

Diocese of Knoxville Science Curriculum Standards: Pre-Kindergarten through Grade 2

PRE-KINDERGARTEN (PK)							
I. Physical Science							
Motion and Stability: Forces and Interactions							
Code	Standards & Objectives	Literacy & Math Standards	Resources Activities	Catholic Identity Themes	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
PS.PK.1 Observable properties of objects	Sort objects by observable properties such as size, shape, color, weight, and texture.	M.PK.4.1 Describe measurable attributes of objects such as length or weight. Sort order and classify by one attribute. PK.M.4.3 Order objects by size or length.	Manipulate, observe, compare, describe, and group objects found in the classroom on the playground, and at home			Predict from looking at the shape of simple tool or object what actions it might be used for (e.g., pliers, letter opener, and paperweight).	
PS.PK.2 States of matter	Identify objects and materials as solid, liquid, or gas. Recognize solids have a definite shape and liquids and gases take the shape of their container.		Use transparent containers of very different shapes (e.g. cylinder, cone, cube) and pour water from one container into another. Observe and discuss the “changing shape” of the water.			Ask students to bring in different types of containers from home. Discuss and demonstrate whether the containers are appropriate to hold solids and liquids (e.g. a cardboard box will absorb water and eventually disintegrate while a glass bottle will not).	

PS.PK.3 Position and Motion of Objects	Describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.	SL.PK.1 Participate in collaborative conversations with diverse partners about preschool topics and texts.	Use a spinning toy (e.g. a top) to explore round-and-round motion and a rocking toy (e.g. a rocking horse) to explore back and forth motion.			Using construction paper and glue, design a 3-dimensional object that will roll in a straight line and 3-dimensional object that will roll around in a circle.	
PS.PK.4 Position and Motion of Objects	Demonstrate that the way to change the motion of an object is to apply a force (give it a push or pull). The greater the force, the greater the change in the motion of the object.		Push and pull objects on a hard smooth surface. Make predictions as to what directions they will move and how far they will go. Repeat using various surfaces. (e.g. rough, soft)				
PS.PK.5 Position and Motion of Objects	Recognize that under some conditions, objects can be balanced.		Try to make a long thin rectangular block of wood stand upright on each face. Note that it stands (balances) very easily on some faces, but not on all.				
PS.PK.6 Properties of Objects and Materials	Differentiate between properties of objects (e.g., size, shape, weight) and properties of materials (e.g., color, texture, hardness).	M.PK.5.2 Identify shapes as two-dimensional (lying on a plane, “flat”) or three-dimensional (solid). M.PK.5.5 Sort, classify, and serialize (order in a pattern) objects using attributes such as color, shape or size. SL.PK.3 Ask and answer questions in order to seek help, get information, or	Gather a variety of solid objects. Collect data on properties of these objects, such as origin (human made or natural), weight (heavy, medium, light), length, odor, color, hardness, and flexibility.			Given a variety of objects made of different materials, ask questions and make predictions about the hardness, and strength of each. Test to see if the predictions were correct.	

		clarify something that is not understood.					
PS.PK.7 States of Matter	Compare and contrast solids, liquids, and gases based on the basic properties of each of these states of matter.	M.PK.5.5 Sort, classify, and serialize (order in a pattern) objects using attributes such as color, shape or size.	Design several stations, each of which demonstrates a state of matter (e.g., water table, balloon and fan table, sand and block table).			Design one container for each state of matter, taking into account which material properties are important (e.g., size, shape, flexibility).	
PS.PK.8 States of Matter	Describe how water can be changed from one state to another by adding or taking away heat.	SL.PK.1 Participate in collaborative conversations with diverse partners about preschool topics and texts.	Do simple investigations to observe evaporation, condensation, freezing, and melting. Confirm that water expands upon freezing.			Using given insulating materials, try to keep an ice cube from melting.	

