Science Curriculum Map

8th Grade

Trimester One (Aug-Oct.) Strategies/Skills covered	Key Standards	Assessments	Suggested Materials
Measurement and Lab Skills		• Review tools and units of measurement • Review safe lab practices • Write formal lab report	Laptop Internet Lab materials
Engineering and Science	MS-ETS1-1 MS-ETS1-2 MS-ETS1-3 MS-ETS1-4	• Identify and practice the steps of the engineering design process • Use the steps of the engineering design process to solve a problem • Design a test to gather data and determine effectiveness of a solution • Evaluate a design for possible improvements • Develop a model of the design	Laptop Internet Lab materials Building materials Textbook
Energy	MS-PS3-1	• Illustrate the difference between kinetic and potential energy	

	MS-PS3-2 MS-PS3-3 MS-PS3-4 MS-PS3-5	• Use a model to explain the transformation from potential to kinetic energy or the reverse • Identify and explain different forms of energy • Describe what happens to energy when it leaves a system • Design an experiment that demonstrates the Law of Conservation of Energy • Identify and explain conversions and transfers of energy • Analyze data and evaluate the effects of energy transformations • Design and build a model that conserves thermal energy	Textbook Laptops Internet Lab materials

Trimester Two (Oct.-Feb.) Strategies/Skills covered	Key Standards	Assessments	Suggested Materials
Chemistry	MS-PS1-1 MS-PS1-2 MS-PS1-3 MS-PS1-4 MS-PS1-5	• Describe how density affects the properties of matter • Identify structure of an atom • Build a model to illustrate atomic and molecular structure	Textbook Laptops Internet Lab materials

	MS-PS1-6	• Identify properties of metals and nonmetals • Calculate number of protons, electron, and neutrons in an atom • Utilize the periodic table to demonstrate understanding of the differences of various elements • Build a model of a periodic table with mystery elements based on their properties • Classify characteristic of the states of matter • Demonstrate the differences in thermal energy when there is a change of state of matter and graph and analyze data • Design a solution to the problem of energy transfer and thermal energy loss • Identify the physical and chemical properties of matter • Explain how scientists use properties of substances to categorize matter • Identify and provide evidence for when a chemical change has occurred • Write chemical equations to illustrate a chemical reaction (Law	

		of Conservation of Matter) ● Compare and contrast physical properties and changes with chemical properties and changes ● Create a written report about a chosen element ● Use the engineering design process to demonstrate an understanding of physical and chemical properties of matter ● Compare and contrast natural and synthetic materials	
Forces, Motion, and Fields	MS-PS2-1 MS-PS2-2 MS-PS2-3 MS-PS2-4 MS-PS2-5 MS-PS3-1 MS-PS3-5	● Demonstrate the relationship between velocity and acceleration ● Identify different types of friction ● Analyze the advantages and disadvantages of friction in a chosen sport ● Calculate the net force acting on an object ● Illustrate and explain how friction and air resistance affect an object's motion and energy ● Demonstrate and explain how an object is affected by gravity, mass, shape, and air resistance	Textbook Laptops Internet Lab materials

		• Identify examples of Newton's Laws of Motion in action • Demonstrate how Newton's Laws of Motion affect an object's motion and energy • Design and build a model to show how forces act on an object, and make conclusions about the design • Identify the relationship between work, energy, and power • Identify the six simple machines and how each of them assists in making work easier • Demonstrate how simple machines do work and create power • Explain how simple machines work together in a compound machine • Build a model to illustrate how simple machines work together • Identify the properties of magnetic, electric, and gravitational fields • Evaluate the effects of fields on objects around them • Create a model of magnetic fields • Build an electric circuit and describe the path electricity takes through it • Build an electromagnet • Compare and contrast permanent magnets, temporary magnets, and	

		electromagnets	

Trimester Three (Mar-Jun) Strategies/Skills covered	Key Standards	Assessments	Suggested Materials
Waves	MS-PS4-1 MS-PS4-2 MS-PS4-3	• Identify and explain the difference between transverse and longitudinal waves • Identify and explain the difference between mechanical and electromagnetic waves • Demonstrate an understanding of the different properties of all waves • Explain the connection between the speed and energy of a wave • Identify and simulate the properties of sound waves and their interactions • Demonstrate an understanding of the properties of light waves • Explain the similarities and differences in the different electromagnetic waves • Illustrate different ways that light	Textbook Laptops Internet Lab materials

		waves interact • Build a model to reflect light to a target • Explain why we see the colors we see • Explain the different ways that we use waves in our lives • Explain how waves are utilized for information transfer • Identify what communication devices use waves • Investigate the differences between analog and digital signals • Evaluate which are better to use - analog or digital signals	
Human Impact on the Environment	MS-LS2-4 MS-LS2-5 MS-PS1-3	• Identify ways in which humans impact the environment • Demonstrate how resources become scarce when they are nonrenewable • Analyze the impact of a new, renewable fuel • Illustrate the different ways that different renewable resources would change the way we live and the effects on the environment	Textbook Laptops Internet Lab materials