

Catholic Identity Standards

4.0 Catholic identity standards. The student understands and integrates the content of what is learned into their faith and daily life.

Ways to Grow	4.0A	recognize that every human life is sacred because each person is created and loved by God
	4.0B	describe ways to take part in/be responsible to the community by discerning and using our God-given gifts
	4.0C	recognize and oppose unjust social structures and work toward justice for all
	4.0D	see God at work in all things and as expressed in the sacraments
	4.0E	connect scripture, tradition, and the models of Mary and the saints to guide, grow, and deepen faith

Scientific and Engineering Practices

4.1 The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models.

- 4.1A ask questions and define problems based on observations or information from text, phenomena, models, or investigations
- 4.1B use scientific practices to plan and conduct descriptive investigations and use engineering practices to design solutions to problems
- 4.1C demonstrate safe practices and the use of safety equipment during classroom and field investigations
- 4.1D use tools to observe, measure, test, and analyze information
- 4.1E collect observations and measurements as evidence
- 4.1F construct appropriate graphic organizers used to collect data
- 4.1G develop and use models to represent phenomena, objects, and processes or design a prototype for a solution to a problem

Scientific and Engineering Practices

4.2 The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence-based arguments or evaluate designs.

- 4.2A identify advantages and limitations of models such as their size, scale, properties, and materials
- 4.2B analyze data by identifying any significant features, patterns, or sources of error
- 4.2C use mathematical calculations to compare patterns and relationships
- 4.2D evaluate a design or object using criteria

Scientific and Engineering Practices

4.3 The student develops evidence-based explanations and communicates findings, conclusions, and proposed solutions.

- 4.3A develop explanations and propose solutions supported by data and models
- 4.3B communicate explanations and solutions individually and collaboratively in a variety of settings and formats
- 4.3C listen actively to others' explanations to identify relevant evidence and engage respectfully in scientific discussion

Scientific and Engineering Practices

4.4 The student knows the contributions of scientists and recognizes the importance of scientific research and innovation for society.

- 4.4A explain how scientific discoveries and innovative solutions to problems impact science and society
- 4.4B research and explore resources such as museums, libraries, professional organizations, private companies, online platforms, and mentors employed in a STEM field to investigate STEM careers
- 4.4.IS7 describe how science and technology should always be at the service of humanity and, ultimately, to God, in harmony with His purposes*
- 4.4.IS11 list the basic contributions of significant Catholics to science such as Galileo, Copernicus, Mendel, and others*

Recurring Themes and Concepts

4.1 The student understands that recurring themes and concepts provide a framework for making connections across disciplines.

- 4.5A identify and use patterns to explain scientific phenomena or to design solutions
- 4.5B identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems
- 4.5C use scale, proportion, and quantity to describe, compare, or model different systems
- 4.5D examine and model the parts of a system and their interdependence in the function of the system
- 4.5E investigate how energy flows and matter cycles through systems and how matter is conserved
- 4.5F explain the relationship between the structure and function of objects, organisms, and systems
- 4.5G explain how factors or conditions impact stability and change in objects, organisms, and systems

Matter and Energy

4.6 The student knows that matter has measurable physical properties that determine how matter is identified, classified, changed, and used.

Applied Standards

Supporting Standards

4.6A classify and describe matter using observable physical properties, including temperature, mass, magnetism, relative density (the ability to sink or float in water), and physical state (solid, liquid, gas)

4.6B investigate and compare a variety of mixtures, including solutions that are composed of liquids in liquids and solids in liquids

4.6C demonstrate that matter is conserved when mixtures such as soil and water or oil and water are formed

Force, Motion, and Energy

4.7 The student knows the nature of forces and the patterns of their interactions.

4.7A plan and conduct descriptive investigations to explore the patterns of forces such as gravity, friction, or magnetism in contact or at a distance on an object

Force, Motion, and Energy

4.8 The student knows that energy is everywhere and can be observed in cycles, patterns, and systems

4.8A investigate and identify the transfer of energy by objects in motion, waves in water, and sound

4.8C demonstrate and describe how electrical energy travels in a closed path that can produce light and thermal energy

4.8B identify conductors and insulators of thermal and electrical energy

Earth and Space

4.9 The student recognizes patterns among the Sun, Earth, and Moon system and their effects.

4.9A collect and analyze data to identify sequences and predict patterns of change in seasons such as change in temperature and length of daylight

4.9B collect and analyze data to identify sequences and predict patterns of change in the observable appearance of the Moon from Earth

Earth and Space

4.10 The student knows that there are processes on Earth that create patterns of change.

4.10A describe and illustrate the continuous movement of water above and on the surface of Earth through the water cycle and explain the role of the Sun as a major source of energy in this process

4.10B model and describe slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice

4.10C	differentiate between weather and climate	
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Earth and Space

4.11 The student understands how natural resources are important and can be managed.		
4.11.DS3 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*		
4.11A	identify and explain advantages and disadvantages of using Earth's renewable and nonrenewable natural resources such as wind, water, sunlight, plants, animals, coal, oil, and natural gas	
4.11B	explain the critical role of energy resources to modern life and how conservation, disposal, and recycling of natural resources impact the environment	4.11.IS5 explain the processes of conservation, preservation, overconsumption, and stewardship in relation to caring for that which God has given to sustain and delight us*
4.11C	determine the physical properties of rocks that allow Earth's natural resources to be stored there	

Organisms and Environments

4.12 The student describes patterns, cycles, systems, and relationships within environments.		
4.12B	describe the cycling of matter and flow of energy through food webs, including the roles of the Sun, producers, consumers, and decomposers	4.12A investigate and explain how most producers can make their own food using sunlight, water, and carbon dioxide through the cycling of matter
4.12C	identify and describe past environments based on fossil evidence, including common Texas fossils	4.12.IS2 describe the relationships, elements, underlying order, harmony, and meaning in God’s creation*

Organisms and Environments

4.13 The student knows that organisms undergo similar life processes and have structures that function to help them survive within their environments.		
4.13B	differentiate between inherited and acquired physical traits of organisms	4.13A explore and explain how structures and functions of plants such as waxy leaves and deep roots enable them to survive in their environment