

SCIENCE CURRICULUM PROJECT

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...

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
<p>1. Use senses to explore and observe materials and natural phenomena.</p> <p>2. Collect information.</p> <p>3. Describe information to be recorded.</p> <p>4. <u>Identify plants and animals that God created.</u></p>	<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. <u>Recognize the difference in an experiment with good caretaking from one with poor caretaking.</u></p> <p>5. <u>Identify people, animals and plants as part of God's creation.</u></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. <u>Describe why it is important to be correct and honest in reporting results.</u></p> <p>5. <u>Show respect for life when conducting an experiment.</u></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. <u>Check their results to be sure they were correct and honest in reporting results.</u></p> <p>4. <u>Demonstrate respect for life when conducting an experiment.</u></p>	<p>1. Make an educated guess based on a given problem.</p> <p>2. Collect &amp; arrange data.</p> <p>3. Chart/graph data.</p> <p>4. Identify the term "lab" to describe an experiment.</p> <p>5. <u>Check to be sure that no living thing is unnecessarily harmed by their experiment.</u></p> <p>6. <u>Tell how their experiment will help or at least not do harm.</u></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. <u>Perform an experiment in such a way that it shows respect for God's creation.</u></p>	<p>1. Identify and define a problem on a scientific topic.</p> <p>2. Identify a hypothesis as an if – then statement.</p> <p>3. Develop a plan to answer these questions.</p> <p>4. Identify a control and a variable.</p> <p>5. Collect and record data for investigations using scientific process skills of observation, estimation and measurement.</p> <p>6. Construct charts, bar line and pie graphs to display data.</p> <p>7. Formulate accurate explanations based on data gathered as evidence.</p> <p>8. Display <u>honestly and accurately</u> report results of individual investigations.</p>	<p>1. Define a problem and formulate a hypothesis.</p> <p>2. Identify the steps of the scientific process.</p> <p>3. <u>Identify Christian responsibilities within the scientific process.</u></p> <p>4. Differentiate between control and variable.</p> <p>5. <u>Give examples of where use of a control group may not respect life or show good stewardship.</u></p> <p>6. Identify and use appropriate measuring equipment and techniques.</p> <p>7. Identify and apply data manipulation tools.</p> <p>8. Conduct an experiment that controls all but one variable.</p> <p>9. Collect and record data accurately.</p> <p>10. <u>Tell about a scientific inquiry that did not respect life or show good stewardship because of manipulating results</u></p> <p>11. Interpret results of data.</p> <p>12. Identify and explain the existence of unexpected results in a data set.</p> <p>13. Identify, report and display the results of the scientific process. (Sixth grade to use lab report format.)</p>

SCIENCE CURRICULUM PROJECT

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...*

Prekindergarten	Kindergarten	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5	Grades 6-8
<p>1. Use scientific tools such as thermometers, balance scales and magnifying glasses for investigation.</p> <p>2. Become familiar with the use of devices incorporating technology.</p> <p>3. <u>Identify some of the scientific tools God gave us to help with investigation.</u></p>	<p>1. Use scientific tools such as thermometers, balance scales and magnifying glasses for investigation.</p> <p>2. Observe a model and identify its purpose.</p> <p>3. Demonstrate how the model is used to solve a problem.</p> <p>4. <u>Identify the talents God gives us to solve problems.</u></p>	<p>1. Participate in the building of a model which solves a problem.</p> <p>2. <u>Identify the God-given talents used to build the model.</u></p> <p>3. Draw a picture of the model in use.</p> <p>4. <u>Explain how the model fits into God's plan for creation.</u></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. <u>Explain how God –given talents helped design the model and solve the problem.</u></p>	<p>1. Draw a picture showing a simple machine.</p> <p>2. <u>Recognize that God has given the ability to build machines.</u></p> <p>3. <u>Recognize ways we please God when we build machines for the good of humankind.</u></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. <u>Name Christian values that we incorporate into the design process.</u></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. <u>Explain the steps of the design process with accompanying Christian values.</u></p>	<p>1. Identify a design problem.</p> <p>2. Establish criteria for determining the success of a solution.</p> <p>3. Sketch, propose &amp; compare design solutions to the problem considering available materials, tools, cost effectiveness, safety &amp; <u>moral implications.</u></p> <p>4. Select the most appropriate design and build a prototype or simulation.</p> <p>5. <u>Identify the ways that the design prototype will further the good of humankind.</u></p> <p>6. Test the prototype using available materials and instruments and record the data.</p> <p>7. <u>Identify the moral and ethical issues in testing a prototype.</u></p> <p>8. Evaluate the test results based on established criteria, note sources of error &amp; recommend improvements.</p> <p>9. Use available technology to report the relative success of the design based on the test results and criteria.</p> <p>10. <u>Explain moral and ethical issues that affect design problems.</u></p>