

COURSE INFORMATION

Grade Level: Level 3

Length: Full Year

ESSENTIAL UNDERSTANDING

In 3rd Grade, students will be exposed to four strands of science: physical science, life science, earth and space science and engineering and design. Students should be able to read third grade level science text, understand material read to them, and plan and conduct investigations to increase understanding.

COURSE OBJECTIVES

1. Students will apply literary skills to nonfiction science texts.
2. Students will construct, manage, and conduct investigations and/or experiments.
3. Students will use and analyze texts, experiments, investigations, and visual sources in order to increase understanding.
4. Students will develop an understanding and make predictions in regards to forces and interactions on objects including electricity and magnetism.
5. Students will evaluate and design models to describe life cycles of living things.
6. Students will determine the positive consequences of animals forming and living in communities.
7. Students will examine and analyze the traits inherited by living things and determine how those traits may be influenced by the environment.
8. Students will determine the diversity of living things by analyzing fossils, examining variations between members of the same species, comparing survivability of organisms across environments, and describing how a changing environment may result in a change of successful species.
9. Students will record and describe seasonal weather conditions, as well as detail the various climate regions of the world.
10. Students will model and describe a solution that reduces the impact of a weather-related hazard

STUDENT OBJECTIVES

1. I can read and understand grade-level nonfiction science texts.
2. I can construct, manage, and conduct a scientific experiment.
3. I can demonstrate the influence of balanced and unbalanced forces on the motion of an object.
4. I can predict the motion of an object using evidence.
5. I can show the cause and effect relationship of electric or magnetic forces between objects.
6. I can define, design, and solve a problem with magnets.
7. I can design a model to describe unique life cycles of plants and animals.
8. I can describe how living in groups may help animals to survive.
9. I can analyze data to provide evidence that plants and animals inherit traits from their parents.
10. I can provide show evidence that traits may be influenced by environment.
11. I can examine and determine information from fossils.
12. I can analyze how differences in animal variations influence survival.
13. I can analyze a habitat and evaluate which species would be successful there.
14. I can model and describe how the plants and animals in an environment may change if the environment were to change.
15. I can record and describe seasonal weather conditions.
16. I can use information to describe regional climates around the world.
17. I can model and describe a solution that reduces the impact of a weather-related hazard.

PACING

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
<p>(4 weeks)</p> <p>Motion and Stability: Forces and Interactions</p>	<p>Physical Science PS2</p> <ul style="list-style-type: none"> ● Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object. ● Make observations and/or measurements of an object’s motion to provide evidence that a pattern can be used to predict future motion. ● Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other. ● Define a simple design problem that can be solved by applying scientific ideas about magnets. 	<ul style="list-style-type: none"> ● Special Delivery! Physical Science 3rd Grade ● Foss: Motion and Matter ● Foss: Matter and Energy ● Foss: Magnetism and Electricity ● Pearson: INTERactive Science ● Forces and Motion ● Magnetism and Electricity
<p>(1 Week)</p> <p>From Molecules to Organisms: Structures and Processes</p>	<p>Life Science LS1</p> <ul style="list-style-type: none"> ● Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. 	<ul style="list-style-type: none"> ● Be a Detective: Life Science 3rd Grade ● Foss: Structures of Life ● Pearson: INTERactive Science ● Life Cycles

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
(1 week) Ecosystems: Interactions, Energy, and Dynamics	Life Science LS2 <ul style="list-style-type: none"> ● Construct an argument that some animals form groups that help members survive. 	<ul style="list-style-type: none"> ● Be a Detective: Life Science 3rd Grade ● Foss: Structures of Life ● Pearson: INTERactive Science ● Animal Behavior
(2 weeks) Heredity: Inheritance and Variation of Traits	Life Science LS3 <ul style="list-style-type: none"> ● Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. ● Use evidence to support the explanation that traits can be influenced by the environment. 	<ul style="list-style-type: none"> ● Be a Detective: Life Science 3rd Grade ● Foss: Structures of Life ● Pearson: INTERactive Science ● Animal Traits ● Habitats
(4 weeks) Biological Evolution	Life Science LS4 <ul style="list-style-type: none"> ● Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago. ● Use evidence to construct an explanation for how the 	<ul style="list-style-type: none"> ● Be a Detective: Life Science 3rd Grade ● Foss: Structures of Life ● Pearson: INTERactive Science ● Fossils ● Habitats

