

SCIENCE CURRICULUM PROJECT

GOAL 12 Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

Standard A: Know and apply the concepts that explain how living things function, adapt and change.

CATHOLIC IDENTITY

Standard A: *Know and apply the concepts that explain how living things function, adapt and change according to God's plans for creation and the maintenance of life.*

As a result of their schooling students will be able to...

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
<p>1. Investigate and categorize living things in the environment.</p> <p>2. Show an awareness of changes that occur in themselves and their environment.</p>	<p>1. Identify major parts & functions of plants, animals, and the human body.</p> <p>2. Categorize plants, animals and the human body by physical features.</p> <p>3. <u>Recognize how people depend on plants and animals to live.</u></p>	<p>1. Describe major parts of plants, animals, and the human body.</p> <p>2. Explain observable features of plants, animals and the human body.</p> <p>3. <u>Recognize unique features and variety in creation as part of God's plan.</u></p> <p>4. <u>Thank God for the unique features and variety in creation.</u></p>	<p>1. Categorize animals as vertebrate & non-vertebrate, warm-blooded, & cold – blooded.</p> <p>2. Classify living and non-living things.</p> <p>3. <u>Classify the things God has made and the things people have made using God's creation.</u></p>	<p>1. Describe simple life cycles of plants, animals, and the human body.</p> <p>2. <u>Draw the human life cycle.</u></p>	<p>1. Explain how features of plants and animals allow them to adapt.</p> <p>2. <u>Recognize that God's plan allows for variation and adaptation to the environment.</u></p> <p>3. <u>Tell the story of creation to illustrate variety and adaptation to environments.</u></p>	<p>1. Compare features of offspring to parents.</p> <p>2. Categorize features of living things as either inherited or learned.</p> <p>3. <u>Identify some of the unique qualities God has given each person.</u></p> <p>4. <u>Recall that human beings are made in the image and likeness of God and list ways they are like God their Father.</u></p>	<p>1. Identify parts of plant and animal cells.</p> <p>2. Identify and explain cell processes.</p> <p>3. Identify asexual and sexual reproductions.</p> <p>4. Compare and contrast sexual and asexual reproduction.</p> <p>5. Observe and identify how different forms and structures of cells reflect different functions.</p> <p>6. Compare and contrast how different forms and structures reflect different functions.</p> <p>7. <u>Explain the importance of plant & animal reproduction as part of God's plan.</u></p> <p>8. <u>Tell how God's plan for human reproduction is different than for plants and animals.</u></p> <p>9. <u>Show how evolution is a part of God's plan.</u></p> <p>10. <u>Write a poem or paragraph which indicates God's plan to maintain life.</u></p>

SCIENCE CURRICULUM PROJECT

GOAL 12 Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

Standard B: Know and apply concepts that describe how living things interact with each other and with their environment.

CATHOLIC IDENTITY

Standard B: *Know and apply concepts that describe how living things interact with each other and with their environment recognizing our responsibility as humans to protect and preserve the natural environment and balance of all living things as commanded by God.*

As a result of their schooling students will be able to...

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
1. Describe and compare basic needs of living things.	1. Identify homes of living things. 2. Identify basic needs of living things. 3. <u><i>Tell ways they could respect and protect the homes of living things.</i></u>	1. Describe basic elements needed for survival of living things. 2. <u><i>Identify the need for God in the life of every human being.</i></u> 3. Draw homes of living things. 4. Compare homes of living things.	1. Identify habitat as a home for living things. 2. Describe and compare the habitats of living things. 3. <u><i>Give an example of how they can exercise their responsibility to protect and respect all habitats.</i></u>	1. Recognize relationships among various organisms in their environment. 2. Explain how living things depend on one another for survival. 3. <u><i>Relate the story from Matthew 6:25-33 to show dependence on God.</i></u>	1. Identify relationships among organisms in a particular environment. 2. Describe adaptations of plants and animals within their own environment. 3. <u><i>Describe the role of humans in maintaining and preserving plants and animal environments.</i></u>	1. Describe relationships among organisms in various environments. 2. Compare adaptations of plants and animals in various environments. 3. <u><i>Describe the role of humans in maintaining appropriate plant and animal environments.</i></u>	1. Describe biotic and abiotic factors in an environment that affects population. 2. Compare and contrast how biotic and abiotic factors affect habitat and placement of organisms in the energy pyramid. 3. <u><i>Describe the role of humans in influencing biotic and abiotic factors in an environment.</i></u> 4. Identify features of an organism for adaptive and competitive potential. 5. Compare and contrast features of an organism for adaptive, competitive and survival potential. 6. <u><i>Describe the responsibility to protect people & the planet as the population continues to grow.</i></u> 7. <u><i>Identify the ways to address animal overpopulation in God's plan.</i></u> 8. <u><i>Identify the role of humans in maintaining the ecological balance in nature as planned by God.</i></u> 9. <u><i>Compare methods of addressing population density between human and animal populations.</i></u>

