeks (April/May)		Assessed
Priority Standard(s)	9-12.ESS3.D.1	Analyze geoscientific data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth's systems.	
Supporting Standard(s)	9-12.ESS3.D.2	Predict how human activity affects the relationships between Earth systems in both positive and negative ways.	