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
	<p>variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.</p> <ul style="list-style-type: none"> ● Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. ● Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change. 	<ul style="list-style-type: none"> ● Animal Report ● Adaptations
<p>(4 Weeks)</p> <p>Earth's Systems</p>	<p>Earth and Space Science 2</p> <ul style="list-style-type: none"> ● Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season. ● Obtain and combine information to describe climates in different regions of the world. 	<ul style="list-style-type: none"> ● Wacky Weather Earth Science 3rd Grade ● Foss: Water and Climate ● Pearson: INTERactive Science ● Weather ● Climate
<p>(2 weeks)</p> <p>Earth and Human Activity</p>	<p>Earth and Space Science 3</p> <ul style="list-style-type: none"> ● Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard. 	<ul style="list-style-type: none"> ● Wacky Weather Earth Science 3rd Grade ● Foss: Water and Climate ● Pearson: INTERactive Science

TOPIC	STANDARD	EXPERIMENTS/PROJECTS
		<ul style="list-style-type: none"> <li>● Hazardous Weather

Trimester 1

From Molecules to Organisms: Structures and Processes	NGSS LS1 (1 Week)
Ecosystems: Interactions, Energy, and Dynamics	NGSS LS2 (1 Week)
Heredity: Inheritance and Variation of Traits	NGSS LS3 (2 Weeks)
Biological Evolution: Unity and Diversity	NGSS LS4 (2 Weeks)

Trimester 2

Biological Evolution: Unity and Diversity	NGSS LS4 (2 Weeks)
Earth’s Systems: Weather and Climate	NGSS ESS2 (4 Weeks)

Trimester 3

Earth and Human Activity	NGSS ESS3 (2 Weeks)
Motion and Stability: Forces and Interactions	NGSS PS2 (4 Weeks)

Montana’s Next Generation Science Standards:

Physical Science PS2 Motion and Stability: Forces and Interactions

3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

Clarification Statement: Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from both sides will not produce any motion at all.

3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

Clarification Statement: Examples of motion with a predictable pattern could include a child swinging in a swing, a ball rolling back and forth in a bowl, and two children on a see-saw.

3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

Clarification Statement: Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.

3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.

Clarification Statement: Examples of problems could include constructing a latch to keep a door shut and creating a device to keep two moving objects from touching each other.

Life Science LS1 From Molecules to Organisms: Structures and Processes

3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

Clarification Statement: Changes organisms go through during their life form a pattern.

Life Science LS2 Ecosystems: Interactions, Energy, and Dynamics

- 3-LS2-1. Construct an argument that some animals form groups that help members survive.**

Life Science LS3 Heredity: Inheritance and Variation of Traits

- 3-LS3-1. Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.**

Clarification Statement: Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.

- 3-LS3-2. Use evidence to support the explanation that traits can be influenced by the environment.**

Clarification Statement: Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; and, a pet dog that is given too much food and little exercise may become overweight.

Life Science LS4 Biological Evolution: Unity and Diversity

- 3-LS4-1. Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.**

Clarification Statement: Examples of data could include type, size, and distributions of fossil organisms. Examples of fossils and environments could include marine fossils found on dry land, tropical plant fossils found in Arctic areas, and fossils of extinct organisms.

- 3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.**

Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.

- 3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.**

Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.

- 3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.**

Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.

Earth and Space Science ESS2 Earth's Systems

- 3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.**

Clarification Statement: Examples of data at this grade level could include average temperature, precipitation, and wind direction.

- 3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.**

Earth and Space Science ESS3 Earth and Human Activity

- 3-ESS3- 1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.**

Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.

Engineering, Technology, and the Application of Science 3-5-ETS1 Engineering Design

- 3-ETS1- 1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.**

- 3-ETS1- 2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.**

- 3-ETS1- 3. 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.**

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*, 24 Jan. 2019, [nextgenscience](http://nextgenscience.org/). Copyright 2013

Foss Science Kit - Motion and Matter, Water and Climate, Structures of Life, Matter and Energy, Magnetism and Electricity

Wacky Weather Earth Science 3rd Grade NGSS Aligned

Be a Detective: Life Science 3rd Grade NGSS Aligned

Special Delivery! Physical Science 3rd Grade NGSS Aligned

Maker Tools: Lego WeDo 2.0, Ozobot, Microbit, Strawbees

Google Earth