

COURSE INFORMATION

Grade Level: Kindergarten

Length: Full Year

ESSENTIAL UNDERSTANDING

In Kindergarten, students will be exposed to 4 strands of science: physical science, life science, earth and space science and engineering and design. Students should be able to read Kindergarten grade level science text, understand material read to them, and plan and conduct investigations to increase understanding.

COURSE OBJECTIVES

1. Literary skills will be applied to science non-fiction text.
2. Design and conduct investigations and/or experiments.
3. Use and analyze texts, experiments, investigations, and visual sources in order to increase understanding.
4. Students will have an understanding of the effects of push and pull on the motion of an object.
5. Understand what a plant needs to survive.
6. Observe the effects of sunlight on the Earth's surface.
7. Compare and contrast the needs of different plants and animals.
8. Prove that Earth events can occur fast or slow.
9. Observe and discuss weather patterns over time.

STUDENT OBJECTIVES

1. I can use my 5 senses to make observations.
2. I can read grade-level nonfiction science text.
3. I can design and conduct experiments.
4. I can investigate how force affects an object.
5. I can describe what plants and animals need to survive.

6. I can describe how the sun affects the Earth's surface.
7. I can show the ways to reduce effects of sunlight.
8. I can describe patterns of weather over time.
9. I can explain how plants and animals impact on the environment.
10. I can discuss how weather forecasting helps in times of severe weather.
11. I can share solutions to reduce human impact on the environment.

PACING

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
(Trimester 3- 4 weeks) Structures and Processes	Life Science K-LS1-1 <ul style="list-style-type: none"> ● Use observations to describe patterns of what plants and animals (including humans) need to survive. 	Hatching Chicks Fish Red Worms and Earthworms Pill Bugs Sow Bugs

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
(Trimester 2) Forces and Interactions	Physical Science K-PS2-1 <ul style="list-style-type: none"> ● Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. Physical Science K-PS2-2 <ul style="list-style-type: none"> ● Analyze data to determine whether a design solution works as intended to change the speed or direction of an object with a push or a pull. 	
(Trimester 1, 2, and 3) Energy	Physical Science K-PS3-1 <ul style="list-style-type: none"> ● Construct an explanation based on observations of the effect of sunlight on the Earth’s surface. Physical Science K-PS3-2 <ul style="list-style-type: none"> ● Use tools and materials to design and build a structure to reduce the warming effect of sunlight on an area. 	
(Trimester 1, 2, and 3) Earth’s Systems	Earth and Space Science K-ESS2-1 <ul style="list-style-type: none"> ● Use and share observations of local weather conditions to describe patterns over time. 	

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
	<p>Earth and Space Science K-ESS2-2</p> <ul style="list-style-type: none"> Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. 	
<p>(Trimester 1, 2, and 3)</p> <p>Earth and Human Activity</p>	<p>Earth and Space Science K-ESS3-1</p> <ul style="list-style-type: none"> Use a model to represent the relationship between the needs of different plants or animals, including humans, and the places they live. <p>Earth and Space Science K-ESS3-2</p> <ul style="list-style-type: none"> Ask questions to obtain information about the purpose of weather forecasting to predict, prepare for, and respond to weather. <p>Earth and Space Science K-ESS3-3</p> <ul style="list-style-type: none"> Communicate ideas about the impact of humans on the land, water, air, or other living things in the local environment. 	

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
5 Senses (3 weeks, Tri 1)	Introduction to using 5 senses for observation in Science. This skill is needed to be successful in Science inquiry throughout the year and years to follow.	<p>http://completelykindergarten.blogspot.com/2014/01/fantastic-five-senses-unit.html</p> <p>http://mrswilliamsonskinders.blogspot.com/search/label/five%20senses</p> <p>https://www.themeasuredmom.com/books-about-the-five-senses/</p> <p>https://www.adabofgluewilldo.com/five-senses/</p> <p>https://www.teacherspayteachers.com/Product/5-Senses-Books-164138</p>
(6 weeks) STEM	Weather	<p>https://thehomeschoolscientist.com/weather-stem-activities/?utm_medium=social&utm_source=pinterest&utm_campaign=tailwind_tribes&utm_content=tribes&utm_term=332309624_9891562_15722</p>

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
	Force and Motion	https://firstgradeblueskies.com/stem-force-and-motion-freebie/ https://www.pre-kpages.com/science-kids-exploring-ramps-friction/
	Plants and Animals	http://www.scienceforkids.com/animal-habitats/

Trimester 1

(5 Senses)

Weather

K-PS3-1, K-PS3-2,
K-ESS2-1, K-ESS3-2, K-ESS3-3

Trimester 2

Weather

K-PS3-1, K-PS3-2,
K-ESS2-1, K-ESS3-2, K-ESS3-3

Motion

K-PS2-1, K-PS2-2

Trimester 3

Weather

K-PS3-1, K-PS3-2,
K-ESS2-1, K-ESS3-2, K-
ESS3-3

Plants and Animals

K-LS1-1, K-ESS3-1,
K-ESS2-2

Montana's Next Generation Science Standards:

Physical Science PS2

K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

[Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.]

- K-PS2-2.** Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.* [Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.] [Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.]

Life Science LS1

- K-LS1-1.** Use observations to describe patterns of what plants and animals (including humans) need to survive. [Clarification Statement: Examples of patterns could include that animals need to take in food but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and, that all living things need water.]

Earth and Space Science ESS2

- K-ESS2-1.** Use and share observations of local weather conditions to describe patterns over time. [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.]

- K-ESS2- 2.** *Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.*
[Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

Earth and Space Science ESS3

- K-ESS3- 1.** *Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live.* [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]

- K-ESS3- 2.** *Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.** [Clarification Statement: Emphasis is on local forms of severe weather.]

RESOURCES

Montana Board of Public Education. “Montana Science Content Standards.” *Class 3 Administrator's License - Superintendent and Principal*, 16 Sept. 2016, opi.mt.gov/.

“Next Generation Science Standards.” *NGSS Fact Sheet / Next Generation Science Standards*, 10 Dec. 2018, www.nextgenscience.org/.

Foss Kit

Trees and Weather

Animals Two by Two