Preschool

II. PK. Life Science

Code	Standards & Objectives	Literacy & Math Standards	Resources/Activities	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
LS.PK.1 Characteristics of living things	Recognize that animals (including humans) and plants are living things that grow, reproduce, and need water, air, and food.	RI.PK.1 With prompting and support, ask and answer questions about key details in an informational text read aloud. RI.PK.3 With prompting and support, “read” illustrations in an informational picture book by predicting facts learned from the pictures (e.g., how a	Draw and record the growth of a plant grown from seeds with different light exposures (vary the duration and intensity of light exposure).			Design and construct a habitat for a living organism that meets its need for food, air, and water.	

		seed grows into a plant).					
LS.PK.2 Characteristics of living things	Differentiate between living and nonliving things. Group both living and nonliving things according to the characteristics that they share.	M.PK.4.5 Classify objects into given categories, count the number of objects in each category and sort the categories by count. Limit total number of objects to ten. W.PK.6 Participate in shared research projects.	Compare and contrast groups of animals (e.g. insects, birds, fish, mammals) and look at how animals in these groups are more similar to one another than to animals in other groups.				
LS.PK.3 Characteristics of living things	Recognize that plants and animals have life cycles, and that life cycles vary for different living things.	RI. PK.10 Listen actively as an individual and engage in group reading activities of age appropriate informational read aloud with purpose and understanding.	Using either living organisms or pictures/models, observe the changes in form that occur during the life cycle of a butterfly or frog. Discuss the life cycle of a tree.			Design and build a habitat for living organism that can be modified to meet the changing needs of the organism during its life cycle.	
LS.PK.4 Heredity	Describe ways in which many plants and animals closely resemble their parents in observed appearance.	SL.PK.1 Participate in collaborative conversations with diverse partners about preschool topics and texts. M.PK.4.1 Describe measurable attributes of objects such as length or weight. Sort, order and classify by one attribute.	Look at and discuss pictures of animals from the same species. Observe and discuss how they are alike and how they are different.				

LS.PK.5 Evolution and biodiversity	Recognize that fossils provide us with information about living things that inhabited the Earth years ago.	W.PK.6 Participate in shared research projects.	Look at a variety of fossils or pictures of fossils, including plants, fish, and extinct species. Guess what living organisms they might be related to			Make a fossil print of plant leaves using clay or putty.	
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Preschool

**Preschool
III. Earth and Space Science**

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment and Content Notes	Date Taught
ES.PK.1 Earth's Materials	Recognize that water, rocks, soil, and living organisms are found on the Earth's surface	RI.PK.1 With prompting and support, ask and answer questions about key details in an informational text read aloud.	Walk around the playground or outside observing and discussing where water, rocks, soil and living organisms are found.			Suggested extensions to learning in technology/engineering may be to identify characteristics shared by naturally occurring rocks and manmade concrete.	
ES.PK.2 Earth's Materials	Understand the air is a mixture of gases that is all around us and that wind is moving air.		Use a hand pump to inflate a basketball. Observe and discuss how and why the basketball gets larger as more air is added (Air takes up space).			Suggested: Design a kite and identify which materials would be used for its construction. Classify them as natural or manmade materials. Build the kite and fly it outside.	

ES.PK.3 Weather	Describe the weather changes from day to day and over the seasons.	SL.PK.1 Participate in collaborative conversations with diverse partners about preschool topics and texts.	Keep a class weather chart indicating daily temperature, how windy it is, which direction wind is blowing (use visual clues), and kind of participation, if any.			Suggested: Design and build a tool that could be used to show wind direction (wind sock for example).	
ES.PK.4 The Sun: Source of light and heat	Recognize that the sun supplies heat and light to the earth and is necessary for life.		Record the time of day when the sun shines in different school locations and note patterns.			Design a shade for the window to keep the room cool or to keep the sun out for watching something.	
ES.PK.5 Periodic Phenomena	Identify some events around us that have repeating patterns, including the seasons of the year, day and night		Make a list of things seen outdoors and the sky during the day. Make another list of things seen outdoors and in the sky at night. Discuss the differences between the day and night lists.			Use a thermometer to record the temperature from morning to noon over several weeks and discuss patterns that emerge.	

Preschool

IV. PK. Engineering, Technology and Applications of Science

Code	Standards and Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
ETSS.PK.1	Ask and answer questions about the scientific world and gather information using the senses.	M.PK.5.1 Describe objects in the environment using names of shapes and describe the relative positions of these					

		objects using terms such as: above, below, beside, in front of, behind and next to. SL. PK.4 Describe familiar people, places, things, and events, and with prompting and support provide additional detail.					
ETSS.PK.2	Describe objects by drawing and/or labeling pictures or building models	M.PK.5.8 Model shapes in the world by building shapes from components and drawing shapes.					
ETSS.PK.3	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable scientific questions.	M.PK.4.4 Use standard and nonstandard techniques and tools to measure and compare.					

