Ganado Unified School District #20
(SCIENCE/ 5TH GRADE)

PACING Guide SY 2022-2023

Resources	AZ College and Career Readiness Standard	Essential Question (HESS Matrix)	Learning Goal	Vocabulary (Content/Academic)
First Quarter				
Inspire Science Investigate Matter Unit 1 **Module Opener** **Lesson 1:** Identify Properties of Materials **Lesson 2:** Mixtures and Solutions **Lesson 3:** Physical and Chemical Changes **Lesson 4:** Solids, Liquids, and Gases	**Physical Sciences:** *Students develop an understanding that changes can occur to matter/object on Earth or in space, but both energy and matter follow the pattern of being conserved during those changes.* **5.P1U1.1.** *Analyze and Interpret data* to explain that matter of any type can be subdivided into particles too small to see and, in a closed system, it properties change or chemical reactions occur, the amount of matter stays the same. **5.P1U1.2.** *Plan and carry out investigations* to demonstrate that some substances combine to form new substances with different properties and others can be mixed without taking on new properties. **5.P3U2.5.** *Define problems* and *design solutions* pertaining to force and motion.	**Big Idea:** What do you need to know about matter to use it to solve problems? What are the properties of matter? What happens when different materials are mix together? How does matter change when it interacts with other matter? What are the differences between solids, liquids, and gases?	Students will be able to consider how properties of matter and its interactions with other patter apply to designing a recipe for the perfect pancake. Students will be able to observe and produce data to identify materials based on their properties. Students will be able to use mathematical and computational thinking to determine if mixing substances causes a change in mass. Students will be able to plan and carry out investigations to determine if mass is conserved after matter undergoes a chemical or physical change. Students will be able to use models to show the scale and organization of particles in matter. Students will be able to investigate how the arrangement of particles affect the properties of matter. Students will be able to define the criteria for and test how to make the perfect pancake. Students will be able to use what they learned throughout the module to explain how knowing about matter helps students make the best pancake.	Chemical property Conductivity Magnetism Mass Matter Physical property Reflectively Solubility Volume Colloid Mixture Solution Chemical change Conservation of mass Physical change Gas Liquid Solid

Second Quarter

Inspire Science Unit 2: Ecosystems **<u>Matter in Ecosystems</u>** **Module Opener** **Lesson 1:** Plant Survival **Lesson 2:** Interactions of Living Things **Lesson 3:** Role of Decomposers **<u>Energy in Ecosystems</u>** **Module Opener** **Lesson 1:** Earth's Major Systems **Lesson 2:** Cycles of Matter in Ecosystems **Lesson 3:** Energy Transfer in Ecosystems	**Physical Sciences:** *Students develop an understanding that changes can occur to matter/object on Earth or in space, but both energy and matter follow the pattern of being conserved during those changes.* **5.P2U1.3.** *<u>Construct an explanation</u>* using evidence to demonstrate that objects can affect other objects even when they are not touching. **5.P3U1.4.** *<u>Obtain, analyze, and communicate evidence</u>* of the effects that balanced and unbalanced forces have on the motion of objects. **5.P4U1.6.** *<u>Analyze and interpret data</u>* to determine how and where energy is transferred when objects move.	**Big Idea:** Hoe does matter cycle between the living and nonliving arts of an ecosystem? What do plants need to survive? What happens when different materials are mixed together? What is the role of decomposers in an ecosystem? **Big Idea:** How is energy from the Sun essential for life on Earth? What are Earth's major systems? How does matter cycle in ecosystems? How is energy transferred in ecosystems?	Students will be able to learn about different types of matter in ecosystems and how the types of matter interact. Students will be able to support an argument that most of the mass of a plant is obtained from water and air and not from the soil. Students will be able to use models to show the relationships between living things in an ecosystem. Students will be able to use models to understand the role of decomposers and their place in an ecosystem. Students will be able to use what they have learned throughout the module to work with a small group to design a compost heap that will recycle plant waste into usable compost. Students will be able to revisit the module phenomenon and explain the ways matter cycles within an ecosystem. Students will be able to use models to understand how energy flows within an ecosystem. Students will be able to use a model to identify matter on Earth as part of Earth's systems. Students will be able to develop and use models of how matter cycles through ecosystems. Students will be able to explain how these cycles affect the ecosystem. Students will be able to develop and use models to show how energy is transferred through an ecosystem. Students will be able to use what they've learned throughout the module to design an eco-column. Students will be able to revisit the Module phenomenon and explain that the Sun is the source of all energy in an ecosystem.	Energy Phloem Stomata Transpiration Xylem Abiotic factor Biotic factor Habitat Invasive species Predator Prey Bacteria Decomposer Fungi Atmosphere Biosphere Geosphere Hydrosphere Condensation Evaporation Nitrogen Cycle Oxygen-carbon cycle Precipitation Runoff Water cycle

