

## Physics

Strand	Common Curriculum Goal	Content Standard	Standard	Unit Name	Course Topic Description
<b>SC.CM.SI</b> Scientific Inquiry	Formulate and express scientific questions or hypotheses to be investigated.	Make observations. Formulate and express scientific questions or hypotheses to be investigated based on the observations.	<b>SC.CM.SI.01</b> Based on observations and scientific concepts, ask questions or form hypotheses that can be answered or tested through scientific investigations.	<i>(All Labs fulfill this requirement):</i>	
				Physics and the Laws of Motion	Free-Fall Acceleration Lab
					Projectile Motion Lab
					Forces and Friction Lab
				Energy and Motion	Conservation of Mechanical Energy Lab
					Momentum Lab
					Machines and Efficiency Lab
				Heat and Thermodynamics	Thermal Equilibrium Lab
					Piston Lab
				Waves	Simple Harmonic Motion Lab
					Wave Lab
					Sound Lab
				Electricity	Electrostatics Lab
Current and Resistance Lab					
Resistors in Series and Parallel Lab					
Magnetism and Atomic Physics	Magnetic Field of a Solenoid Lab				
	Electromagnetic Induction Lab				
	Photoelectric Effect Lab				
<b>SC.CM.SI</b> Scientific Inquiry	Design safe and ethical scientific investigations to address questions or	Design scientific investigations to address and explain	<b>SC.CM.SI.02</b> Design a scientific investigation that provides sufficient data to answer a question or test a	<i>(All Labs fulfill this requirement):</i>	
				Physics and the Laws of Motion	Free-Fall Acceleration Lab
					Projectile Motion Lab



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<b>SC.CM.SI</b> Scientific Inquiry	hypotheses.	questions or hypotheses.	hypothesis.	<i>(All Labs fulfill this requirement):</i>	
				Physics and the Laws of Motion	Free-Fall Acceleration Lab
					Projectile Motion Lab
					Forces and Friction Lab
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Current and Resistance Lab					
Resistors in Series and Parallel Lab					
Magnetism and Atomic Physics	Magnetic Field of a Solenoid Lab				
	Electromagnetic Induction Lab				
	Photoelectric Effect Lab				
<b>SC.CM.SI</b> Scientific Inquiry	Conduct procedures to collect, organize, and display scientific data.	Collect, organize, and display scientific data.	<b>SC.CM.SI.03</b> Collect, organize, and display sufficient data to facilitate scientific analysis and interpretation.	<i>(All Labs fulfill this requirement):</i>	
				Physics and the Laws of Motion	Free-Fall Acceleration Lab
					Projectile Motion Lab
					Forces and Friction Lab



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				Energy and Motion	Conservation of Mechanical Energy Lab Momentum Lab Machines and Efficiency Lab
				Heat and Thermodynamics	Thermal Equilibrium Lab Piston Lab
				Waves	Simple Harmonic Motion Lab Wave Lab Sound Lab
				Electricity	Electrostatics Lab Current and Resistance Lab Resistors in Series and Parallel Lab
				Magnetism and Atomic Physics	Magnetic Field of a Solenoid Lab Electromagnetic Induction Lab Photoelectric Effect Lab
<b>SC.CM.SI</b> Scientific Inquiry	Analyze scientific information to develop and present conclusions.	Analyze scientific information to develop and present conclusions.	<b>SC.CM.SI.04</b> Summarize and analyze data, evaluating sources of error or bias. Propose explanations that are supported by data and knowledge of scientific terminology.	<i>(All Labs fulfill this requirement):</i>	
				Physics and the Laws of Motion	Free-Fall Acceleration Lab Projectile Motion Lab Forces and Friction Lab
				Energy and Motion	Conservation of Mechanical Energy Lab Momentum Lab Machines and Efficiency Lab

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				Heat and Thermodynamics	Thermal Equilibrium Lab Piston Lab
				Waves	Simple Harmonic Motion Lab Wave Lab Sound Lab
				Electricity	Electrostatics Lab Current and Resistance Lab Resistors in Series and Parallel Lab
				Magnetism and Atomic Physics	Magnetic Field of a Solenoid Lab Electromagnetic Induction Lab Photoelectric Effect Lab
<b>SC.CM.PS</b> Physical Science	Understand structure and properties of matter.	Understand structure and properties of matter.	<b>SC.CM.PS.01</b> Describe properties of elements and their relationship to the periodic table.		
			<b>SC.CM.PS.01.01</b> Explain atoms and their base components (protons, neutrons, and electrons) as a basis for all matter.		
			<b>SC.CM.PS.01.02</b> Read and interpret the periodic table, recognizing the relationship of the chemical and physical properties of the elements to their position on the periodic table.		
			<b>SC.CM.PS.01.03</b> Recognize that the historical development of atomic theory demonstrates how scientific knowledge changes over time, and how those	Magnetism and Atomic Physics	Atomic Physics

