

SCIENCE CURRICULUM INQUIRY & DESIGN

GOAL 11 Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.

Standard A: Know and apply the concepts, principles and processes of scientific inquiry.

CATHOLIC IDENTITY

Standard A: *Know and apply the concepts, principles and processes of scientific inquiry in ways that demonstrate respect for all life, especially the sanctity of human life. Recognize moral implications of scientific inquiry and to take a Christian stance.*

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

| Kindergarten | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|--|---|---|---|---|--|---|---|
| <p>1. Describe orally and show an observed event as a guided activity.</p> <p>2. Participate in simple experiments.</p> <p>3. Identify method to record observations.</p> <p>4. <i>Recognize the difference in an experiment with good caretaking from one with poor caretaking.</i></p> <p>5. Identify people, animals and plants as part of God's creation.</p> | <p>1. Explain orally and show an observed event as a guided activity.</p> <p>2. Record observation as a guided activity.</p> <p>3. Perform simple experiments as a guided activity.</p> <p>4. Describe why it is important to be correct and honest in reporting results.</p> <p>5. Show respect for life when conducting an experiment.</p> | <p>1. Explain an event in oral and written form.</p> <p>2. Perform simple experiments with a partner, record and share results.</p> <p>3. Check their results to be sure they were correct and honest in reporting results.</p> <p>4. Demonstrate respect for life when conducting an experiment.</p> | <p>1. Make an educated guess based on a given problem.</p> <p>2. Collect & arrange data.</p> <p>3. Chart/ graph data.</p> <p>4. Identify the term "lab" to describe an experiment.</p> <p>5. Check to be sure that no living thing is unnecessarily harmed by their experiment</p> <p>6. Tell how their experiment will help or at least not do harm.</p> | <p>1. Formulate questions on a specific scientific topic.</p> <p>2. Collect and record data.</p> <p>3. Construct charts and bar graphs to display data.</p> <p>4. Formulate reasonable explanations for investigations based on data gathered as evidence.</p> <p>5. Write, draw or verbalize the results of group investigations.</p> <p>6. Perform an experiment in such a way that it shows respect for God's creation.</p> | <p>1. Develop questions on a specific scientific topic.</p> <p>2. Develop a plan to answer these questions.</p> <p>3. Collect and record data for investigations using scientific process skills of observation, estimation and measurement.</p> <p>4. Construct charts, bar line and pie graphs to display data.</p> <p>5. Formulate accurate explanations based on data gathered as evidence.</p> <p>6. Display honestly and accurately report results of individual investigations.</p> | <p>1. Identify and define a problem.</p> <p>2. Identify a hypothesis as an if –then statement.</p> <p>3. Identify a control and a variable.</p> <p>4. Identify measuring equipment and techniques.</p> <p>5. Identify unexpected results in data.</p> <p>6. Identify data manipulation tools</p> <p>7. Identify results.</p> <p>8. Identify the steps of the scientific process.</p> <p>9. Identify Christian responsibilities within the scientific process.</p> | <p>1. Define a problem and formulate a hypothesis.</p> <p>2. Differentiate between control and variable.</p> <p>3. Give examples of where use of a control group may not respect life or show good stewardship.</p> <p>4. Use measuring devices and techniques.</p> <p>5. Represent data in various formats.</p> <p>6. Use the scientific process in a lab report.</p> | <p>1. Recognize a problem and apply a hypothesis.</p> <p>2. Conduct an experiment that controls all but one variable.</p> <p>3. Collect and record data accurately.</p> <p>4. Explain the existence of unexpected results in a data set.</p> <p>5. Apply data manipulation tools.</p> <p>6. Produce and interpret results of data.</p> <p>7. Report and display the results of the scientific process.</p> <p>8. Tell about a scientific inquiry that did not respect life or show good stewardship because of manipulating results.</p> |

SCIENCE CURRICULUM INQUIRY & DESIGN

GOAL 11 Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.
Standard B: Know and apply the concepts, principles and processes of technological design.