SCIENCE CURRICULUM PROJECT

GOAL 12 Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

Standard C: Know and apply concepts that describe properties of matter and energy and the interactions between them.

CATHOLIC IDENTITY

Standard C: **Know and apply concepts that describe properties of matter and energy and the interactions between them and responsibly use this knowledge to promote good.**

As a result of their schooling students will be able to...

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
	<ol style="list-style-type: none"> 1. Identify the basic functions of the sun. 2. Describe large scale physical properties of objects. 3. Describe the five senses and understand that we use our five senses to make observations. 4. <u>Use the five senses to discover the variety of properties found in God's universe.</u> 5. Examine, describe and compare physical properties of a variety of materials using the five senses. 	<ol style="list-style-type: none"> 1. Identify sources of energy. 2. Classify objects according to large-scale physical properties. 3. Use the five senses to observe and describe the physical characteristics of objects. 4. Observe, describe, compare and classify common physical properties of matter, size, mass shape, color & temperature. 5. <u>Chart how the five senses are used to discover and enjoy different properties found in God's universe.</u> 	<ol style="list-style-type: none"> 1. Compare sources of energy. 2. <u>Identify the source of all energy.</u> 3. Compare & contrast large scale physical properties. 4. <u>Describe spiritual properties (virtues).</u> 5. Observe and identify three states of matter; solid, liquid and gas. 6. Measure length, mass, volume and temperature of various materials. 	<ol style="list-style-type: none"> 1. Observe and compare the emission of light, heat and sound from different sources. 2. Examine & classify common physical properties of matter-solids, liquids & gasses. 3. <u>Explain how the physical world can be used to enhance our spiritual energy.</u> 	<ol style="list-style-type: none"> 1. Observe light's ability to pass through materials that are transparent (including lenses & prisms) translucent, and opaque. 2. Identify the properties of sound. 3. Demonstrate how states of matter can be altered as a group activity. 4. <u>Describe how altering states of matter can be used to promote good.</u> 	<ol style="list-style-type: none"> 1. Explain how light reflects, refracts, and forms color. 2. Explain how light and sound fit into the E.M. spectrum. 3. Describe the processes that alter the states of matter (freezing, boiling, melting, sublimating). 4. <u>Give examples of altering states of matter to promote good.</u> 	<ol style="list-style-type: none"> 1. Recognize and explain interactions of energy and matter including changes of state. 2. Demonstrate and apply interactions of energy and matter including changes of state & conservation of mass & energy. 3. Identify and explain chemical & physical properties of matter. 4. Identify atoms, elements, mixtures, and compounds. 5. Identify ionic, covalent and metallic bonding. 6. Read, understand and use periodic table. 7. <u>Describe and give examples of how the application of energy and matter interactions can promote good.</u> 8. <u>Contrast the application of energy and matter interactions to promote good with those that can be used for evil.</u>

SCIENCE CURRICULUM PROJECT

GOAL 12 Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

Standard D: Know and apply concepts that describe force and motion and the principles that explain them.

CATHOLIC IDENTITY

Standard D: *Know and apply concepts that describe force and motion and the principles that explain them as revealing as God's plan.*

As a result of their schooling students will be able to...

