Options EHS Physical Science A 2020	Scope and Sequence
Unit Lesson	**Objectives**
Science Skills	
Tools, Technology, and Measurement	
	Select and use appropriate tools to perform tests and collect data.
	Select and use appropriate technology such as computers and graphing calculators to gather, analyze, interpret, and display data.
	Use the SI system of measurement to convert between standard and metric, and metric and metric, and to recognize approximate representations of measurement.
	Science Practice: Use technology to display data in tables and graphs, and use the graphical representations to interpret the data.
Scientific Measurement	
	Explain the purpose of utilizing the metric system in scientific measurement.
	Identify the basic SI units utilized in scientific measurement.
	Calculate values utilizing the metric conversion process.
	Describe the use of significant figures and rounding in scientific measurement.
Scientific Inquiry	
	Examine the process of scientific inquiry using the three types of scientific investigations, including the benefits and limitations of each.
	Identify questions that can be answered through scientific investigation.
	Distinguish between variables and controls in a scientific investigation.
Motion and Forces	
Introduction to Motion	
	Describe the position of an object.
	Explain how an object's motion is relative to a reference point or frame.

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Unit	**Lesson**	**Objectives**
		Distinguish between distance and displacement.
	Speed and Velocity	
		Differentiate between speed and velocity.
		Solve problems involving distance, time, speed, and/or velocity.
		Interpret graphs of distance versus time.
	Acceleration	
		Describe the concept of acceleration.
		Solve problems involving velocity, time, and acceleration.
		Interpret graphs of velocity versus time.
	Lab: Motion	
		Measure distance and time to determine speed.
		Graph changes in motion.
		Interpret data to determine acceleration.
	Introduction to Forces	
		Describe the concept of force.
		Explain how to determine the net force on an object.
		Distinguish between balanced and unbalanced forces and their effect on motion.
	Friction	
		Describe friction and explain what causes it to occur.
		Identify and describe the different types of friction.
		Explain how friction can be reduced or increased depending on the application.
	Gravity	

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Unit	**Lesson**	**Objectives**
		Describe Newton's law of universal gravitation.
		Identify and describe the factors that affect the gravitational force between two objects.
		Explain the concept of free fall.
		Describe how gravity affects projectile motion.
	Newton's Laws of Motion	
		Describe Newton's first law of motion and how it relates to inertia.
		Use Newton's second law of motion to calculate force, mass, and acceleration.
		Explain Newton's third law of motion and how it relates to action and reaction forces.
		Identify applications of Newton's three laws of motion.
	Momentum	
		Define and calculate momentum.
		Explain how momentum is conserved.
		Apply Newton's third law of motion to understand what happens to momentum when two objects collide.
		Use mathematical representations to show that the total momentum of a system of objects is conserved when there is no net force on the system.
	Lab: Newton's Laws of Motion	
		Demonstrate Newton's first law.
		Verify Newton's second law by changing the variables F, m, or a.
	Unit Test	
Work and Energy		
	Work and Power	
		Identify when work is done.

Options EHS Physical Science A 2020		Scope and Sequence
Unit	**Lesson**	**Objectives**
		Calculate the work done on an object.
		Explain how force, work, and power are related.
		Calculate power.
	Introduction to Machines	
		Define a machine and explain its purpose.
		Calculate the mechanical advantage of a machine.
		Calculate the efficiency of a machine.
	Introduction to Energy	
		Define energy.
		Explain how energy and work are related.
		Identify and describe the different forms of energy.
	Potential and Kinetic Energy	
		Distinguish between potential and kinetic energy.
		Calculate the potential energy in a system.
		Calculate the kinetic energy in a system.
		Explain how energy is transferred in a moving system.
	Energy Transformations	
		Explain how energy changes form.
		Identify examples of energy transformations.

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Unit	**Lesson**	**Objectives**
		Summarize the law of conservation of energy.
	Lab: Kinetic Energy	
		Calculate the kinetic energy of objects of different mass.
		Determine the kinetic energy of objects at different speeds.
		Graph data to illustrate changes in kinetic energy.
	Unit Test	
Matter		
	Introduction to Matter	
		Explain what makes up matter.
		Describe how to measure mass and volume.
		Differentiate between mass and weight.
	Density	
		Explain density and state the SI units used to measure it.
		Calculate the mass, volume, or density of an object given the other two measurements.
		Determine whether an object will sink or float relative to the density of the surrounding liquid.
	Lab: Density of Solids	
		Measure the mass and volume of various solid objects.
		Calculate the density of several solid objects.
		Use density to identify an unknown substance.
	States of Matter	
		Describe the arrangement and motion of atoms in the different states of matter.
		Discriminate the characteristics of solids, liquids, and gases.

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Unit	**Lesson**	**Objectives**
	Changes of State	
		Describe what happens during the different changes of state.
		Explain how energy is related to changes of state.
	Unit Test	
Temperature and Heat		
	Temperature and Thermal Energy	
		Explain how temperature relates to kinetic energy.
		Describe how temperature is measured.
		Convert temperature readings between different temperature scales.
		Descibe how thermal energy relates to temperature.
	Heat	
		Distinguish between heat and thermal energy.
		Predict how thermal energy flows between objects at different temperatures.
		Explain why some substances change temperature more easily than others.
	Conduction	
		Explain how molecular movement transfers thermal energy by conduction.
		Distinguish between insulators and conductors.
		Identify situations in which conduction occurs.
	Convection	
		Explain how fluid movement transfers thermal energy by convection.

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Unit	**Lesson**	**Objectives**
		Describe the motion of liquids and gases due to convection.
		Identify situations in which convection occurs.
	Radiation	
		Explain how electromagnetic waves transfer energy by radiation.
		Describe the role of color and texture in absorbers and reflectors.
		Identify situations in which radiation occurs.
	Unit Test	
Cumulative Exam		
	Cumulative Exam Review	
	Cumulative Exam	