

Subject and Grade:	Science- 5th	School Year:	2024-2025
Unit Title:	Web of Life: Ecosystems & the Food Web	Author/s:	Cristiane Williams

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.</p> <p>5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</p> <p>5ESS3-1: Obtain and combine information about ways individual communities use science ideas to protect Earth’s resources and environment.</p> <p>5-PS3-1: Use models to describe that energy in animals’ food was once energy from the sun.</p>	<p>Why would a hawk move to New York City?</p> <p>What do plants eat?</p> <p>Where do fallen leaves go?</p> <p>Do worms really eat dirt?</p> <p>Why do you have to clean a fish tank but not a pond?</p> <p>How can we protect Earth’s environments?</p> <p>Why did the dinosaurs go extinct?</p>

Brief Unit Summary	Content Vocabulary
<p>Students will explore how organisms depend on one another and form an interconnected ecosystem. Students will investigate food chains, food webs, and the importance of producers, consumers, and decomposers.</p>	<p>Food Chains</p> <p>Food Webs</p> <p>Decomposers</p> <p>Energy Flow</p>

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<ul style="list-style-type: none"> Students construct models of food chains by linking cards discovering that different interrelationships exist between organisms. 	<p>Summative: Lesson 1-7: Lesson assessments Unit assessment</p> <p>Formative: Experiments, worksheets</p>	<p>2nd week of September- October (~40 sessions)</p> <p>Unit Breakdown:</p> <ul style="list-style-type: none"> 1 Anchor Phenomenon 7 Lessons & Activities

<ul style="list-style-type: none">● Students conduct an investigation and interpret data and figure out that water and air account for a plant's weight.● Students conduct an investigation to test how mold grows under different conditions to decompose food. Students realize that decomposers, like mold, break down and consume dead plant material.● Students make observations of worms to realize that worms act as decomposers to eat dead matter in an ecosystem and cycle nutrients into the soil.● Students develop a model of a pond ecosystem and realize that interrelationships exist between decomposers, plants, and animals. Students discover that each organism must be in balance for the pond ecosystem to function.● Students learn about what happens in unbalanced ecosystems and how that can lead to an overabundance of algae and harmful algal blooms.● Students develop a model of a dinosaur food web. Students realize that blocking the sun's energy would have disastrous effects on the organisms that rely on this energy in the food web and cause the extinction of some entire species.		<ul style="list-style-type: none">● 7 Anchor Connections● 7 Lesson Assessments● 7 Extensions● 1 Unit Assessment● 1 Performance Task
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Differentiation/Enrichment	Materials	Resources

Subject and Grade:	Science- 5th	School Year:	2024-2025
Unit Title:	Watery Planet: Water Cycle & Earth's Systems Unit	Author/s:	Cristiane Williams

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</p> <p>5-ESS2-2: Describe and graph the amounts of saltwater and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</p> <p>5-PS1-2: Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances the total amount of matter is conserved.</p> <p>3-5-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.</p> <p>3-5-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.</p> <p>3-5-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.</p>	<p>How much water is in the world?</p> <p>How much salt is in the ocean?</p> <p>When you turn on the faucet, where does the water come from?</p> <p>Can we make it rain?</p> <p>How can you save a town from a hurricane?</p>

Brief Unit Summary	Content Vocabulary
<p>In this unit, students consider the profound importance of water as a natural resource. Students investigate the distribution of water, how it cycles through Earth's systems, and explore how it affects human societies.</p>	<p>Hydrosphere Mixtures Solutions Water Cycle</p>

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<ul style="list-style-type: none"> ● Students analyze and interpret data from world maps to determine the relative amounts of fresh, salt, and frozen water. Students figure out that while the Earth has a lot of water, most of Earth's water is not fresh or accessible. ● Students create a model ocean to observe how salt seems to completely vanish when dissolved in water. Students measure and graph quantities to provide evidence that the salt is still in the solution, even though we can't see it. ● Students learn most people get fresh water from underground sources. Students determine the best place to settle a town by considering features of the landscape and the characteristics of the plants that thrive there. ● Students create a model of the ocean and sky to investigate how temperature influences evaporation and condensation. Students figure out that higher ocean temperatures lead to 	<p>Summative: Lesson 1-5: Lesson assessments Unit assessment Formative: Experiments, worksheets</p>	<p>November- December (~29 sessions)</p> <p>Unit Breakdown:</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 5 Lessons & Activities • 5 Anchor Connections • 5 Lesson Assessments • 5 Extensions • 1 Unit Assessment • 1 Performance Task

<p>more evaporation, thus leading to more rain.</p> <ul style="list-style-type: none"> Students define the problem that a town needs protection from flooding. They design solutions using different types of flood protection. They realize flooding is caused by severe rainfall generated by hurricanes. Hurricanes are created where ocean temperatures are warm. 		
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Differentiation/Enrichment	Materials	Resources

*****Cloud in a Bottle Investigation**

Subject and Grade:	Science- 5th	School Year:	2024-2025
Unit Title:	Chemical Magic: Chemical Reactions & Properties of Matter	Author/s:	Cristiane Williams