CATHOLIC IDENTITY - Standard B: *Know and apply concepts, principles and processes of technological design, understanding that they are a part of God's plan, and further His intent for the good of humankind.*
As a result of their schooling students will be able to...

| Kindergarten | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|---|--|---|--|--|--|---|---|
| <p>1. Observe a model and identify its purpose.</p> <p>2. Demonstrate how the model is used to solve a problem.</p> <p>3. Identify the talents God gives us to solve problems.</p> | <p>1. Participate in the building of a model which solves a problem.</p> <p>2. Identify the God-given talents used to build the model.</p> <p>3. Draw a picture of the model in use.</p> <p>4. Explain how the model fits into God's plan for creation.</p> | <p>1. Use given materials and tools to design and construct a model to solve a problem as a class activity.</p> <p>2. Draw and explain a picture of the model.</p> <p>3. Explain how God-given talents helped design the model and solve the problem.</p> | <p>1. Draw a picture showing a simple machine.</p> <p>2. Recognize that God has given the ability to build machines.</p> <p>3. Recognize ways we please God when we build machines for the good of humankind.</p> | <p>1. Recognize a design problem and state the problem as a question.</p> <p>2. Solve a design problem using the scientific method.</p> <p>3. Build a prototype of a design using available tools and materials.</p> <p>4. Test the prototype with appropriate instruments and techniques.</p> <p>5. Use quantitative measurements to record data.</p> <p>6. Assess test results and judge the effectiveness of the design using given criteria.</p> <p>7. Report test design, test process, and test results.</p> <p>8. Name Christian values that we incorporate into the design process.</p> | <p>1. Identify a specific design problem and give possible solutions.</p> <p>2. Create a plan and procedure based on the scientific method to solve a design problem.</p> <p>3. Build a prototype of a design using available and/or created materials.</p> <p>4. Test the prototype using available and created instruments and techniques.</p> <p>5. Use quantitative measurements to record data.</p> <p>6. Assess test results and judge the effectiveness of the design using given criteria and note possible sources of error.</p> <p>7. Report the test design, test process and test results using appropriate technology.</p> <p>8. Explain the steps of the design process with accompanying Christian values.</p> | <p>1. Recognize a design problem.</p> <p>2. Participate in a class activity to draw, propose and compare design solutions to a problem considering available materials, tools, cost-effectiveness & safety.</p> <p>3. Participate in a class activity to build a prototype or simulation.</p> <p>4. Test a prototype using available materials & record data.</p> <p>5. Evaluate the test results based on established criteria.</p> <p>6. Use available technology to report the relative success of the design.</p> <p>7. Identify the ways that the design prototype will further the good of humankind.</p> | <p>1. Propose possible criteria for determining a solution.</p> <p>2. Participate in a group to sketch, propose & compare design solutions to the problem considering available materials, tools, cost effectiveness and safety.</p> <p>3. Participate in a group to select the most appropriate design and build a prototype or simulation.</p> <p>4. Test the prototype using available materials and instruments and record the data.</p> <p>5. Evaluate the test results based on established criteria & note sources of error.</p> <p>6. Use available technology to report the relative success of the design based on the test results.</p> <p>7. Identify the moral and ethical issues in testing a prototype.</p> | <p>1. Identify a design problem and establish criteria for determining the success of a solution.</p> <p>2. Sketch, propose & compare design solutions to the problem considering available materials, tools, cost effectiveness, safety & moral implications.</p> <p>3. Select the most appropriate design and build a prototype or simulation.</p> <p>4. Test the prototype using available materials and instruments and record the data.</p> <p>5. Evaluate the test results based on established criteria, note sources of error & recommend improvements.</p> <p>6. Use available technology to report the relative success of the design based on the test results and criteria.</p> <p>7. Explain moral and ethical issues that affect design problems.</p> |

SCIENCE CURRICULUM – CONCEPTS & PRINCIPLES

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...

