Course Description:

Grade 5 Science continues to build on the science skills that have been obtained in years previous. There will be an emphasis on earth and space science, life science, and physical science. Students will begin the course by focusing on earth and space science by looking at the solar system and planets. Students will come to an understanding of the concept of the earth as a sphere and the earth's place in the solar system. The course continues with a focus on physical science and the different tools that can measure force, time, and distance. They will also grow in their understanding of how light and sound travel and interact with each other as well as the different types of energy. The semester concludes with a look into life science and the ways that organisms are interconnected.

Module	Lesson Title	Objectives
Our Solar System and Beyond	Formation of the Solar System	● Define and describe nebulae. ● Order the stages of development of our solar system.
	The Sun	● Describe the importance of the Sun in our solar system. ● Differentiate between apparent brightness and absolute brightness.
	Gravity and Orbits	● Describe the relationship between gravity and the planets' orbits. ● Determine the effects of changing the mass or changing the distance on the strength of gravitational force between two objects. ● Describe the shape of the planets' orbits around the Sun.
	Terrestrial Planets	● Describe the characteristics of the terrestrial planets. ● Compare and contrast the terrestrial planets with Earth.
	Jovian Planets	● Describe the characteristics of the Jovian planets (or gas giants). ● Compare and contrast the Jovian planets with Earth.

	Dwarf Planets	• Define dwarf planets. • Differentiate between planets and dwarf planets.
	Comets and Asteroids	• Identify the characteristics of comets. • Identify the characteristics of asteroids.
	Meteoroids	• Define meteoroid. • Differentiate between meteoroids, meteors, and meteorites.
	The Stars	• Explain how stars are born. • Describe how stars are classified.
Sun, Seasons, and Tides	The Structure of the Sun	• Differentiate between the layers of the Sun. • Distinguish between the layers of the Sun and the layers of the Sun's atmosphere.
	Rotation and Revolution	• Identify the predictable cycles and patterns of motion between Earth and the Sun. • Distinguish between rotation and revolution.
	Night and Day	• Explain how the relationship between Earth and the Sun creates day and night. • Describe how Earth's rotation on its axis in a 24-hour period produces day and night.
	Earth's Tilt and the Seasons	• Identify how the cycles and patterns of motion between Earth and the Sun are predictable. • Demonstrate how Earth's revolution around the Sun and tilt on its axis causes the seasons.
	Spring and Summer	• Describe the characteristics of spring and summer. • Describe what happens on the vernal equinox and the summer solstice.
	Fall and Winter	• Differentiate between fall and winter's characteristics. • Describe how the Earth's revolution affects the seasons.

	Intro to the Moon	● Identify Earth as having a single Moon that orbits it.
	The Phases of the Moon	● Describe how the relationship between Earth and the Moon creates the phases of the Moon.
	Tides	● Describe how the Moon helps create the tides in Earth's oceans.
Forces and Motion	Force, Motion, and Position	● Identify the relationship between motion, position, and force.
	Energy and Inertia	● Differentiate between kinetic and potential energy. ● Describe how inertia keeps objects in motion or at rest.
	Measuring Speed	● Explain how the speed of an object is calculated. ● Calculate the speed or distance travelled using the equation s = d/t.
	Acceleration	● Explain that acceleration is a rate of change in velocity. ● Calculate the rate of acceleration.
	Force	● Define a force as a push or pull on an object. ● Describe the effect of applying a force to an object on that object's motion.
	Types of Forces	● Differentiate between the different types of forces that can act on objects.

	Newton's Laws of Motion	• Define Newton's three laws of motion. • Give an example of each of Newton's three laws in action.
	Law of Inertia	• Define the law of inertia. • Describe how inertia affects moving or nonmoving objects.
	Earth and Weight	• Describe gravity and how it affects the weight of objects. • Describe how an object can have a different weight on different planets, moons, etc.
Matter	Atoms	• Describe the characteristics of matter and atoms. • Differentiate between the parts of an atom.
	Elements	• Describe the relationship between an atom and an element. • Describe how the periodic table is organized. • Differentiate between the elements on the periodic table.
	Compounds	• Compare and contrast an element, a molecule, and a compound.
	States of Matter	• Differentiate between solids, liquids, and gases. • Determine the characteristics of matter.
	Phase Changes	• Differentiate between phase changes. • Determine how phase changes occur.
	Physical Changes	• Identify different physical properties. • Describe the characteristics of a physical change. • List examples of physical changes.
	Mixtures and Solutions	• Differentiate between pure substances and mixtures. • Differentiate between homogeneous mixtures and heterogeneous mixtures. • Identity the characteristics of a solution.

	Chemical Changes	• Identify chemical properties. • Differentiate between chemical and physical changes.
	Conservation of Matter	• Identify examples of the law of conservation of matter. • Describe the characteristics of the law of conservation of matter.
Sound and Light	Introduction to Light	• Describe light as a type of electromagnetic energy. • Identify the electromagnetic spectrum. • Identify the parts of a transverse wave.
	Speed of Light	• Identify the speed of light. • Describe how light does not need a medium to travel through.
	Reflection of Light	• Define reflection. • Differentiate between luminous and illuminated. • Describe the law of reflection.
	Refraction of Light	• Define refraction as light waves bending as they travel from one medium to another. • Describe how refraction causes rainbows.
	Lenses	• Describe refraction. • Differentiate between concave and convex lenses.
	Sight and Light	• Define the electromagnetic spectrum and visible light. • Describe how each part of the eye works together to allow humans to see.
	Introduction to Sound	• Describe sound and the waves that cause it. • Compare sound waves and light waves.
	Traveling Sound	• Describe how sound travels through a medium. • Define echolocation and provide examples of animals using it.

	Pitch and Loudness	• Differentiate between pitch and loudness (volume). • Identify what affects the pitch and the volume of a sound wave.
	Hearing and Sound	• Identify and describe important parts of the ear. • Define what an echo is and why they occur.
Earth's Spheres and Food Chains	Earth's Spheres	• Differentiate between Earth's spheres.
	Water on Planet Earth	• Identify the steps of the water cycle. • Describe why water is essential for life. • Differentiate between various bodies of water.
	Introduction to Ecosystems	• Differentiate between ecosystems, populations, communities, and organisms. • Define producers, consumers, and decomposers. • Recognize that fossils can be used as evidence to learn what life and the environment were like on Earth long ago.
	Living and Nonliving Parts of Ecosystems	• Differentiate between biotic and abiotic factors. • Identify the importance of the presence of all biotic and abiotic factors in an ecosystem. • Define photosynthesis.
	The Sun's Role in Ecosystems	• Describe the flow of energy from the sun to all living things.
	Consumers	• Identify consumers and differentiate between the subcategories of consumers. • Describe the flow of energy from producers to consumers in an ecosystem.
	Food Chains and Food Webs	• Differentiate between food chains and food webs. • Describe the energy flow through food chains and webs.
	Phytoplankton	• Identify what phytoplankton is and its role in a marine ecosystem. • Describe a marine food chain / web.

	Extreme Organisms	● Identify extreme organisms. ● Define the adaptations of extreme organisms.