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen.</p> <p>5-PS1-2: Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances the total amount of matter is conserved.</p> <p>5-PS1-3: Make observations and measurements to identify materials based on their properties.</p>	<p>Are magic potions real?</p> <p>Could you transform something worthless into gold?</p> <p>What would happen if you drank a glass of acid?</p> <p>What do fireworks, rubber, and Silly Putty have in common?</p> <p>Why do some things explode?</p>

5-PS1-4: Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

Brief Unit Summary	Content Vocabulary
<p>In this unit, students investigate the properties of matter by dissolving everyday chemicals to make solutions and by exploring simple yet surprising chemical reactions. Through these investigations, students begin to build conceptual models for the particulate nature of matter.</p>	<p>Physical Change Chemical Change Substances Particles Properties</p>

Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<ul style="list-style-type: none"> ● Students observe that a salt and vinegar solution will turn a dull penny shiny again indicating that substances can change other substances. ● Students coat a steel nail in copper by placing it into the solution that dissolved bits of the penny. Students realize that substances can change to become particles too small to be seen, but they still exist. ● Students figure out that acids are very reactive substances. Students investigate reactions between different substances to determine how known acids react with other materials. ● Students combine different substances together to discover that chemical reactions can create new substances. ● Students investigate and model the reaction between baking soda and vinegar. They figure out that gasses 	<p>Summative: Lesson 1-5: Lesson assessments Unit assessment Formative: Experiments, worksheets</p>	<p>January -Mid February (~29 sessions)</p> <p>Unit Breakdown:</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 5 Lessons & Activities • 5 Anchor Connections • 5 Lesson Assessments • 5 Extensions • 1 Unit Assessment • 1 Performance Task

are made of particles too small to be seen.		
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Differentiation/Enrichment	Materials	Resources

*****Chemical Investigation**

Subject and Grade:	Science- 5th	School Year:	2024-2025
Unit Title:	Spaceship Earth: Sun, Moon, Stars, & Planets	Author/s:	Cristiane Williams

NYS Next Gen Learning Standards	Essential Question/Big Ideas
<p>5-ESS1-1: Support an argument that differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from Earth.</p> <p>5-ESS1-2: 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>5-PS2-1: Support an argument that the gravitational force exerted by Earth on objects is directed down.</p>	<p>How fast does the Earth Spin?</p> <p>Who set the first clock?</p> <p>How can the Sun tell you the season?</p> <p>Why do the stars change with the season?</p> <p>How does the Moon change shape?</p> <p>How can the Sun help us explore other planets?</p> <p>Why is gravity different on other planets?</p> <p>Could there be life on other planets?</p>

Brief Unit Summary	Content Vocabulary
In this unit, students explore the Earth, Sun, Moon, and stars using observations of shadows and changing patterns in the sky. Students also explore the planets of our Solar System and begin to consider what	<p>Rotation</p> <p>Axis</p> <p>Seasonal Changes</p>

might lie beyond.	Orbit Moon Phases Lunar Cycles Solar System Gravity
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Content Skills or Learning Targets	Assessments (Pre-Assessments, Formative, and Summative)	Timeframe
<ul style="list-style-type: none"> • Students model the rotation of the Earth and investigate why the sun looks like it's moving across the sky. Using evidence they gathered in the investigation, students build a model that explains how the Earth's rotation around its own axis causes the Sun to appear to rise and set. • Students make a shadow clock (sundial) and investigate how the direction and length of shadows change with the position of the light shining on the sundial. Students realize that the Sun's position in the sky can be used to tell the time of day. • Students examine photos taken at different times of year and figure out the time of year that each photo was taken. Students discover that the Sun's path changes with the seasons, as does the time of sunrise and sunset. The Sun is always highest in the sky at noon, but that height changes with the season. • Students build a model of the universe and use it to explain why different stars are visible at different times of 	<p>Summative: Lesson 1-8: Lesson assessments Unit assessment</p> <p>Formative: Experiments, worksheets</p>	<p>Mid February- April (~43 sessions)</p> <p>Unit Breakdown:</p> <ul style="list-style-type: none"> • 1 Anchor Phenomenon • 8 Lessons & Activities • 8 Anchor Connections • 8 Lesson Assessments • 8 Extensions • 1 Unit Assessment • 1 Performance Task

year. Using evidence from this model, students make an argument that supports the claim that the Earth orbits the Sun.

- Students use a physical model of the Sun and Moon to investigate how the Moon's phase relates to its position relative to the Sun. Students notice that the Moon's phases repeat in a predictable pattern.
- Students gather evidence to support an argument that the apparent brightness of the Sun is dependent upon an observer's distance from the Sun. They construct a model of the solar system and gather observations of the Sun's apparent brightness from each planet within their model.
- Using mathematics and computational thinking, students calculate how high they could jump on planets and moons that have stronger or weaker gravity than Earth. Students analyze and interpret this data to construct an explanation for why the amount of gravity is different on other planets.
- Students discover that the Earth is in the "Goldilocks Zone" — a distance from the Sun with the right amount of light and heat for life to exist. Students evaluate other solar systems, comparing their stars to our Sun. Based on their analysis, students plan a space mission to a planet with conditions similar to those on Earth.

Differentiation/Enrichment	Materials	Resources