

Course Title

8th grade Physical Science



INNOVATIVE ARTS ACADEMY

Course Overview

Students delve into the fundamental principles of the physical world, focusing on matter, energy, and their interactions. Key topics include the nature of matter (atoms, elements, compounds), laws of motion, energy transformation, and waves. Students develop experimental skills, analyze data, and learn to apply scientific reasoning to understand everyday phenomena.

Unit Title

Forces, Motion, Energy, and Light

Time Frame

Approximately 11 Weeks

Unit Title

Chemistry of Materials and Chemical Reactions

Time Frame

Approximately 13 Weeks

Unit Title

Ecology

Time Frame

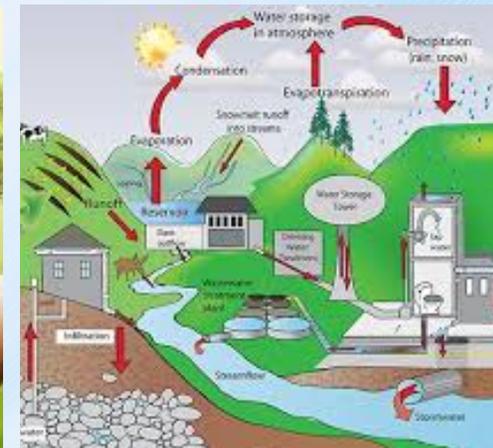
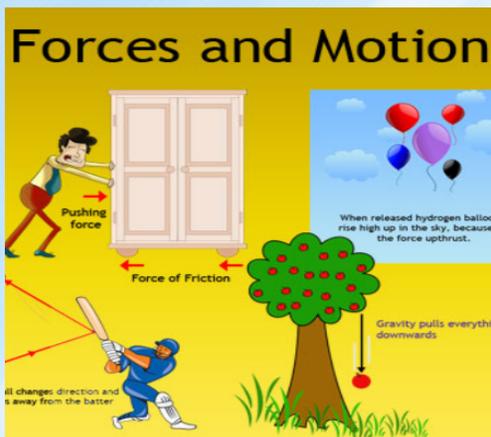
Approximately 6 Weeks

Unit Title

Land, Water, and Human Interactions

Time Frame

Approximately 6 Weeks



Focus of the Unit

Students will be exploring the fundamental physics concepts that govern how things move and interact.

Focus of the Unit

Students will dive into the composition of matter, starting with the idea that "All materials are made from a limited number of elements"

Focus of the Unit

The Students will explore the intricate relationships within the natural world, focusing on **Ecology**.

Focus of the Unit

The Students will focus on how humans interact with the land and water, connecting to ideas like "Land, water, and Human Interactions" and how "cities are made" or "building the cities"

Unit Title	Forces, Motion, Energy, and Light
Time Frame	Approximately 11 weeks



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	Essential Question(s)
	How are forces transmitted between objects? What is energy and how does it transfer?

	Focus of the Unit
	Students will be exploring the fundamental physics concepts that govern how things move and interact.

Standards	STEELS 3.2.6-8.H; STEELS 3.2.6-8.K; STEELS 3.2.6-8.G; STEELS 3.2.6-8.Q, 3.2.6-8.R
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Learning Targets
I can show how forces push and pull objects even when they aren't touching.

Learning Targets
I can use Newton's Third Law to solve problems about things crashing into each other.

Learning Targets
I can build models to show how energy is stored in a system.

Learning Targets
I can use models to understand how waves, like light, carry energy and how they bounce, are soaked up, or pass through things.



Resources	Steel Alignments (IAA), Inspire, Online Resources.
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Unit Title	Chemistry of Materials and Chemical Reactions
Time Frame	Approximately 13 weeks



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	Essential Question(s)
	How can scientists identify elements? What happens when matter changes state?

	Focus of the Unit
	Students will dive into the composition of matter, starting with the idea that "All materials are made from a limited number of elements"

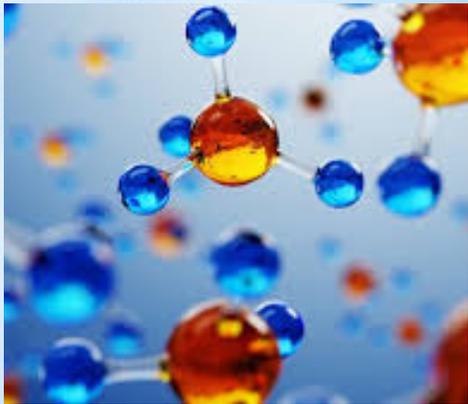
Standards	STEELS 3.2.6-8.A, STEELS 3.2.6-8.B, STEELS 3.2.6-8.D, STEELS 3.2.6-8.E, STEELS 3.2.6-8.F
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Learning Targets
I can measure how much "stuff" is packed into a space (density).

Learning Targets
I can tell the difference between just mixing things (physical change) and when they actually change into something new (chemical change).

Learning Targets
I can look for clues that tell me a chemical reaction has happened.

Learning Targets
I can think like an engineer to design things that use chemical processes.



Resources	Steel Alignments (IAA), Inspire, Online Resources.
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Unit Title	Ecology
Time Frame	Approximately 6 weeks



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	Essential Question(s)
	How does resource availability affect organisms and populations? How do changes affect ecosystems? How can we design solutions to ecological problems?

	Focus of the Unit
	The Students will explore the intricate relationships within the natural world, focusing on Ecology.

Standards	STEELS 3.1.6-8.I, STEELS 3.1.6-8.K, STEELS 3.1.6-8.J, STEELS 3.1.6-8.L, STEELS 3.1.6-8.U
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Learning Targets
I can explain how having enough food, water, and space affects how many living things can live in one area.

Learning Targets
I can create models to show how energy flows from one living thing to another.

Learning Targets
I can identify how changes in an ecosystem, big or small, can affect the living things there.

Learning Targets
I can design a possible solution to an ecological problem and explain it.



Resources	Steel Alignments (IAA), Inspire, Online Resources.
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Unit Title	Land, Water, and Human Interactions
Time Frame	Approximately 6 weeks



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	Essential Question(s)
	How do weathering, erosion, and deposition change the Earth's surface? How can we reduce harmful effects on Earth's water and coastlines? How can we mitigate human impact on the environment?

	Focus of the Unit
	The Students will focus on how humans interact with the land and water, connecting to ideas like "Land, water, and Human Interactions" and how "cities are made" or "building the cities"

Standards	STEELS 3.3.6-8.M, 3.3.6-8.N, STEELS 3.3.6-8.H, STEELS 3.3.6-8.E, STEELS 3.3.6-8.M
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Learning Targets
I can identify different ways humans have changed the environment, like when we build things.

Learning Targets
I can discuss and argue about ways we could reduce the impact humans have on the Earth.

Learning Targets
I can build or analyze models of the water cycle.

Learning Targets
I can identify ways to reduce the harmful effects humans have on water and coastlines.



Resources	Steel Alignments (IAA), Inspire, Online Resources.
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