Chardon Local Schools Curriculum

Grade 7 - SCIENCE - COURSE DESCRIPTION

Curriculum Description / Overview

Seventh-grade science focuses on order and organization. The three major branches of science will all be investigated, including life, earth, and physical. The common theme that connects all disciplines is that matter and energy can be transferred between and within systems but can neither be created nor lost, and that systems cycle in observable and predictable patterns. Topics include the atmosphere, the periodic table, biomes, ecosystems, photosynthesis, waves, the physics of motion, and cycles and patterns of the earth, sun and moon.

While the content throughout the school year will vary, all units will share the common themes of The Scientific Method and its process. The development and performance of valid scientific experiments are important skills in which students will strengthen during this course.

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Grade 7 - SCIENCE - CURRICULUM MAP

Strand	EARTH AND SPACE SCIENCE (7.ESS)
Power Objective #1	Describe the hydrologic cycle and how it illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere, and atmosphere. (7.ESS.1-3)
Supporting Indicators	Define the changes in states of matter.
	Explain how thermal energy is transferred in the hydrologic cycle.
	Identify the different spheres of the Earth.
	Interpret how the cycling of water in the atmosphere affects weather patterns.
Power Objective #2	Explain how thermal-energy is transferred in the oceans and the atmosphere, and how they contribute to the formation of currents, and influence global climate patterns. 7.ESS.2
Supporting Indicators	Identify the sun as the source of energy for wind, air and ocean currents.
	Demonstrate how ocean currents are influenced by factors other than thermal energy, such as water density, mineral content, ocean floor topography and the Earth's rotation.
	Illustrate how the jet stream and the gulf stream are examples of currents that influences weather patterns affecting global as well as local areas.
	Indicate how large bodies of water influence weather and climate.
Power Objective #3	Recognize and compare how the atmospheric properties at different elevations contain a mixture of gases that cycle through the lithosphere, biosphere, hydrosphere and atmosphere. 7.ESS.3
Supporting Indicators	Explain that composition of the layers of the atmosphere is determined by the elevation (gravity) and the temperature of an area.

	Describe the movement of specific elements/molecules and how they interact as they move through the spheres of the earth.
	Illustrate how natural and human events can affect the the health of the atmosphere.
	Describe how the atmosphere is held to the Earth by gravity.
Power Objective #4	Demonstrate the cause of solar and lunar eclipses, tides and phases of the moon with respect to the positions of the Earth, moon and sun. 7.ESS.4 and 5
Supporting Indicators	Explain how the moon's orbit and its change of position relative to the Earth and sun result in different parts of the moon being visible from Earth.
	Demonstrate that a solar eclipse is when Earth moves into the shadow of the moon (during a new moon). A lunar eclipse is when the moon moves into the shadow of Earth (during a full moon).
	Explain how gravitational force between the Earth and the moon causes daily oceanic tides.
	Describe how the seasons on Earth are caused by the tilt of its axis and how this affects the amount of direct sunlight that the earth receives in a single day.
Strand	**PHYSICAL SCIENCE (7.PS)**
Power Objective #1	Elements can be organized by properties. 7.PS.1
Supporting Indicators	Explain when substances interact to form new substances, the properties of the new substances may be very different from those of the old, but the amount of mass does not change.
	Determine the properties of an element based on its location in the Periodic Table.
	Classify substances according to their properties, such as metals and acids.
	Classify a variety of natural substances to determine if they are acidic, basic, or neutral, using the pH scale.
Power Objective #2	Energy can be transformed or transferred but is never lost. 7.PS.2
Supporting Indicators	Describe explain how thermal energy can be transferred through radiation, convection and conduction.
	Explain how electrical energy transfers when an electrical source is connected in a complete electrical circuit to an electrical device.

	Demonstrate how the amount of energy transferred increases as the strength of the force and/or the distance covered by object increases
Strand	**LIFE SCIENCE (7.LS)**
Power Objective #1	Describe how matter is transferred between organisms and their environments. 7.LS.1
Supporting Indicators	Compare and contrast photosynthesis and cellular respiration.
	Distinguish between users and producers of energy and materials in an ecosystem.
	Describe how molecules of living things are continually recycled.
	Apply the Law of Conservation of Mass within an ecosystem.
Power Objective #2	Indicate how abiotic and biotic factors determine the growth and survival of organisms. 7.LS.2
Supporting Indicators	Describe the major biomes of the Earth based on biotic and abiotic components of their environment.
	Categorize biomes to climate zones on a global level by using a variety of maps, models and technology.
	Describe the impact of natural and human interactions on biomes, whether deliberate or inadvertent.
Strand	**SCIENCE INQUIRY AND APPLICATIONS**
Power Objective #1	Use appropriate scientific processes, and communication techniques. (7.SI)
Supporting Indicators	Identify questions that can be answered through scientific investigations.
	Design and Conduct a scientific Investigation.
	Use scientific methods to create and perform experiments, gather and analyze data, and communicate results safely.
	Use appropriate mathematics, tools and techniques to gather data and information.