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

SCIENCE CURRICULUM – CONCEPTS & PRINCIPLES

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...

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

SCIENCE CURRICULUM – CONCEPTS & PRINCIPLES

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...

| Kindergarten | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 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. <i>Use the five senses to discover the variety of properties found in God's universe.</i> 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. <i>Chart how the five senses are used to discover and enjoy different properties found in God's universe.</i> | <ol style="list-style-type: none"> 1. Compare sources of energy.2. <i>Identify the source of all energy.</i> 3. Compare & contrast large scale physical properties. 4. <i>Describe</i> spiritual properties (virtues). 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. <i>Explain how the physical world can be used to enhance our spiritual energy.</i> | <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. <i>Describe how altering states of matter can be used to promote good.</i> | <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. <i>Give examples of altering states of matter to promote good.</i> | <ol style="list-style-type: none"> 1. Recognize interactions of energy and matter including changes of state. 2. Identify chemical & physical properties of matter. 3. Identify atoms, elements, mixtures, and compounds. 4. <i>Describe how the application of energy and matter interactions can promote good.</i> | <ol style="list-style-type: none"> 1. Explain interactions of energy and matter. 2. Explain physical & chemical properties of matter. 3. Read and understand periodic table. 4. <i>Give examples of how the application of energy and matter interactions can promote good.</i> | <ol style="list-style-type: none"> 1. Demonstrate and apply interactions of energy and matter including changes of state & conservation of mass & energy. 2. Model physical and chemical characteristics of matter. 3. Use periodic table to solve problems. 4. Identify ionic, covalent and metallic bonding. 5. <i>Contrast the application of energy and matter interactions to promote good with those that can be used for evil.</i> |

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...

| Kindergarten | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|---|--|--|---|---|---|---|--|
| 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. Recognize that their ability to move in different ways is a gift from God. 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. | 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. Write a thank you letter to God for the gift of gravity. | 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. 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. | 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. Demonstrate the benefits of force and motion as examples of God's goodness to all people. | 1. Describe how change in speed or position effects motion. 2. Demonstrate the proper use of simple machines to cause motion. 3. Demonstrate the proper use of a simple electrical circuit. 4. Describe how a machine can be used according to God's plan for the good of people. | 1.Explain how speed, mass, and distance effect changes in motion. 2.Explain how simple machines work to change speed, position and motion. 3.Construct a functional electrical circuit. 4. Describe positive uses of electricity as part of God's plan. | 1. Identify how gravity and inertia affect motion. 2. Define the factors that affect gravitational force on matter. 3. List the good things that have come from our knowledge about gravity or inertia. 4. Explain how the positive aspects of gravity can help to carry out God's plan. | 1. Explain how forces affect motion. (Newton's Laws) 2. Explain changes mass/distance relationships as they effect gravitational pull. 3. Express appreciation or awe for a God who designed the laws of motion, mass and gravity. | 1. Design and demonstrate how forces affect motion using simple machines to create a complex machine. 2. Demonstrate factors that effect gravitational forces on objects. 3. Compare and contrast the ways machines can help keep or hinder God's plan. 4. Express appreciation to God who made them with the ability to understand simple and complex machines |

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...

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

SCIENCE CURRICULUM – CONCEPTS & PRINCIPLES

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...

