

Fifth Grade Science Curriculum

Grade Level Goal

In fifth grade, the students will continue building a knowledge base, through investigation in the areas of life, physical, and earth science. Using this knowledge base, they will begin to apply scientific concepts to the world around them.

Unit Title	Forces and Motion
Big Ideas	<ul style="list-style-type: none"> • Both contact forces and non-contact forces can move objects. • Every experiment provides useful results, whether or not the results match the hypothesis. • Forces are pushes and pulls that can be contact or non-contact forces. • Scientific investigations follow processes that require systematic and logical development, observation, and careful analysis. • Scientific investigations generally lead to new questions. • The foundation of scientific theory is replicable investigations. • Through repeated inquiry, patterns emerge and theories are proposed.
Essential Questions	<ul style="list-style-type: none"> • How do faith and science interact? • How does science help us answer questions about the world around us? • What are contact and non-contact forces and how do they move objects? • What are the Church's views on research? • What does it mean to question? • What is scientific inquiry? • Why do scientists conduct investigations?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW distinguish between contact forces and non-contact forces. ✓ TLW demonstrate how contact and non-contact forces change the motion of an object. ✓ TLW write generalizations to explain the effects of gravitational, frictional, buoyant, magnetic, and static electrical forces on moving objects.
GLCE	P.FM.05.21; S.RS.05.11; P.FM.05.22; S.IA.05.11; S.IA.05.12; S.IA.05.13; S.IA.05.14; S.IA.05.15; S.IP.05.11; S.IP.05.12; S.IP.05.13; S.IP.05.14; S.IP.05.15; S.IP.05.16; S.RS.05.12; S.RS.05.13; S.RS.05.15; S.RS.05.16; S.IA.05.13; S.IA.05.14; S.IP.05.16; S.RS.05.15

Unit Title	Forces
Big Ideas	<ul style="list-style-type: none"> • A balanced force on an object does not change the motion of the object. • An unbalanced force on an object changes the motion of the object. • Forces have a magnitude and direction.
Essential Questions	<ul style="list-style-type: none"> • What impact does a balanced force have on the motion of an object? • What impact does an unbalanced force have on the motion of the object?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW describe what happens when two forces act on an object in the same or opposing directions. ✓ TLW describe how constant motion is the result of balanced (zero net) forces and how changes in the motion of objects are caused by a non-zero net (unbalanced) force. ✓ TLW relate the size of change in motion to the strength of unbalanced force and the mass of the object.
GLCE	P.FM.05.31; S.IA.05.12; S.IA.05.13; S.IA.05.14; S.IP.05.16; S.RS.05.15; S.RS.05.19; P.FM.05.32; P.FM.05.33; S.IA.05.12; S.IA.05.13; S.IP.05.13; S.IP.05.16; S.RS.05.15; P.FM.05.34; S.IA.05.11; S.IA.05.12; S.IA.05.13; S.IA.05.14; S.IP.05.13; S.IP.05.14; S.IP.05.15; S.IP.05.16; S.RS.05.11;

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S.RS.05.15

Unit Title	Speed
Big Ideas	<ul style="list-style-type: none"> • Motion can be describe by a change in position relative to its point of reference. • Motion can be measured and represented on a graph. • The motion of an object can be described by its speed and the direction in which it is moving.
Essential Questions	<ul style="list-style-type: none"> • How can motion be described? • How can motion be represented on a graph?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW explain the motion of an object relative to its point of reference. ✓ TLW describe the motion of an object in terms of distance, time, and direction, as the object moves and in relationship to other objects. ✓ TLW illustrate how motion can be measured and represented on a graph.
GLCE	P.FM.05.41; S.IA.05.12; P.FM.05.42; S.IA.05.12; S.RS.05.15; P.FM.05.43; S.IA.05.11; S.IA.05.12; S.IP.05.16; S.RS.05.15

Unit Title	Animals and Body Systems
Big Ideas	<ul style="list-style-type: none"> • Animal systems (including body systems of humans) work together to perform selected activities. • Multicellular organisms may have specialized systems that perform functions that serve the needs of the organism. • The Human Body is created in the image and likeness of God.
Essential Questions	<ul style="list-style-type: none"> • How are the needs of multicellular organisms met by specialized systems? • How do body systems work together? • How does God want us to live to respect the gift of life? • How is the interdependence of the human body systems like the interdependence of the members of the Body of Christ?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW elaborate on the health of the human body and maintenance of the body systems through discussion and research of a healthy diet and exercise. ✓ TLW construct a life size model of the human body and explore the human body as a system. ✓ TLW identify the structures and functions of the skeletal and muscular system. ✓ TLW determine the interrelationship of the skeletal and muscular systems. ✓ TLW analyze the structures and functions of the circulatory and respiratory systems. ✓ TLW collaboratively investigate how the circulatory and respiratory systems function together and how they affect metabolism. ✓ TLW identify the structures and order the process of the digestive system through a model or diagram. ✓ TLW collaboratively investigate how the circulatory and digestive systems function together and how they affect metabolism. ✓ TLW identify the structures and order the process of the excretory system. ✓ TLW explain the basic parts and functions of the nervous system. ✓ TLW explain the basic parts and functions of the reproductive system. ✓ TLW explain how the nervous, skeletal, muscular, circulatory, endocrine, and respiratory systems work together during exercise and other selected functions. ✓ TLW identify the body systems on their human body model and explain how the various systems work together to perform various functions.
GLCE	S.RS.05.15; S.RS.05.15; L.OL.05.41; S.IP.05.13; L.OL.05.42; L.OL.05.41; S.IA.05.12; S.IA.05.13; S.IP.05.11; S.IP.05.12; S.IP.05.13; S.RS.05.15; L.OL.05.42; S.IA.05.11; S.IA.05.12; S.IA.05.13; S.IP.05.13; S.IP.05.15; S.IP.05.16; L.OL.05.41; S.IA.05.12; S.RS.05.15; L.OL.05.42; S.IA.05.12; S.IP.05.15; S.RS.05.15; L.OL.05.41; S.RS.05.15; S.IP.05.14; S.IP.05.16; L.OL.05.41; S.IA.05.12;

