

Fourth Grade Science Curriculum

Grade Level Goal

In fourth grade, the students will identify and explore a variety of topics in life, physical, earth and space sciences. Their scientific curiosity will be fostered through active participation, critical thinking and problem solving.

Unit Title	Estimation and Measurement
Big Ideas	<ul style="list-style-type: none"> • All objects and substances have physical properties that can be measured. • Inquiry includes an analysis and presentation of findings that leads to future questions, research, and investigations. • Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.
Essential Questions	<ul style="list-style-type: none"> • How do I use what I already know to take me through the process? • How does science help us answer questions about the world around us? • What does it mean to question? • What does measuring an object or substance tell us about the natural world and why is that important? • Why do scientists conduct investigations?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW review the use of various measurement tools and units of measurement. ✓ TLW select appropriate units and measure using common tools for length, weight/mass, volume (capacity), temperature, and time. ✓ Given a problem, TLW solve and give answers to a reasonable degree of precision. ✓ TLW measure and compare integer temperature in degrees. ✓ TLW convert from one unit of measure to a larger or smaller unit of measure. ✓ TLW explore measuring the same object with different units of measure and discuss the appropriateness of the unit for measuring the object. ✓ TLW demonstrate scientific processes related to observations of the natural world.
GLCE	S.RS.04.14; S.RS.04.15; P.PM.04.16; P.PM.04.17; P.PM.04.18; S.IA.04.14; S.IA.04.15; M.PS.04.02; S.IP.04.15; M.UN.04.03; S.IA.04.14; S.IP.04.14; M.TE.04.05; S.IA.04.14; S.IA.04.14; S.IP.04.14; S.IP.04.15; D.RE.04.01; D.RE.04.02; D.RE.04.03; S.IA.04.11; S.IA.04.12; S.IA.04.13; S.IA.04.14; S.IA.04.15; S.IP.04.11; S.IP.04.12; S.IP.04.13; S.IP.04.14; S.IP.04.15; S.IP.04.16; S.RS.04.11; S.RS.04.14; S.RS.04.15
Catholic Social Teachings	Care of God’s Creation

Unit Title	Forms of Energy
Big Ideas	<ul style="list-style-type: none"> • Heat and electricity are forms of energy. • Increasing the temperature of any substance requires the addition of energy. • Light and sound are forms of energy
Essential Questions	<ul style="list-style-type: none"> • How can the temperature of a substance be increased? • How can you tell energy is present? • How does temperature relate to energy? • What are heat and electricity?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW review properties of light and sound as they relate to energy. ✓ TLW identify heat as a form of energy. ✓ TLW demonstrate how temperature can be increased in a substance by adding energy. ✓ TLW describe heat as energy and how heat is produced through electricity,

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	rubbing, and burning. ✓ TLW identify objects that are good or poor conductors of heat energy. ✓ TLW identify electricity as a form of energy. ✓ TLW identify static electricity as a form of energy. ✓ TLW identify the positive and negative charges of various objects and describe the interaction of the charges in real-world situations. ✓ TLW analyze the relationship of static electric charges to hazardous situations at home, school, and in nature. ✓ TLW describe possible electrical shock hazards to be avoided at home and at school.
GLCE	P.EN.04.12; P.EN.04.42; P.EN.04.43; S.IP.04.16; P.PM.04.53; P.EN.04.12; P.EN.04.12; S.IP.04.11;
Catholic Social Teachings	Stewardship – understanding God’s creation

Unit Title	Magnets
Big Ideas	<ul style="list-style-type: none"> • A force is a push or a pull. • Magnets can repel or attract other magnets. Magnets can also attract certain non-magnetic objects at a distance.
Essential Questions	<ul style="list-style-type: none"> • How do magnets work? • How is magnetic attraction affected by the distance between and magnet and an object? • What is a magnetic field?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW investigate objects to determine if they are magnetic or nonmagnetic. ✓ TLW manipulate magnets to discover that magnetic poles either attract or repel and illustrate findings. ✓ TLW demonstrate magnetic fields by observing the patterns formed with iron filings using a variety of magnets. ✓ TLW demonstrate that non-magnetic objects are affected by the strength of the magnet and the distance away from the magnet. ✓ (Extension) TLW determine the usefulness of magnets in real life. ✓ (Extension) TLW use a directional compass as a guide to various playground locations and determine north, south, east and west.
GLCE	S.IP.04.11; S.IP.04.11; S.IP.04.13; P.PM.04.33; P.PM.04.34; S.IP.04.11; S.RS.04.16; S.IP.04.15
Catholic Social Teachings	Stewardship – Using the resources found in God’s creation