KINDERGARTEN (K)

I. Physical Science

Structure and Properties of Matter

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes
PS.K.1.1 Structure and Properties of	Plan and conduct an investigation to describe and classify different	RI.K.6.1 Classify objects according to use and categories.				

Matter	kinds of materials, including wood, plastic, metal, cloth, and paper by their observable properties (color, texture, hardness, and flexibility) and whether they are natural or human-made.	M.K.3.1 Describe, sort, and resort objects using a variety of attributes such as size, shape, and position. W.K.7 Participate in shared research and writing projects.					
PS.K.1.2 Structure and Properties of Matter	Conduct investigations to understand that matter can exist in different states (solid and liquid) and has properties that can be observed and tested (visual, textual, aural).	M.K.1 Reason abstractly and quantitatively. M.K.5.1 Compare and order objects indirectly or directly using measurable attributes such as length, height, and weight.					Connections to ETS1
PS.K.1.3 Structures and Properties of Matter	Construct an evidence-based account of how an object made of a small set of pieces (block, snap cubes) can be disassembled and made into a new object.	M.K.3.3 Use basic shapes, spatial reasoning, and manipulatives to model objects in the environment and to construct more complex shapes.					

K. Physical Science: Motion and Stability: Forces and Interactions
Essential Questions:

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
PS.K.2.1 Forces	Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.	RI.K.1 With prompting and support, ask and answer questions about key details in a text. W.K.7 Participate in shared research	Introduce children to the idea that there are forces we can and cannot see that act upon objects. Examples of			Examples of pushes and pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and 2 objects colliding and pushing on each other.	

		and writing projects (e.g. explore a number of books by a favorite author and express opinions about them). M.K.1 Reason abstractly and quantitatively	pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and 2 objects colliding and pushing on each other.			Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.	
PS.K.2.1A: Forces and Motion	Demonstrate understanding that pushes and pulls can have different strengths and directions.	M.K.1 Reason abstractly and quantitatively					
PS.K.2.1B: Forces and Motion	Demonstrate understanding that pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.						
PS.K.2.1C: Types of Interactions	Recognize when objects touch or collide, they push on one another and can change motion.						
PS.K.2.1D: Relationship between Energy & Forces	Demonstrate understanding that a bigger push or pull makes things speed up or slow down more quickly.						
PS.K.2.2 Relation. Energy & forces	Analyze data to determine if a design solution works as intended to change the	RI.K.1 With prompting and support, ask and answer questions	Examples of problems requiring a solution could			Examples of problems requiring a solution could include having a marble or other object move a certain	

	speed or direction of an object with a push or a pull.	about key details in a text. SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and structure that would cause an object such as a marble or ball to turn.			distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn. Assessment does not include friction as a mechanism for change in speed. Cause/Effect: Simple tests can be designed to gather evidence to support or refute student ideas about causes (K-PS2-1, K-PS2-2)	
PS.K.3.1 Energy	Make observations to determine the effect of sunlight on Earth's surface.	W.K.7 Participate in shared research and writing projects. M.K.5.1 Compare and order objects indirectly or directly using measurable attributes such as length, height, and weight.				Sunlight warms the Earth's surface. Examples of Earth's surface could include sand, soil, rocks, and water.	

PS.K.3.2	Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.	W.K.7 Participate in shared research and writing projects. M.K.5.1 Compare and order objects indirectly or directly using measurable attributes such as length, height, and weight.				Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.	
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Kindergarten