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	S.IP.05.11; S.IP.05.12; S.IP.05.13. S.RS.05.15; L.OL.05.41; S.IA.05.12; S.RS.05.15; L.OL.05.41; S.IA.05.11; S.IA.05.12; S.IA.05.13; S.IA.05.14; S.IP.05.11; S.IP.05.12; S.IP.05.13; S.IP.05.14; S.IP.05.15; S.IP.05.16; S.RS.05.11; S.RS.05.13; S.RS.05.15; L.OL.05.42
Catholic Social Teachings	Dignity of the Human Person

Unit Title	Classification
Big Ideas	<ul style="list-style-type: none"> • Classification of living things is an artificial method of sorting organisms into groups based on anatomical structures and functions. • Classification schemes have levels from general (kingdom) to more specific (species).
Essential Questions	<ul style="list-style-type: none"> • What criteria are used for classifying living things? • What is classification
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW collaboratively develop a classification system that can be used to classify organisms. ✓ TLW review classification categories, give examples of each, and justify classifications based on structure and function. ✓ TLW classify a group of selected organisms into categories based on structure and function.
GLCE	L.EV.05.21; L.EV.05.21; L.EV.05.21
Catholic Social Teachings	Care for God's Creation

Unit Title	Solar System
Big Ideas	<ul style="list-style-type: none"> • As the Moon orbits the Earth, it appears to have different phases because we see different amounts of the Moon that is lighted by the Sun. • Constellations appear to move across the nighttime sky due to the rotation of the Earth on its axis. • Gravity is the force that keeps most objects in the solar system in regular and predictable orbits. • The combined gravitational effect of the Sun and the Moon produce tides on the Earth. • The Sun is a star that is the largest body in our solar system, which includes other planets, their moons, and smaller objects such as asteroids and comets. Earth is the third planet from the Sun.
Essential Questions	<ul style="list-style-type: none"> • How does gravity affect the orbit of objects in the solar system? • What are tides and what causes them? • What is the Sun and how does it relate to other objects in the solar system? • Why do constellations seem to move across the nighttime sky?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW design a model that describes the position and relationship of the planets and other objects to the Sun. ✓ TLW describe the motion of planets and moons in terms of rotation on axis and orbits due to gravity. ✓ TLW explain Moon phases as they relate to the position of the Moon in its orbit around the Earth, resulting in a varying amount of observable reflected light. ✓ TLW explain that stars, constellations, and the Sun appear to move because the Earth rotates on its axis and orbits the Sun. ✓ TLW explain lunar and solar eclipses based on the relative positions of the Earth, Moon, and Sun and the orbit of the Moon. ✓ TLW explain the tides of the oceans as they relate to the gravitational pull and orbit of the Moon. ✓ TLW research a selected constellation or spacecraft, design a visual aid and deliver a presentation on the mythological origin and historical significance of the constellation or the spacecraft and its discoveries.

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GLCE	E.ST.05.11; S.IA.05.11; S.IA.05.12; S.IA.05.13; S.IA.05.14; S.IP.05.11; S.IP.05.12; S.IP.05.13; S.IP.05.14; S.IP.05.15; S.IP.05.16; S.RS.05.12; S.RS.05.15; E.ST.05.21; S.RS.05.15; E.ST.05.22; S.IP.05.13; S.IP.05.14; S.IP.05.16; S.RS.05.15; E.ST.05.23; S.IA.05.13; S.RS.05.15; S.RS.05.19; E.ST.05.24; E.DT.05.25; S.RS.05.15; S.RS.05.19
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Unit Title	Earth and Space
Big Ideas	<ul style="list-style-type: none"> • Solar energy is responsible for life processes, weather and other phenomena on Earth. • The Sun creates energy by the transformation of matter into energy using nuclear fusion. • The universe is dynamic and contains all the matter and energy that exists.
Essential Questions	<ul style="list-style-type: none"> • How do scientists estimate the age of the universe? • How does the Sun generate energy? • How does the universe change over time?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW review the planets, the motion of solar system objects, the primary cause of seasons, and the light-year as a unit of distance in space. ✓ TLW describe the position and motion of our solar system in our galaxy and the overall scale, structure, and age of the universe. ✓ TLW identify patterns in solar activities. ✓ TLW describe how nuclear fusion produces energy in the Sun and how it has led to the formation of all the chemical elements. ✓ TLW explain that solar energy is responsible for life processes and weather, as well as other phenomena on Earth. ✓ TLW describe how the Big Bang theory accounts for the formation of the universe. ✓ TLW explain how observations of the cosmic microwave background have helped determine the age of the universe. ✓ TLW differentiate between the cosmological and Doppler red shift. ✓ TLW explain stellar evolution. ✓ TLW collaboratively conduct research on a technological advancement in the field of astronomy and present the findings.
GLCE	E5.1A; E5.3A; E5.2A; E5.2C; E5.2D; E5. 2B; E1.2i; E1.2k; E5.1b; E5.1c; E5.1d; E5.2e; E5.2f; E5.2g; E5.2h; E1.2i; E1.2k

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