Third Quarter

Inspire Science
Unit 3: Earth's Interactive Systems

Earth's Water System
Module Opener

Lesson 1: Water Distribution on Earth

Lesson 2: Human Impact on Water Resources

Lesson 3: Effects of the Hydrosphere

Earth's Other Systems

Module Opener

Lesson 1: Effects of the Geosphere

Lesson 2: Effects of the Atmosphere

Lesson 3: Effects of the Biosphere

Life Sciences: *Students develop an understanding of patterns and how genetic information is passed from generation to generation. They also develop the understanding of how genetic information and environment features impact the survival of an organism.*

5.L3U1.9. *Obtain, evaluate, and communicate information* about patterns between the offspring of plants, and the offspring of animals (including humans); construct an explanation of how genetic information is passed from one generation to the next.

5.L3.U1.10. *Construct an explanation* based on evidence that the changes in an environment can affect the development of the traits in a population of organisms.

5.L4U3.11. *Obtain, evaluate, and communicative evidence* about how natural and human-caused changes to habitats or climate can impact populations.

5.L4U3.12. *Construct an argument based on evidence* that inherited characteristics can be affected by behavior and/or environmental conditions.

Big Idea: How can we collect water to conserve water resources?

What types of water features are on Earth's surface?

How do humans impact Earth's water?

How does the hydrosphere interact with Earth's other systems?

Big Idea: How do Earth's systems interact with one another?

How does the geosphere interact with other systems?

How does the biosphere interact with other systems?

Students will be able to understand the effects humans have on Earth's water sources as well as the location and amount of water on Earth's surface.
Students will be able to use mathematics to graph the amount of usable fresh water on Earth.
Students will be able to explain the positive and negative impact that humans can have on water resources.
Students will be able to develop and use models to show how the hydrosphere interacts with Earth's other systems.
Students will be able to design a rainwater collection system.
Students will be able to use what they learned throughout the module to explain how water can be collected and conserved in the ecosystem.
Students will be able to develop and use models to show how Earth's major systems interact.
Students will be able to develop and use models to show how the geosphere interacts with Earth's other systems.
Students will be able to develop and use models to show how the atmosphere interacts with Earth's other systems.
Students will be able to develop and use models to show how the biosphere interact with Earth's other systems.
Students will be able to design a desert oasis where living things get what they need to survive under harsh conditions.
Students will be able to use what they learned throughout the module to explain Earth's systems interact and affect ecosystems.

Glacier
Groundwater
Ice caps
Reservoir
Storage
Acid rain
Algae bloom
Conservation
Deposition
Erosion
Floodplain
Glacier
Hot spot
Landslide
Minerals
Molten rock
Volcano
Air mass
Climate
Weather
Deforestation
Endangered
Extinct

Fourth Quarter

Inspire Science **<u>Unit 4: Earth & Space Patterns</u>** **<u>Earth's Patterns and Movement</u>** **Module Opener** **Lesson 1:** The Role of Gravity **Lesson 2:** Earth's Motion	**Earth and Space Sciences:** *Students develop an understanding of the how gravitational forces in space cause observable patterns due to the position of Earth, Sun, Moon, and Stars.* **5.E2U1.7.** *<u>Develop, revise, and use models</u>* based on evidence to *<u>construct explanations</u>* about the movement of the Earth and Moon within our Solar System. **5.E2U1.8.** *<u>Obtain, analyze, and communicate evidence</u>* to support an explanation that the gravitational force of Earth on objects is directed toward the planet's center.	**Big Idea:** What patterns are caused by Earth's movement? What pulls objects down? How does Earth move through space? **Big Idea:** What causes different stars to appear during different seasons throughout the year? Where is Earth located in space? What causes some stars to be brighter than others?	Students will be able to gain an understanding of the role of gravity in relation to patterns of the Earth and Moon. Students will be able to support an argument that gravity causes objects to be pulled towards the center of Earth. Students will be able to model the movement of Earth in relationship to other objects in space. Students will be able to use what they learned about Earth's patterns to create models that tur their classroom into a planetarium. Students will be able to complete the engineering design processes to come up with the materials that they will need and a sketch of their models. Each team will collaborate with another team to share their model and data of a different element. After a class, discussion, students will need to collaborate in their teams to overcome problems, redesign models, and improve the effectiveness of their model. Students will be able to use what they learn throughout the module to explain how patterns in the night sky are caused by Earth's movement. Students will be able to apply their understanding of Earth's patterns and knowledge of the Sun and other star's distance from Earth to design a model of a constellation. Students will be able to explain Earth's location within the universe. Students will be able to support an argument that some stars appear brighter than others due to their relative distances. Students will be able to use what they learned throughout the module to design a model of a constellation. Students will be able to use what they learned throughout the module to explain the appearance of stars from Earth throughout the year.	Gravity Meteor Meteorite Tides Moon phases Orbit Revolution Rotation Apparent motion Galaxy Planet Constellation Light-year star