II. K. Life Science
From Molecules to Organisms: Structure and Processes

Code	Performance Standards and	Literacy and Math	Resources	Catholic Identity	Academic Vocabulary &	Assessment/Content Notes	Date Taught
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	Expectations				Scientists	
LS.K.1.1 Structure & Properties of Matter	Use observations to describe patterns of what plants and animals (including humans) need to survive.	M.K.5.1 Compare and order objects indirectly or directly using measurable attributes such as length, height, and weight. W.K.7 Participate in shared research and writing projects. LS.K.2 Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood	<p>1. Analyzing and Interpreting Data: Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them (Literacy Standard KW -Writing)</p> <p>2. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (LS.K.1)</p> <p>3. Connections in nature of science: Scientists look for patterns and order when making observations about the world. (LS.K.1)</p> <p>4. Patterns: Patterns in the natural and human designed world can be observed and used as evidence (LS.K.1)</p>			<p>All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.</p> <p>Clarification statement: Examples of patterns could include that animals need to take in food, but plants do not; the different kinds of food needed by different types of animals; the requirement of plants to have light; and that all living things need water.</p>
LS.K.1.1A Molecules to Organisms	Use information from observations to identify similarities and differences in plants and animals (locomotion, obtainment of					<p>All animals need food in order to live and grow. They obtain their food from plant or from other animals. Plants need water and light to live and grow.</p>

	food, ways they reproduce, take in air/glasses). (ETS1)						
LS.K.1.1B Molecules to Organisms	Recognize differences between living organisms and non-living materials and sort them into groups by observable physical attributes.	.					Directly compare 2 objects with a measurable attribute in common, to see which object has “more of/less of” that attribute, and describe the difference.
LS.K.1.1C Molecules to organisms	Analyze and interpret data to describe how humans use their sensory organs (eyes, nose, ears, tongue, skin) in making observations.						

Kindergarten

**III. K. Earth and Space Science
Earth and Human Activity**

Code	Standard and Objectives	Literacy and Math Standards	Resources/Activities	Catholic Identity	Academic Vocabulary/ Scientists	Assessment/Content Notes	Date Taught
ESS.K.2.1 Earth and Human Activity	Analyze and interpret weather data (precipitation, wind, temperature, cloud cover) to describe weather patterns that occur over time (hourly	Literacy Standard: W.K.7. Participate in shared research and writing projects. Math Standards: M.K.1 Reason abstractly and				Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of	

	daily) using simple graph, pictorial weather symbols, and tools (thermometer, rain gauge) (ETS1) (ETS2)	quantitatively. K. 1. Know number names and the count sequence (K.ESS2.1). M.K.3.3 Use basic shapes, spatial reasoning, and manipulatives to model objects in the environment and to construct more complex shapes. M.K.5.1 Compare and order objects indirectly or directly using measurable attributes such as length, height and weight. Classify objects into categories, count the number of objects in each category and sort the categories by count. M.K.1 Know number names and the count sequence.				sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months. Assessment boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.	
ESS.K.2.1A Earth and Human activity	Develop and use models to predict weather and identify patterns in spring, summer, autumn, and winter.						
ESS.K.2.2	Construct an argument supported by evidence for how	RI.K.1 With prompting and support, ask and answer questions				Clarifying statement: Examples of plants and animals changing their environment could include a	

	plants and animals (including humans) can change the environment to meet their needs.	about key details in a text. W.K.1 Use a combination of drawing, dictating, and writing to compose information/explanatory texts in which students name what they are writing about and supply some information about the topic.				squirrel digs in the ground to hide its food and tree roots can break concrete. RI.K.1 Literacy Standards: With prompting and support, ask and answer questions about key details in a text (K.ESS2.2) W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which the student tells a reader the topic or the name of the book he/she is writing about and state an opinion or preference about the topic or book. (K.ESS.2) W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which the students name what they are writing about and supply some information about the topic. (K.ESS.2.2)	
ESS.K.3.1 Earth and Human Activity	Use a model to represent the relationship between the basic (shelter, food, water) needs of different plants or animals including humans and the place they live	SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional details. M.K.1 Reason abstractly and quantitatively M.K.1.1 Counting and			habitat	Clarification statement: Examples of relationships could include that deer eat buds or leaves, therefore, they usually live in forested areas, and grasses need sunlight so they often grow in meadows. Plants and animals make up a system.	

