

Catholic Identity: Integration of Our Faith

ES.1A	display a deep sense of wonder and delight about the natural universe *
ES.1B	describe the unity of faith and reason *
ES.1C	describe relationships, elements, underlying order, harmony, and meaning *
ES.1D	share concern and care for the environment as part of God’s creation *

Learning Process Standards

ES.2 The student uses scientific practices during laboratory and scientific investigations and uses critical thinking and scientific problem solving to make informed decisions. The student will explain how science limits its focus to “how” things physically exist and is not designed to answer issues of meaning, the value of things, or the mysteries of the human person. *

Tools to Know		Ways to Show	
ES.2A	plan and conduct investigations	ES.2C	record and organize data and observations
ES.2B	collect information using appropriate scientific tools	ES.2D	communicate observations about investigations

Structure of Earth

ES.5 **Earth and space.** The student understands the structure of Earth and the rock cycle. The student will explain what it means to say that God created the world and all matter out of nothing at a certain point in time; how it manifests His wisdom, glory, and purpose; and how He holds everything in existence according to His plan.*

Applied Standards		Supporting Standards	
ES.5A	classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation	ES.5A.1	develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process
ES.5B	construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's history		
ES.5C	build a model to illustrate the compositional and mechanical layers of Earth		

Plate Tectonics

ES.5 **Earth and space.** The student understands plate tectonics.

ES.5D	analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions	ES.5D.1	describe how plate tectonics causes major geological events such as ocean basin formation, earthquakes, volcanic eruptions, and mountain building
		ES.5D.2	describe the historical development of evidence that supports plate tectonic theory
		ES.5D.3	identify the major tectonic plates
ES.5E	interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering		

Human Impacts on Earth Systems

ES.5 **Earth and Space.** The student knows that human activity can impact Earth systems. The student will accept the premise that nature should not be manipulated simply at man’s will or only viewed as a thing to be used, but that man must cooperate with God’s plan for himself and for nature. *

ES.5F	construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems	ES.5F.1	research and discuss the advantages and disadvantages of using coal, oil, natural gas, nuclear power, biomass, wind, hydropower, geothermal, and solar resources
		ES.5F.2	model the effects of human activity on groundwater and surface water in a watershed
		ES.5F.3	apply scientific principles to design a method for monitoring and minimizing a human impact on the environment
		ES.5F.4	explain the processes of conservation, preservation, overconsumption, and stewardship in relation to caring for that which God has given us. *

Weather and Climate

ES.5 Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems.

<p>ES.5H develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates</p>	<p>ES.5H.1 recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds</p> <p>ES.5H.2 identify the role of the oceans in the formation of weather systems such as hurricanes</p> <p>ES.5H.3 collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions</p>
<p>ES.5I ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century</p>	

Natural Hazards

ES.5 Earth and Space. The student knows that natural events can impact Earth systems. The student describes God’s relationship with man and nature. *

<p>ES.5G analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects</p>	<p>ES.5G.1 analyze the effects of weathering, erosion, and deposition on the environment in ecoregions of Texas</p> <p>ES.5G.2 predict and describe how catastrophic events such as floods, hurricanes, or tornadoes impact ecosystems</p>
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Sun, Earth, and Moon

ES.5 Earth and space. The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon.

<p>ES.5L develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons</p>	<p>ES.5L.1 relate the positions of the Moon and Sun to their effect on ocean tides</p>
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Solar System

ES.5 Earth and space. The student understands the organization of our solar system and the relationships among the various bodies that comprise it. The student displays a sense of wonder and delight about the natural universe and its beauty. *

<p>ES.5J analyze and interpret data to determine scale properties of objects in the solar system</p>	<p>ES.5J.1 develop and use a model to describe the role of gravity in the motions within galaxies and the solar system</p> <p>ES.5J.2 analyze the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, presence of water, and composition of the atmosphere</p>
<p>ES.5K describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell diagram for classification</p>	<p>ES.5K.1 recognize that the Sun is a medium-sized star located in a spiral arm of the Milky Way galaxy and that the Sun is many thousands of times closer to Earth than any other star</p> <p>ES.5K.2 identify how different wavelengths of the electromagnetic spectrum such as visible light and radio waves are used to gain information about components in the universe</p>