| Kindergarten | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|--|---|--|--|---|---|---|--|
| 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. Identify the heavenly bodies in the Creation Story from the Bible. | 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. Write a thank you prayer for the sun, moon, stars and earth. | 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. Describe how God is like the sun. | 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. Tell the creation story of day and night, sun, moon and stars | 1. Describe the movements of the earth and moon that result in seasons and lunar phases. 2. Describe changes that occur in the night time sky. 3. Illustrate easily recognizable constellations. 4. Recognize the order and maintenance of God’s universe. | 1. Explain how the earth’s tilt, latitude, and location in its orbit effect seasonal changes. 2. Explain the seasonal progression of constellations. 3. Identify major constellations. 4. Express wonder & awe at God’s maintenance of an ordered universe through the discovery of new planets, stars & other phenomenon in the universe | 1. Explain the effects of gravitational force in the solar system. 2. Identify the organization and physical characteristics of the solar system. 3. Identify Milky Way Galaxy. 4. Describe how God’s forces within the galaxy reflect God’s power. | 1. Analyze the effects of gravitational force in the solar system. 2. Evaluate the importance of the physical characteristics of the solar system. 3. Describe various objects in Milky Way Galaxy. 4. Compare the Milky Way to other forms of galaxies. 5. Describe how the complexity and order of the universe teach us about God’s wisdom and majesty. | 1. Simulate the effects of gravitational force in the solar system. 2. Construct a model of the solar system to include physical characteristics. 3. Compare & contrast the sun as a star with other objects in the Milky Way Galaxy. 4. Compare the complexity and order of the universe with God’s attributes. |

SCIENCE CURRICULUM TECHNOLOGY & SOCIETY

GOAL 13 Understand the relationships among science, technology and society in historical and contemporary contexts.

Standard A: Know and apply the accepted practices of science.

CATHOLIC IDENTITY

Standard A: Know and apply the accepted practices of science and understand the moral and ethical issues involved.

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

| Kindergarten | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|---|--|--|---|---|---|--|---|---|
| <p>1. Follow basic safety measures for experiments.</p> <p>Observe experiments and describe outcomes.</p> <p>Recognize that God loves you and wants you to practice safety measures.</p> | <p>1. Identify basic safety measures for various types of experiments.</p> <p>2. Describe the steps of an experiment.</p> <p>3. Draw the steps of an experiment and its outcome.</p> <p>4. Explain that because of God's love for us, we must take care of ourselves and act responsibly.</p> | <p>1. Explain and use basic safety measures for experiments.</p> <p>2. Perform an experiment changing one variable.</p> <p>3. Describe an experiment with a change in one or more variables.</p> <p>4. Demonstrate "good" choices in safety procedures.</p> | <p>1. Identify and practice ways to avoid injury when conducting science activities.</p> <p>2. Observe varied results generated from an activity.</p> <p>3. Keep accurate records of activities.</p> <p>4. Recognize why it is important to be honest and truthful in reporting results.</p> | <p>1. Demonstrate how to use a fire extinguisher.</p> <p>2. Explain why similar activities have different results.</p> <p>3. Produce accurate and detailed records of activities.</p> <p>4. Describe why it is important to be honest and truthful in reporting results.</p> | <p>1. Identify and explain safety issues in lab activities.</p> <p>2. Compare varied results from similar activities.</p> <p>3. Explain why accurate and detailed records are important.</p> <p>4. Recognize the moral responsibility to be valid in science practices.</p> | <p>1. Identify potential hazards in science activities.</p> <p>2. Recognize difference between valid and biased scientific practices.</p> <p>3. Describe characteristics of observational & experimental investigations</p> <p>4. Describe the moral responsibility to be valid in science practices.</p> | <p>1. Examine ways to reduce potential hazards in science activities.</p> <p>2. Identify historical and contemporary cases in which the work of science has been affected by both valid and biased scientific practices.</p> <p>3. Distinguish between observational and experimental investigations</p> <p>4. Give an example of a valid or biased scientific practice that may not necessarily be morally or ethically acceptable.</p> | <p>1. Put into practice the necessary safety precautions to reduce potential hazards in science activities.</p> <p>2. Analyze and evaluate historical & contemporary cases in which the work of science has been effected by both valid & biased scientific practices.</p> <p>3. Compare & contrast observational and experimental investigations.</p> <p>4. Write a letter to someone they believe is doing important, valid & moral scientific work.</p> |

SCIENCE CURRICULUM TECHNOLOGY & SOCIETY

GOAL 13 Understand the relationships among science, technology and society in historical and contemporary contexts.

Standard B: Know and apply concepts that describe the interaction between science, technology and society.