	(habitats).	Cardinality M.K.3.3 Use basic shapes, spatial reasoning, and manipulatives to model objects in the environment and to construct more complex shapes. (Model with mathematics)					
ESS.K.3.2	Ask questions about and explain the purpose of weather forecasting to prepare for, and respond to, severe weather in Tennessee.	RI.K.1 With prompting and support, ask and answer questions about key details in a text. SL.K.3 Ask and answer questions to seek help, get information, or clarify something that is not understood. SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional details. M.K.1.1 Counting and Cardinality M.K.3.3 Use basic shapes, spatial reasoning, and manipulatives to model objects in the environment and to				Emphasis is on local forms of severe weather.	

		construct more complex shapes. (Model with mathematics)					
ESS.K.3.3	Communicate solutions that will reduce the impact from humans on land, water, air, and other living things in the local environment.	W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which students name what they are writing about and supply some information about the topic.				Clarification statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.	

Kindergarten

IV. K. Engineering, Technology and Applications of Science

Code	Standards and Objectives	Literacy and Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
ETS.K.1.1 Engineering Design	Ask and answer questions about the scientific world and gather information using the senses.						
ETS.K.1.2 Engineering Design	Describe objects accurately by drawing and/or labeling pictures.						
ETS.K.2 Eng., Tech, Science, Society	Use appropriate tools (magnifying glass, rain gauge,					People encounter questions about the natural world every day (K.ESS3.2).	

	basic balance scale) to make observations and answer testable scientific questions.						
FIRST GRADE (1st)							
I. Physical Science							
Code	Standards and Objectives	Literacy and Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
PS.1.3.1 Energy	Make observations to determine an effect of heating from sunlight on Earth's surface (sand, soil, rocks, and water). (ETS1)	W.1.2 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question.				Science investigations begin with a question. Scientists use different ways to study the world.	
PS.1.3.2 Energy	Use appropriate tools and materials to design and test a structure that will reduce the heating effect of sunlight on an area. (ETS2)	W.1.2 SL.1.1. Participate in					
PS.1.4.1 Waves and their application	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.	W.1.2 Write informative/explanatory texts in which students name a topic, supply some facts about the topic, and provide some sense of closure.				Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper	

						near a speaker making sound and holding an object near a vibrating turning fork.	
PS.1.4.2 Waves and their application	Use a model to describe how light is required to make objects visible. Summarize how illumination could be from an external light source or by an object giving off its own light.	W.1.2. and W.1.7. Participate in shared research and writing projects (explore a number of “how-to” books on a given topic and use them to write a sequence of instructions.	Some materials allow light to pass through them, others allow only some light through and others block all the light and create a dark shadow on any surface beyond them, where the light cannot reach. Mirrors can be used to redirect a light beam.			Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.	
PS.1.4.3 Waves and their application	Determine the effect of placing objects made with different materials (transparent, translucent, opaque, and reflective) in the path of a beam of light. (ETS1)	SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups				Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror).	
PS.1.4.4 Waves	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.	MP.5 Use appropriate tools strategically. 1.MD.A.1 Order three objects by length, compare the lengths of two objects indirectly by using a third object. 1.MD.A.2 Express the length of an object as a whole number of length units, by layering multiple copies of a shorter				Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string, “telephones”, and pattern of drum beats. Assessment does not include technological details for how communication devices work.	

		object (the length unit) end to end; understand that the length measurement of an object is the number of the same-size length units that span it with no gaps or overlaps.					
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Grade 1

II. Life Science

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
LS.1.1 Molecules to Organism	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.					Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills and detecting intruders by mimicking eyes and ears.	
LS.1.1A Molecules to Organism	Recognize the structure of plants (roots, stems, leaves, flowers fruits) and						

	describe the function of the parts (taking in water and air, producing food, making new plants). (ETS2)						
LS.1.1B Molecules to Organ.	Illustrate and summarize the life cycle of plants.(ETS1)	W.1.7 Participate in shared research and writing projects (explore a number of “how-to” books on a given topic and use them to write a sequence of illustrations).					
LS.1.1 C Molecules to Organism	Analyze and interpret data from observations to describe how changes in the environment cause plants to respond in different ways. (ETS1)	W.1.7 Participate in shared research and writing projects					
LS.1.2 Molecules and Organism	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.	RI.1.1 Ask and answer questions about key details in a text. RI.1.2 Identify the main topic and retell key details of a text. RI.1.10 With prompting and support read informational text. M.1.1.3 Create and use counting strategies and				Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).	

