

Science Curriculum Map Overview

Topic	Skills	Approximate Weeks of Study
SIMPLE MACHINES	<ul style="list-style-type: none">* MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.* MS-PS3-2. Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.* MS-PS3-5. Construct, use, and present an argument to support the claim that when work is done on or by a system, the energy of the system changes as energy is transferred to or from the system.* MS-PS2-2. Plan and conduct an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object.	7
LIGHT	<ul style="list-style-type: none">* MS-PS4-1. Develop a model and use mathematical representations to describe waves that includes frequency, wavelength, and how the amplitude of a wave is related to the energy in a wave.* MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.* MS-PS4-3. Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.	5

LOOKING AT LIQUIDS

MS. Structure and Properties of Matter

- * MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures.
- * MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- * MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and phase (state) of a substance when thermal energy is added or removed.
- * MS-PS1-7. Use evidence to illustrate that density is a property that can be used to identify samples of matter.
- * MS-PS1-8. Plan and conduct an investigation to demonstrate that mixtures are combinations of substances.

MS. Chemical Reactions

- * MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- * MS-PS1-5. Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.
- * MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy during a chemical and/or physical process.
- * MS-PS3-4. Plan and conduct an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the temperature of the sample of matter.

FORCES IN SPACE	<ul style="list-style-type: none"> * MS-PS2-1. Apply Newton’s Third Law to design a solution to a problem involving the motion of two colliding objects. * MS-PS2-4. Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects and the distance between them. * MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. 	8
ELECTROMAGNETISM	<ul style="list-style-type: none"> * MS-PS3-6. Make observations to provide evidence that energy can be transferred by electric currents. * MS-PS2-3. Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. * MS-PS2-5. Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact. 	10
ENGINEERING DESIGN	<ul style="list-style-type: none"> * MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. * MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem. * MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. * MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved. 	ON-GOING