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			changes have had an impact on society.		
<b>SC.CM.PS</b> Physical Science	Understand chemical and physical changes.	Describe and analyze chemical and physical changes.	<b>SC.CM.PS.02</b> Analyze the effects of various factors on physical changes and chemical reactions.		
			<b>SC.CM.PS.02.01</b> Describe how transformations among solids, liquids, and gases occur (change of state).	Heat and Thermodynamics	Heat
			<b>SC.CM.PS.02.02</b> Identify factors that can influence change of state, including temperature, pressure, and concentration.		
			<b>SC.CM.PS.02.03</b> Describe chemical reactions in terms of reactants and products.		
			<b>SC.CM.PS.02.04</b> Describe the factors that affect the rate of chemical reactions.		
			<b>SC.CM.PS.02.05</b> Recognize examples that show when substances combine or break apart in a chemical reaction, the total mass remains the same (conservation of mass).		
<b>SC.CM.PS</b> Physical Science	Understand fundamental forces, their forms, and their effects on motion.	Describe fundamental forces and the motions resulting from them.	<b>SC.CM.PS.03</b> Describe and explain the effects of multiple forces acting on an object.	Physics and the Laws of Motion	Forces and the Laws of Motion
			<b>SC.CM.PS.03.01</b> Understand and apply the relationship $F=ma$ in situations in which one force acts on an object.	Physics and the Laws of Motion	Forces and Friction Lab
			<b>SC.CM.PS.03.02</b> Recognize that equal and opposite forces occur when one object exerts a force on another.	Physics and the Laws of Motion	Forces and the Laws of Motion
			<b>SC.CM.PS.03.03</b> Describe the forces	Physics and the	Forces and Friction Lab
					Forces and the Laws of

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			acting on an object, based on the motion of that object.	Laws of Motion	Motion Forces and Friction Lab			
			<b>SC.CM.PS.04</b> Recognize that gravity is a universal force.	Physics and the Laws of Motion	Two Dimensional Motion and Vectors Free-Fall Acceleration Lab			
				Energy and Motion	Circular Motion and Gravitation			
			<b>SC.CM.PS.04.01</b> Describe the relationship of mass and distance to gravitational force.	Energy and Motion	Circular Motion and Gravitation			
<b>SC.CM.PS</b> Physical Science	Understand energy, its transformations, and interactions with matter.	Explain and analyze the interaction of energy and matter.	<b>SC.CM.PS.05</b> Describe differences and similarities between kinds of waves, including sound, seismic, and electromagnetic, as a means of transmitting energy.	Waves	Vibrations and Waves			
					Sound			
					Light			
						<b>SC.CM.PS.05.01</b> Recognize that waves of all kinds have energy that can be transferred when the waves interact with matter.	Waves	Vibrations and Waves
						<b>SC.CM.PS.05.02</b> Apply the concepts of frequency, wavelength, amplitude, and energy to electromagnetic and mechanical waves.	Waves	Wave Lab
						<b>SC.CM.PS.06</b> Describe and analyze examples of conservation of energy.	Energy and Motion	Conservation of Mechanical Energy Lab
						<b>SC.CM.PS.06.01</b> Recognize that heat energy is a by-product of most energy transformations.	Energy and Motion	Conservation of Mechanical Energy Lab Work and Energy
			<b>SC.CM.PS.06.02</b> Describe ways in which energy can be transferred, including chemical reactions, nuclear reactions, and light waves.	<i>(only light waves are covered):</i>				
				Magnetism and Atomic Physics	Photoelectric Effect Lab			



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			<b>SC.CM.PS.06.03</b> Explain the difference between potential and kinetic energy.	Energy and Motion	Conservation of Mechanical Energy Lab
			<b>SC.CM.PS.06.04</b> Analyze the flow of energy through a system by applying the law of conservation of energy.	Energy and Motion	Conservation of Mechanical Energy Lab