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
<p>1. Describe the effects of forces in nature, e.g., wind, gravity, magnetism.</p>	<p>1. Identify movement as either push or pull. 2. Demonstrate the following motions—walking in a straight line, zigzagging, circles, back & forth, fast & slow. 3. <u>Recognize that their ability to move in different ways is a gift from God.</u> 4. Demonstrate basic pushes & pulls – bike riding, sitting, standing, throwing, kicking, etc. 5. Demonstrate the basic premise of gravity using a variety of items such as balls, feathers, blocks, etc. 6. Use a magnet and describe results.</p>	<p>1. Describe the effect of a push or a pull on the position & motion of simple objects. 2. Compare the effect of gravity using objects of various sizes, shapes, weight. 3. Use simple and complex magnets to solve a problem. 4. <u>Write a thank you letter to God for the gift of gravity.</u></p>	<p>1. Identify and explain the force behind a movement or motion. 2. Measure motion using various methods (i.e. stopwatch, yardstick). 3. Create charts to record the force of gravity using various objects. 4. Explain useful application of magnets. 5. <u>Compose a class story describing life without one of the forces (ex. gravity) and how fortunate humans are that God has given us this gift.</u></p>	<p>1. Demonstrate how an object moves in a straight line in varied directions (up, down, forward, etc.). 2. Demonstrate how pushes and pulls cause motion. 3. Explain pushes and pulls generated by magnetic poles. 4. <u>Demonstrate the benefits of force and motion as examples of God's goodness to all people.</u></p>	<p>1. Describe how change in speed or position affects motion. 2. Demonstrate the proper use of simple machines to cause motion. 3. Demonstrate the proper use of a simple electrical circuit. 4. <u>Describe how a machine can be used according to God's plan for the good of people.</u></p>	<p>1. Explain how speed, mass, and distance affect changes in motion. 2. Explain how simple machines work to change speed, position and motion. 3. Construct a functional electrical circuit. 4. <u>Describe positive uses of electricity as part of God's plan.</u></p>	<p>1. Explain how forces affect motion. (Newton's Laws). 2. Define the factors that affect gravitational force on matter. 3. Explain changes mass/distance relationships as they affect gravitational pull. 4. Demonstrate factors that effect gravitational forces on objects. 5. Design and demonstrate how forces affect motion using simple machines to create a complex machine. 6. <u>List the good things that have come from our knowledge about gravity or inertia.</u> 7. <u>Explain how the positive aspects of gravity can help to carry out God's plan.</u> 8. <u>Express appreciation or awe for a God who designed the laws of motion, mass and gravity.</u> 9. <u>Compare and contrast the ways machines can help keep or hinder God's plan.</u> 10. <u>Express appreciation to God who made humans with the ability to understand simple and complex machines</u></p>

SCIENCE CURRICULUM PROJECT

GOAL 12 Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

Standard E: Know and apply concepts that describe the features and processes of the Earth and its resources.

CATHOLIC IDENTITY

Standard E: **Know and apply concepts that describe the features and processes of the Earth and its resources, including God's creation and command for stewardship.**

As a result of their schooling students will be able to...