		<p>number patterns to compare whole numbers up to 120 recording the results of comparisons with the symbols <,=,></p> <p>M.1.2.10 Use mathematical reasoning and beginning understanding of tens and ones to solve two-digit addition and subtraction problems within 100 an adding a two-digit number and multiple of 10 using concrete models or drawings or strategies based on place value.</p>					
LS.1.2A Ecosystems	Conduct experiments to show how plants depend on air, water, minerals from soil, and light to grow and thrive.(ETS1.A)						
LS.1.2B Ecosystem	Obtain and communicate information to classify plants by where they grow (water, land) and the plant's physical characteristics.						
LS.1.2C Ecosystems	Recognize how plants depend on						

	their surroundings and other living things to meet their needs in the places they live.						
LS.1.3.1 Heredity	Make observations to construct an evidence-based account that young plants and animals are alike, but not exactly like their parents.	RI.1.1 Ask and answer questions about key details in a text. W.1.7 Participate in shared research and writing projects. W.1.8 With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. M.1.2 Reason abstractly and quantitatively M.1.5 Use appropriate tools strategically M.1.1 Order three objects by length, compare the lengths of two objects indirectly by using a third object.	Use media or first-hand observations of items for natural phenomena			Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and a particular breed of dog looks like its parents but is not exactly the same.	

Grade 1

III. Earth and Space Science							
Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary	Assessment/Content Notes	Date Taught

					& Scientists	
ESS1.1 Earth's Place	Use observations of the sun, moon, and stars to describe patterns that can be predicted. (ETS1.A)	W.1.7 Participate in shared research and writing projects. W.1.8 With guidance and support from adults, recall information from experiences to gather information from provided sources				Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.
ESS1.2 Earth's Place	Make observations at different times of year to relate the amount of daylight to the time of the year.	W.1.7 Participate in shared research and writing projects. W.1.8 With guidance and support from adults, recall information from experiences to gather information from provided sources. M.1.2 Reason abstractly and quantitatively M.1.2 Model with mathematics M.1.3.1 Use addition and subtraction within 20 to solve word problems involving unknowns in key positions. M.1.3.5 Organize, represent and interpret data with up to 3 categories using pictures and picture graphs and				Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.

		ask/answer questions about graphs.					
ESS1.2A Earth's Place	Recognize that light from natural objects in the sky can be seen from Earth with the naked eye and that a telescope can provide greater detail of objects in the sky.						
ESS1.2B Earth's Place	Analyze data to predict patterns between sunrise, sunset, and seasons.						

Grade 1

IV. Engineering, Technology and Applications of Science

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
ETS1.1 Engineering Design	Make short-term and long-term observation and write brief description using the observation to answer testable scientific questions.						
ETS1.1A Engineering Design	Observe, describe, draw, and sort objects (in terms of shape, number, texture, size, mass (weight), color, and motion) as a way of isolating and categorizing some of their properties.						

ETS1.2	Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable scientific questions.						
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SECOND GRADE (2nd)

I. Physical Science

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
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<p>PS2.1.1 Matter</p>	<p>Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p>	<p>W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). W.2.8 Recall information from experiences or gather information from provided sources to answer a question. M.2.4.2 Use geometric models to demonstrate relationships between wholes and their parts as a foundation to fractions. M.2.3.4 Generalize numeric and non-numeric patterns using words and tables, tally charts, and bar graphs.</p>			<p>Science models, laws, mechanisms, and theories explain natural phenomena.</p>	<p>Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share. Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties.</p>	
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<p>PS2.1.2 Matter</p>	<p>Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</p>	<p>RI.2.8 Describe how reasons support specific points the author makes in a text. W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). W.2.8 Recall information from experiences or gather information from provided sources to answer a question. M.2.4.2 Use geometric models to demonstrate relationships between wholes and their parts as a foundation to fractions. M.2.3.4 Generalize numeric and non-numeric patterns using words and tables, tally charts, and bar graphs.</p>				<p>Examples of properties could include strength, flexibility, hardness, textures, and absorbency. Different properties are suited to different purposes.</p>	
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<p>PS2.1.3 Matter</p>	<p>Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.</p>	<p>W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations). W.2.8 Recall information from experiences or gather information from provided sources to answer a question.</p>				<p>Examples of pieces could include blocks, building bricks, legos, or other assorted small objects.</p>	
<p>PS2.1.4 Matter</p>	<p>Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</p>	<p>RI.2.1 Ask and answer questions as <i>who, what, where, when, why, and how</i> to demonstrate understanding of key details in a text. RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text. RI.2.8 Describe how reasons support specific points the author makes in a text. W.2.1 Write opinion pieces in which students introduce the topic or book they are writing</p>			<p>Scientists search for cause and effect relationships to explain natural events.</p>	<p>Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible change could include cooking an egg, freezing a plant leaf, and heating paper.</p>	