CATHOLIC IDENTITY

Standard B: Know and apply concepts that describe the interaction between science, technology, society and morality. Use this knowledge to foster and promote Catholic values.

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

| Kindergarten | Grade 1 | Grade 2 | Grade 3 | Grade 4 | Grade 5 | Grade 6 | Grade 7 | Grade 8 |
|--|--|--|--|---|--|--|--|--|
| <p>1. Identify famous scientists and inventors.</p> <p>2. Identify ways that science and technology effect people's lives.</p> <p>3. Identify ways that science has helped God's people live better.</p> <p>4. Describe the 3R's: reduce, recycle and reuse.</p> <p>5. Tell how God expects people to use His creation with respect.</p> | <p>1. Describe the contribution of famous scientists and inventors.</p> <p>2. Describe ways that science and technology effect people's lives.</p> <p>3. List ways scientists use God's creation to promote good.</p> <p>4. Identify the use of common scientific instruments and technology.</p> <p>5. Identify ways to reduce, reuse and recycle materials.</p> | <p>1. Describe and identify the value of common scientific instruments and technology.</p> <p>2. Compare the accuracy of measurement made with and without instruments.</p> <p>3. Describe some common uses for scientific knowledge.</p> <p>4. Give examples of choices that reflect the Catholic value of respect for all God's creatures.</p> <p>5. Demonstrate ways to reduce, reuse and recycle materials.</p> | <p>1. Observe the use of technology in science to collect and store data.</p> <p>2. Identify technological innovations that have affected society.</p> <p>3. Describe how technological innovations help us to be closer to all of God's people.</p> <p>4. Identify careers in science.</p> <p>5. Observe examples of technology within an ecosystem.</p> <p>6. Observe an example of a personal or societal choice that affects the local ecosystem.</p> | <p>1. Demonstrate the use of technology for data collection, storage.</p> <p>2. Recognize the use of science and technology in varied careers.</p> <p>3. Describe careers in the fields of science and technology.</p> <p>4. Identify examples of technology within an ecosystem.</p> <p>5. Explain how a personal, societal, or "moral" choice affects a local ecosystem.</p> <p>6. Describe how scientific knowledge can promote the Catholic value of sharing food with all God's people.</p> | <p>1. Explain how technology is used for data storage, retrieval, and communication of information.</p> <p>2. Describe the effects on society of scientific and technological innovations.</p> <p>3. Explain how science and technology affect lives and careers of people.</p> <p>4. Explain how technology changes an ecosystem.</p> <p>5. Analyze how personal, societal, or "moral" choices affect regional and global ecosystems.</p> <p>6. Explain how science and technology can be used to promote Catholic values.</p> | <p>1. Recognize ways that scientific knowledge & economics drive technological development.</p> <p>2. Know what the Church teaches regarding technology and resource acquisition. (Church & Computer Culture, John Paul II, 1989)</p> <p>3. Identify important contributions to science & technology made by individuals.</p> <p>4. Identify methods of resource acquisition.</p> | <p>1. Identify ways that scientific knowledge and economics drive technological development.</p> <p>2. Identify important contributions to science & technology made by groups from various cultures.</p> <p>3. Describe how some scientific and technological skills may not reflect what the Church teaches.</p> <p>4. Describe how resource acquisition impacts ecosystems & technological development.</p> <p>5. Identify methods of resource conservation & management.</p> <p>6. Identify an example of a local policy affecting science & technology.</p> <p>7. Develop criteria for evaluating local science & technology issues.</p> | <p>1. Explain ways that scientific knowledge and economics drive technological development.</p> <p>2. Analyze the interactions of resource acquisition, technological development, and ecosystem impact.</p> <p>3. Identify advantages & disadvantages of natural resource conservation & management.</p> <p>4. Apply classroom-developed criteria including the moral and ethical issues to determine the effects of policies on local science & technology issues.</p> <p>5. Apply Church teachings to a current policy to evaluate its appropriateness.</p> |