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
<p>1. Use common weather-related vocabulary, e.g., rainy, snowy, sunny, windy.</p> <p>2. Participate in recycling in environment.</p>	<p>1. Identify basic physical features of the earth.</p> <p>2. Describe earth materials using the five senses.</p> <p>3. Identify and describe the daily changes in the weather.</p> <p>4. Name and describe the seasons.</p> <p>5. Identify how seasonal changes may affect plants and animals.</p> <p>6. Identify ways to reuse materials.</p> <p>7. <u>Identify examples of God's goodness to humans through the beauty of the changing of seasons and weather.</u></p>	<p>1. Identify & describe various physical features of the earth.</p> <p>2. Sort soil & water samples based on appearance.</p> <p>3. Compare changes in the weather.</p> <p>4. Identify common recyclable materials.</p> <p>5. <u>Recognize that reusing and recycling is part of God's command for stewardship.</u></p> <p>6. <u>Make a list of good things God provided for each season.</u></p>	<p>1. Locate on a map or globe various physical features of the earth.</p> <p>2. Identify and describe pollutants destructive to air, water and land.</p> <p>3. Describe seasonal weather changes.</p> <p>4. Describe the sequence of seasons.</p> <p>5. Measure temperature in Fahrenheit and Celsius.</p> <p>6. Sort common recyclable materials.</p> <p>7. <u>Demonstrate the beauty of God's world using the variations in physical features.</u></p>	<p>1. Identify the parts of the water cycle.</p> <p>2. Observe different rocks (igneous, sedimentary, metamorphic).</p> <p>3. Observe recyclable and non-recyclable materials.</p> <p>4. <u>Describe how all creation begins with God, but only people's souls end with God (ex. rock cycle and human life cycle).</u></p>	<p>1. Demonstrate a working model of the water cycle.</p> <p>2. Explain how the water cycle affects weather patterns.</p> <p>3. Identify the parts of the rock cycle.</p> <p>4. Explain how earthquakes affect the rock cycle.</p> <p>5. Identify and classify recyclable materials.</p> <p>6. <u>Identify recycling projects that fulfill God's command to be stewards.</u></p>	<p>1. Demonstrate the proper use of weather instruments.</p> <p>2. Predict local weather based on current condition and patterns.</p> <p>3. Identify different types of erosion (wind, water, ice).</p> <p>4. Identify rock and mineral samples by type (igneous, sedimentary, metamorphic).</p> <p>5. Explain how materials are recycled.</p> <p>6. <u>Design or participate in a recycling project that fulfills God's command to be stewards.</u></p>	<p>1. Explain various atmospheric systems (jet stream, hurricanes, earthquakes).</p> <p>2. Explain and simulate the forces that affect the Earth's land, water and atmospheric systems.</p> <p>3. Investigate and explain the cause/effect within the interactions that result in global changes.</p> <p>4. Develop a plan to reduce global warming.</p> <p>5. Explain the effects of different types of erosion.</p> <p>6. Analyze mineral and rock samples using standard test methods.</p> <p>7. Design and analyze topographic maps.</p> <p>8. Explain the biodegradability of renewable and non-renewable resources.</p> <p>9. Identify the importance of conserving material resources.</p> <p>10. Describe and evaluate methods for managing solid waste.</p> <p>11. <u>Design or participate in a stewardship project which aids victims of natural disasters.</u></p> <p>12. <u>Write a letter to a government official that stresses our responsibility to be good stewards of God's earth.</u></p> <p>13. <u>Describe the moral and ethical implications that result from global changes.</u></p>

SCIENCE CURRICULUM PROJECT

GOAL 12 Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

Standard F: Know and apply concepts that explain the composition and structure of the universe and Earth's place in it.

CATHOLIC IDENTITY

Standard F: **Know and apply concepts that explain the composition and structure of the universe and Earth's place in it, including God's creation and maintenance of the universe.**

As a result of their schooling students will be able to...

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
1. Identify basic concepts associated with night/day and seasons.	1. Observe the sun, its location and movement at different times of the day. 2. Draw the location of the sun as the earth moves during the day. 3. Track the stages of the moon. 4. Compare day and night sky. 5. <u>Identify the heavenly bodies in the Creation Story from the Bible.</u>	1. Identify the relationship between the sun, moon, and earth. 2. Identify the planets. 3. Describe the physical features of the moon. 4. Observe easily recognizable constellations. 5. Describe the revolution and rotation of the earth around the sun. 6. <u>Write a thank you prayer for the sun, moon, stars and earth.</u>	1. Describe the relationship between the sun, moon, and earth. 2. Identify the effect of the rotation and revolution of the earth on daily, seasonal and annual patterns. 3. Describe the characteristics of the sun. 4. Identify easily recognizable constellations. 5. <u>Describe how God is like the sun.</u>	1. Identify the planets according to their order from the sun. 2. Explain how day and night occur. 3. Observe patterns of easily recognizable constellations. 4. <u>Tell the creation story of day and night, sun, moon and stars.</u>	1. Describe the movements of the earth and moon that result in seasons and lunar phases. 2. Describe changes that occur in the nighttime sky. 3. Illustrate easily recognizable constellations. 4. <u>Recognize the order and maintenance of God's universe.</u>	1. Explain how the earth's tilt, latitude, and location in its orbit affect seasonal changes. 2. Explain the seasonal progression of constellations. 3. Identify major constellations. 4. <u>Express wonder & awe at God's maintenance of an ordered universe through the discovery of new planets, stars & other phenomenon in the universe.</u>	1. Analyze, explain and simulate the effects of gravitational force in the solar system. 2. Identify the organization and physical characteristics of the solar system. 3. Construct a model of the solar system to include physical characteristics. 4. Identify and describe various objects in the Milky Way Galaxy. 5. Compare & contrast the sun as a star with other objects in the Milky Way Galaxy. 6. <u>Describe God's forces within the galaxy.</u> 7. <u>Describe how the complexity and order of the universe teach us about God's wisdom and majesty.</u> 8. <u>Compare the complexity and order of the universe with God's attributes.</u>