		about, state an opinion, supply reasons that support, use linking words and provide a concluding statement or section.					
PS2.2.1 Motion & Stability	Interpret data from observations and measurements comparing the effects of different strengths and directions of pushing and pulling on the motion of an object. (ETS1)						
PS2.2.2 Motion & Stability	Design and conduct an investigation to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull. (ETS1)						
PS2.3.1 Energy	Construct an explanation of how a stronger push or pull makes things go faster and how faster speeds during a collision can cause a bigger change in shape of the colliding objects (ETS1)						
PS2.3.2 Energy	Make observations and conduct experiments to provide evidence that				friction		

	forced contact between two surfaces produces energy and is called friction and that friction can be reduced.						
PS2.4.1 Waves	Plan and conduct investigations to demonstrate the cause and effect relationship between vibrating materials (tuning forks, water, bells) and sound (ETS2)						
PS2.4.2 Waves	Use tools and materials to design and build a design to understand that light and sound travel in waves and can send signals over a distance. (ETS2)						
PS2.4.3 Waves	Observe and demonstrate that waves move in regular patterns of motion by disturbing the surface of shallow and deep water.						

Grade 2

II. Life Science

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
LS2.1.1 Molecules to	Use text based evidence and observations to						

Organisms	explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.						
LS2.1.2 Molecules to Organisms	Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.						
LS2.1.3 Molecules to Organisms	Use simple graphical representations to show that species have unique and diverse life cycles; including birth, growth, reproduction, and death.						
LS2.1 Ecosystems	Plan and conduct an investigation to determine if plants need sunlight and water to grow.	W.2.7 Participate in shared research and writing projects W.2.8 Recall information from experiences or gather information from provided sources to answer a question.				Plants depend on water and light to grow.	
LS2.2	Develop a simple model	M.2.4.2 Use				Plants depend on animals	

Ecosystems	that mimics the function of an animal in dispersing seeds or pollinating plants.	geometric models to demonstrate relationships between wholes and their parts as a foundation to fractions. M.2.3.4 Generalize numeric and non-numeric patterns using words and tables, tally charts, and bar graphs.					for pollination or to move their seeds around.	
LS2.2.1 Ecosystems	Develop and use models to compare how animals depend on their surroundings and other living things to meet the needs in the places they live. (ETS1)						Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people.	
LS2.2.2 Ecosystems	Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought). (ETS1)	SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.						
LS2.3.1 Heredity	Provide evidence that living things have physical traits (color of fur, length of appendages, shape of leaf) inherited from parents and that							

	variations of these traits exist in groups of similar organisms.						
LS2.4.1 Biological Evolution	Make observations of plants and animals to compare the diversity of life in different habitats	W.2.7 Participate in shared research and writing projects W.2.8 Recall information from experiences or gather information from provided sources to answer a question M.2 Reason abstractly and quantitatively. M.2.4.2 Use geometric models to demonstrate relationships between wholes and their parts as a foundation to fractions. M.2.3.4 Generalize numeric and non-numeric patterns using words and tables, tally charts, and bar graphs.			Habitat Scientists look for patterns and order when making observations about the world.	Emphasis on the diversity of living things in each of a variety of different habitats. There are many different kinds of living things in any area, and they exist in different place on land and in water.	

