

Course Description: This curriculum has been written to align with the revised MO Learning Standards for Science (approved by the state board of education in April of 2016). The Science Core and Mystery Science support our curriculum. This curriculum has been written as a guide for utilizing this resource to teach the revised MO Learning Standards for Science.

Fifth Grade Science Scope and Sequence

	Unit	Timeframe
1	Earth Science: Space Systems	6 weeks
2	Earth Science: Earth's Systems	9 Weeks
3	Life Science: Matter and Energy of Organisms and Ecosystems	9 weeks
4	Life Science: Human Body Systems	7 weeks
5	Physical Science: Structure and Properties of Matter	5 weeks

Unit 1 Earth Science: Space Systems
<p>Standards addressed:</p> <p>5.PS2.B Support an argument that the gravitational force exerted by Earth on objects is directed toward the planet's center. [Clarification Statement: "Down" is a local description of the direction that points toward the center of the spherical Earth.]</p> <p>5. PS4.A.1 Develop a model to describe that objects can be seen only when light is reflected off them or when they produce their own light.</p> <p>5.ESS1.A Support an argument that relative distances from Earth affects the apparent brightness of the sun compared to other stars.</p> <p>5.ESS1.B.1 Make observations during different seasons to relate the amount of daylight to the time of year.</p> <p>5.ESS1.B.2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</p>
<p>Essential Questions:</p> <p>Why do objects fall down regardless of location on Earth?</p> <p>Why are some stars brighter than other stars?</p> <p>Why do objects visible in the sky appear different throughout the year?</p>
<p>Learning targets:</p> <p>Students will be able to relate gravitational force to the motions of the Earth, sun and moon.</p> <p>Students will be able to explain rotation and revolution and how these relate to days, seasons, and years.</p> <p>Students will be able to describe the moon's motion and apparent movement across the sky.</p>
<p>Content vocabulary:</p> <p>revolve, revolution, gravitational force, rotation, axis, orbit, constellation, moon phases, relative distance,</p>

apparent brightness		
Resources <i>National Geographic Exploring Science</i>		
Standard(s)	Topic	Number of Days
5.PS2.B	Gravity	2
5.PS2.B	Earth, Sun, and Moon	6 days
5.PS2.B 5.ESS1.A	The Sun/ Brightness	2
5.ESS1.B.2	Day and Night	2
5.ESS1.B.2	Sunlight and Shadows	2
5.ESS1.B.1	Revolutional and Season	2
5.ESS1.B.2	Hours of Daylight	2
5.ESS1.B.2	Earth's Orbit and the Night Sky	2
5.ESS1.B.2	Moon Motion and Phases	4-5
	Solar System Project	5-7

Unit 2 Earth Science: Earth's Systems

Standards addressed:

5.ESS2.B Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

5.ESS2.C Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

5.ESS3.C Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment

Essential Questions:

How do the different Earth systems interact and affect one another?

Why is water a scarce resource?

How can communities protect Earth's resources (water) and environment?

Learning targets:

Students will be able to explain how the major Earth's systems interact and affect Earth's materials and processes.

Students will be able to identify and develop ways to protect Earth's natural resources.

Content vocabulary:

geosphere, hydrosphere, atmosphere, biosphere, resource, climate, pollution

Resources

National Geographic Exploring Science, National Geographic - Monsoons video, National Geographic - Renewable Energy 101 video

Standard(s)	Topic	Number of Days
5.ESS2.B	Introduce Earth's Major Systems	2
5.ESS2.B	The Geosphere	2
5.ESS2.B	The Hydrosphere	2
5.ESS2.B	The Atmosphere	2
5.ESS2.B	The Biosphere	2
5.ESS2.B	Earth's Systems Interact	2
5.ESS2.B	Ocean Ecosystem and The Ocean Shapes the Land	2
5.ESS2.B	The Ocean Affects Climate and Landforms and Patterns	2-3
5.ESS2.B	The Atmosphere and Landforms and Introduce Develop a Model	5
5.ESS2.C	Water on Earth	2
5.ESS2.C	Earth's Resources	2
5.ESS2.C	Humans Impact the Land and Humans Impact Vegetation	2
5.ESS2.C	Plants and Pollution	2
5.ESS2.C	Humans Impact on Water and Air	2
5.ESS2.C	Human Impact on Space and Protecting Land, Air, and Water	2-4
5.ESS2.C	Renewable Resources	2

Unit 3

Life Science: Matter and Energy of Organisms and Ecosystems

Standards addressed:

5.LS1.A.2 Support an argument that plants get the materials (i.e. carbon dioxide, water, sunlight) they need for growth chiefly from air and water.

5.LS2.B.1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Essential Questions:

Where does the energy for animal's food come from?

Where do plants get what they need for growth?

How does matter cycle through the environment?

Learning targets:

Students will be able to identify and explain that energy in food was once energy from the sun.

Students will be able to explain/model that plants get the materials they need mostly from air and water

Students will be able to model the movement of matter between animals, plants, decomposers, and the environment.