Unit Title	Electrical Circuits
Big Ideas	<ul style="list-style-type: none"> • Electrical circuits transfer electrical energy and produce magnetic fields. • Objects vary in the extent to which they conduct electricity.
Essential Questions	<ul style="list-style-type: none"> • In an electromagnet, what is the relationship between magnetism and electricity? • What is an electromagnet? • What materials are good conductors and what materials are poor conductors?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW collaboratively brainstorm a list of 25 or more real-life objects that use electricity, and review possible shock hazards. ✓ Given a battery, small light bulb and wire or large paper clip, TLW investigate ways to light the bulb by creating a closed circuit, and then illustrate the results. ✓ TLW examine diagrams of circuits to determine if the circuits will work and justify the answers. ✓ TLW explain how electrical energy is transferred and changed through the use of a simple circuit. ✓ TLW identify objects that are good conductors or poor conductors of electricity. ✓ TLW create a simple working electromagnet and explain the conditions

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	<p>necessary to make the electromagnet.</p> <ul style="list-style-type: none"> ✓ (Extension) TLW build a switch to demonstrate open and closed circuits. ✓ TLW investigate various individuals throughout history and across cultures who have contributed to the discovery of electricity.
GLCE	S.RS.04.16; P.EN.04.51; P.EN.04.51; P.EN.04.51; P.EN.04.51; P.PM.04.53; P.EN.04.52; S.IA.04.14; S.RS.04.17; S.RS.04.19
Catholic Social Teachings	Rights and Responsibilities – Using one’s knowledge to help others.

Unit Title	Adaptations and Food Webs
Big Ideas	<ul style="list-style-type: none"> • Changes in the environment can produce changes in food webs. • Organisms have basic needs for air, water, and food. Plants also need light. • Organisms interact to provide food and shelter to one another. • Organisms of the same kind have individual differences and some variations in physical characteristics give an advantage for survival and reproduction.
Essential Questions	<ul style="list-style-type: none"> • How do changes in the environment impact food chains and food webs and why? • How do organisms interact with one another in ways that are harmful or helpful? • What are the basic needs of plants and animals? • What impact do individual differences in various organisms of the same kind have?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW collaboratively review the basic requirements necessary for life of all organisms. ✓ TLW review major characteristics of biomes and habitats. ✓ TLW review living and non-living components of an ecosystem and determine an ecosystem’s contribution to the needs of organisms. ✓ TLW collaboratively investigate and describe physical adaptations (traits) that give organisms an advantage for reproduction and survival in their environment. ✓ TLW explain how behavioral characteristics (adaptation, instinct, learning, habit) of animals help them to survive in their environment. ✓ TLW explain common patterns of feeding relationships of living things. ✓ TLW explain how environmental changes can produce a change in the food web.
GLCE	L.OL.04.16; L.OL.04.15; S.IP.05.13; L.EC.04.11; L.EV.04.21; L.EV.04.22; L.EV.05.12; S.IP.05.15; S.RS.05.17; L.EV.05.11; S.IP.05.15; S.RS.05.17; L.EC.04.11; L.EC.04.21; S.RS.04.18
Catholic Social Teachings	Stewardship – Making wise choices about God’s creation.

Unit Title	Fossils
Big Ideas	<ul style="list-style-type: none"> • Fossils provide evidence about the history of the Earth. • There are differences and similarities between the life forms found in fossils and in the organisms that exist today.
Essential Questions	How do fossils provide evidence about the history of the Earth?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW understand the progression of Earth’s lands, plants, and animals. ✓ TLW describe how fossils provide evidence about how living things and environmental conditions have changed. ✓ TLW analyze the relationship of environmental change and catastrophic events to species extinction. ✓ TLW explain that layers or rocks and fossils are used to understand the past life. ✓ TLW compare and contrast life forms found in fossils and organisms that exist today.
GLCE	E.ST.04.31; E.ST.04.32; E.ST.04.31; E.ST.04.32
Catholic Social Teachings	God’s Creation – God created the perfect set up for evolution to happen (6 Eras = 6 Days)

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Unit Title	Sun – Moon and Earth
Big Ideas	<ul style="list-style-type: none"> • The Moon appears to be the same size as the Sun because it is closer to the Earth. • The Sun, Moon, and Earth have observable characteristics and predictable patterns of movement.
Essential Questions	<ul style="list-style-type: none"> • What are the apparent movements of the Sun, Moon, and Earth? • Why does the Moon appear to be the same size as the Sun? • Why does the Moon change shape during the course of a month?
Skills/Concepts	<ul style="list-style-type: none"> ✓ TLW identify common objects in the sky and list what is already known about the Sun and Moon. ✓ TLW investigate the concept of relative distances of the Sun, Earth, and Moon. ✓ TLW compare and contrast selected characteristics of the Earth, Sun, and Moon. ✓ TLW describe the Earth's orbit around the Sun. ✓ TLW explain how the spin (rotation) of the Earth causes day and night and describe the apparent movement of the Sun across the sky through day/night and the seasons. ✓ TLW describe the apparent movement of the Moon across the sky through day/night and the seasons. ✓ TLW explain how the visible shape of the Moon follows a predictable cycle which takes approximately one month.
GLCE	E.ST.04.11; E.ST.04.12; E.ST.04.12; E.ST.04.21; E.ST.04.23; E.ST.04.22; E.ST.04.25; E.ST.04.25; E.ST.04.24

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