Second Grade

**Grade 2
III. Earth and Space Science**

Code	Standards & Objectives	Literacy and Math Standards	Resources	Catholic Identity	Academic Vocabulary &	Assessment/Content Notes	Date Taught
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					Scientists		
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<p>ESS2.1.1 Earth's Place in the universe</p>	<p>Use information from several sources to provide evidence that Earth events have stability and change in that they occur quickly or slowly and begin, end, or happen continuously.</p>	<p>RI.2.1 Ask and answer questions as <i>who, what, where, when, why, and how</i> to demonstrate understanding of key details in a text. RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. W.2.7 Participate in shared research W.2.8 Recall information from experiences or gather information from provided sources to answer a question. SL.2.2 Recount or describe key ideas or details from a text read aloud or information presented orally or</p>				<p>Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.</p>	
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		<p>through other media.</p> <p>M.2.2.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.</p>					
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<p>ESS2.2.1 Earth Systems</p>	<p>Compare the effectiveness of multiple solutions designed to slow or prevent wind or water from changing the shape of the land. (ETS1)</p>	<p>RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. W.2.7 Participate in shared research W.2.8 Recall information from experiences or gather information from provided sources to answer a question</p>				<p>Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.</p>	
<p>ESS2.2.1A Earth Systems</p>	<p>Observe and analyze how blowing wind and flowing water can move Earth materials (soil, rocks) from one place to another, changing the shape of a landform and affecting the habitats of living things.</p>	<p>M.2.1 Reason abstractly and mathematically</p>					
<p>ESS2.2 Earth Systems</p>	<p>Use models to observe and represent the shapes and kinds of</p>	<p>SL.2.5 Create audio recordings of stories or poems; add</p>					

	land and water in any area	drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings. M.2.4.2 Model with mathematics M.2 Read and write numbers to 1000 using base ten numerals, number names, , and expanded form. M2.6.1 Solve word problems that involve repeated addition, subtraction and basic multiplication					
ESS2.3 Earth Systems	Use information obtained from reliable sources to explain that water is found in the ocean, rivers, streams, lakes, and ponds, and may be solid or liquid.	M.2.3.4 Generalize numeric and non-numeric patterns using words and tables, tally charts, and bar graphs. Draw a picture graph.					

Grade 2

IV. Engineering, Technology and Applications of Science

Code	Standards & Objectives	Literacy & Math Standards	Resources	Catholic Identity	Academic Vocabulary & Scientists	Assessment/Content Notes	Date Taught
ETS2.1	Ask questions, make	RI.2.1 Ask and				A situation that people want	

<p>Engineering Design</p>	<p>observations, and gather accurate qualitative and quantitative information about a situation people want to change and define a simple problem that can be solved through the development of a new or improved object or tool.</p>	<p>answer questions as <i>who, what, where, when, why, and how</i> to demonstrate understanding of key details in a text. RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text W.2.6 With guidance and support from adults, use a variety of digital tools to produce and publish writing, including in collaboration with peers. W.2.7 Participate in shared research W.2.8 Recall information from experiences or gather information from provided sources to answer a question</p>			<p>to change or create can be approached as a problem to be solved through engineering. Asking questions, making observations, and gathering information are helpful in thinking about problems.</p>	
<p>ETS2.1.1 Engineering Design</p>	<p>Develop a simple sketch, drawing or physical model that shows part and whole to communicate solutions to others or as needed to solve a given</p>				<p>Before beginning to design a solution, it is important to clearly understand the problem.</p>	

	problem						
ETS2.1.2 Engineering Design	Compare, contrast, and defend multiple solutions to a design problem by using evidence from observations to point out strengths and weaknesses.	<p>SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.</p> <p>M.2 Reason abstractly and quantitatively.</p> <p>M.2.4.2 Use geometric models to demonstrate relationships between wholes and their parts as a foundation to fractions.</p> <p>M.2.3.4 Generalize numeric and non-numeric patterns using words and tables, tally charts, and bar graphs. Draw a picture graph (with single unit scale) to represent a data set with up to four categories. Solve simple addition, subtract, and</p>					

		compare problems using information presented in the bar graph.					
ETS2.1.3 Engineering Design	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.	M.2 Reason abstractly and quantitatively. M.2.4.2 Use geometric models to demonstrate relationships between wholes and their parts as a foundation to fractions.					
ETS2.2.1 Links among ETSS	Use appropriate tools (ruler, stopwatch, magnifying glass, basic balance scale) to make observations, record data (table, line plot, picture graph and bar graphs), and refine design ideas.						
ETS2.2.2 Links among ETSS	Predict and explain how human life and the natural world would be different without current technologies (automobiles, computers, refrigerators).						