Content vocabulary:

photosynthesis, nutrients, food chain, food web, ecosystem, decomposers

Resources

National Geographic Exploring Science, States of Matter BrainPop Video

Standard(s)	Topic	Number of Days
5.LS1.A.2	What Plants Need	2
5.LS1.A.2	How Plants Get Energy	2
5.LS1.A.2	Materials for Plant Growth	2
5.LS1.A.2	Investigation	1-2
5.LS1.A.2	What do plants eat?	2
5.LS2.B	Why Animals Need Food	2
5.LS2.B	Desert Food Web	2
5.LS2.B	Decomposers	2
5.LS2.B	Cycles of Matter	2
5.LS2.B	Tallgrass Prairie Ecosystem	2
5.LS2.B	Grassland Populations and Communities	2
5.LS2.B	Develop a Model Ecosystem	3-5

Unit 4

Life Science: Human Body Systems

Standards addressed:

5.LS1.A.1 Compare and contrast the major organs/organ systems (e.g., support, reproductive, digestive, transport/circulatory, excretory, response) that perform similar functions for animals belonging to different vertebrate classes.

Essential Questions:

What are the main functions of each body system?
 How are human organ systems alike or different from an animal of a different vertebrate class (i.e. reptile)?

Learning targets:

Students will be able to identify the structures and functions of each organ system.
 Students will be able to explain how various systems work together to perform various functions.
 Students will be able to explain how organ systems of an animal in one vertebrate class are similar/different than that of a animal in a different vertebrate class (i.e. mammal vs reptile)

Content vocabulary:

organ, organ system

Resources

National Geographic Exploring Science, Organ Systems video, Kids Health: How Bones Work video, Skeletal System video, Muscular System video, Kids Health: How Muscles Work video, Circulatory System video, Kids Health: How the Heart Works video, Respiratory System video, Kids Health: How the Lungs Work video, Digestive System video, Kids Health: How Does the Digestive System Work? video, Nervous System video, Kids Health: How the Brain and Nervous System Work? video, Kids Health: How the Eyes Work, Kids Health: How the EArS Work, Kids Health: How the Nose Works, Kids Health: How the Tongue Works, Kids Health: How the Skin Works, Fish and Human Organs Compared, Human Brains Compared to Other Animals

Standard(s)	Topic	Number of Days
5.LS1.A.1	Organ Systems	2
5.LS1.A.1	Skeletal System	3
5.LS1.A.1	Muscular System	3
5.LS1.A.1	Circulatory System	3
5.LS1.A.1	Respiratory System	3
5.LS1.A.1	Digestive/Excretory System	3
5.LS1.A.1	Nervous System	3
5.LS1.A.1	Sensory Organs	3
5.LS1.A.1	Comparing Organ Systems	3

Unit 5

Physical Science: Structure and Properties of Matter

Standards addressed:

5.PS1.A.1 Develop a model to describe that matter is made of particles too small to be seen. [Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.

5.PS1.A.2 Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.]

5.PS1.B.1 Plan and conduct investigations to separate the components of a mixture/solution by their physical properties (i.e., sorting, filtration, magnets, screening).

5.PS1.B.2 Conduct an investigation to determine whether the combining of two or more substances results in new substances.

5.ETS1.A Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

5.ETS1.C Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Materials needed for experiments for this unit: balloons, salt, 9 oz. plastic cups, plastic spoons, (poster board, foil, pipe cleaners, craft sticks - items to make models)

Essential Questions:

In what ways can we classify objects?

How can we prove the existence of some matter when the particles are too small to be seen?

Do certain changes in matter result in less matter?

Does the mixing of substances create new substances?

Learning targets:

Students will be able to compare and contrast the properties of solids, liquids, and gases.

Students will be able to identify the physical properties of matter.

Students will be able to classify matter based on its ability to conduct or insulate electrical energy.

Students will be able to determine whether matter is conserved when one material is mixed with another material.

Content vocabulary:

mass, matter, states of matter, solid, liquid, gas, property, hardness, electrical conductor, electrical conductivity, electrical insulator, conservation of matter, condensation, solubility

Resources

National Geographic Exploring Science, Study Jams: Atoms: Protons, Neutrons, Electrons video, What's Matter? - Crash Course Kids #3.1, Study Jams - Solid, Liquid Gas video, Part(icles) of Your World: Crash Course Kids #3.2, Science Max Solids, Liquids, and Gases episode, Matter Chant, Study Jams - Properties of Matter, Properties of Matter, The Science of Lunch, Bill Nye Magnetism, Worlds Fastest Trains - MAGLEV Trains, Science Max: Magnetic Levitation, What Conducts Electricity, Universe Unboxed: Insulators vs Conductors, The Great Picnic Mix Up: Crash Course Kids #19.1, Dissolving Experiment, Study Jams - Mixtures,

Standard(s)	Topic	Number of Days
-------------	-------	----------------

	Introduction to Matter	1
	States of Matter	2
	Investigating matter	2
	Properties of Matter	2
	Hardness	2
	Property of Magnetism	2
	Electrical and Thermal Conductivity	2
	Property of Solubility	2
5.PS1.A.2	Heating and Cooling	2
5.PS1.A.2	Investigate changing states of matter	2
5.ETS1.A 5.ETS1.C	Design a Lunch Box	5
5.PS1.A.2	Mixtures	2
5.PS1.A.2	Conservation of Matter	2
	Chemical Change	2
	Signs of a chemical change	2
5.PS1.B.2	Chemical Reactions	2
5.PS1.B.2	Determining substances	2