

GENERAL SCIENCE				
Standard	Indicator	Disciplinary Core Ideas	Unit	Labs/Activites/Simulations
Forces and Interactions			SEMESTER 1	
HS-PS2-1 *	Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration.	Force and Interactions	Unit 1 - Motion	
HS-PS2-2 *	Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system.	Force and Interactions	Unit 2 - Forces	
HS-PS2-3 *	Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during the collision.	Force and Interactions	Unit 3 - Work and Energy	
HS-PS2-4 *	Use mathematical representation of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.	Types of Interactions	Unit 4 - Forces in Fluids	
HS-PS2-5	Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that changing magnetic field can produce an electric current.	Types of Interactions	Unit 5 - Heat, Waves, Electricity, and Magnetism	
HS-PS2-6	Communicate scientific and technical information about why the molecular level structure is important in the functioning of designed materials	Types of Interactions		
Energy				
HS-PS3-1	Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other components and energy flows in and out of the system are known.	Definitions of Energy		
HS-PS3-2	Develop and use models to illustrate the energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles and energy associated with the relative position of particles.	Definitions of Energy		
HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.	Definitions of Energy		

HS-PS3-4	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 a more uniform energy distribution among the components in the system (second law of thermodynamics).	Conservation of Energy of Energy Transfer		
HS-PS3-5	Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interactions.	Relationships of Energy and Forces		
Waves and Electromagnetic Radiation				
HS-PS4-1	Use mathematical representation to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.	Wave Properties		
HS-PS4-2	Evaluate questions about the advantage of using a digital transmission and storage of information.	Wave Properties		
HS-PS4-3	Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by wave model or a particle model, and that for some situations one model is more useful than the other.	Wave Properties		
HS-PS4-5	Communicate technical information about how some technological devices use the principle of wave behavior and wave interactions with matter to transmit and capture information and energy.	Wave Properties		
HS-PS4-4	Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.	Electromagnetic Radiation		
Structures and Properties of Matter			SEMESTER 2	
HS-PS1-1 *	Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms.	Structures and Properties of Matter	Unit 6 - Matter	
HS-PS1-2 *	Construct and revise an explanation for the outcome 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.	Structures and Properties of Matter	Unit 7 - States of Matter	
HS-PS1-3 *	Plan and conduct an investigation to gather evidence to compare the structure of substances of the bulk scale to infer the strength of electrical forces between particles.	Structures and Properties of Matter	Unit 8 - Atoms	

HS-PS1-4 *	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.	Structures and Properties of Matter	Unit 9 - The Periodic Table	
HS-PS1-5 *	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 and which the reaction occurs.	Types of Interactions	Unit 10 - The Structure of Matter	
HS-PS1-6	Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.	Types of Interactions	Unit 11 - Chemical Reaction	
HS-PS1-7	Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.	Types of Interactions		
HS-PS1-8	Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.	Nuclear Processes		