Snapshot
Grade 8 Science

Catholic Identity Standards	
8.1	**Catholic identity standards.** The student understands and integrates the content of what is learned into their faith and daily life.*
Ways to Grow	8.1(VL) S.K6 DSI(CNS) display a deep sense of wonder and delight about the natural universe * 8.1(VL) S.K6 GS2(CNS) describe the unity of faith and reason * 8.1(VL) S.K6 IS2(CNS) describe relationships, elements, underlying order, harmony, and meaning * 8.1(VL) S.K6 DS2(CNS) share concern and care for the environment as part of God's creation *

Learning Process Standards			
8.2	**Learning process standards.** 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.* The student will list the basic contributions of significant Catholics to science.*		
Tools to Know		**Ways to Show**	
8.2A	plan and conduct investigations	8.2C	record and organize data and observations
8.2B	collect information using appropriate scientific tools	8.2D	communicate observations about investigations
		8.2E	represent the natural world using models

Properties of Atoms		
8.3i	**Matter and energy.** The student knows that matter is composed of atoms and has chemical and physical properties. 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**
8.3A	describe the structure of atoms, including the masses, electrical charges, and locations, of protons and neutrons in the nucleus and electrons in the electron cloud	
8.3B	identify that protons determine an element's identity and valence electrons determine its chemical properties, including reactivity	
8.3C	interpret the arrangement of the Periodic Table, including groups and periods, to explain how properties are used to classify elements	

Chemical Formulas, Equations, and Reactions		
8.3ii	**Matter and energy.** The student knows that matter is composed of atoms and has chemical and physical properties.	
8.3D	recognize that chemical formulas are used to identify substances and determine the number of atoms of each element in chemical formulas containing subscripts	
8.3E	investigate how evidence of chemical reactions indicates that new substances with different properties are formed and how that relates to the law of conservation of mass	

Force, Motion, and Energy		
8.4	**Force, motion, and energy.** The student knows that there is a relationship between force, motion, and energy.	
8.4A	demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion	
8.4B	investigate and describe applications of Newton's three laws of motion such as in vehicle restraints, sports activities, amusement park rides, Earth's tectonic activities, and rocket launches	8.4B.1 differentiate between speed, velocity, and acceleration

Sun, Earth, and Moon		
8.5i	**Earth and space.** The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon.	
8.5A	model and illustrate how the tilted Earth rotates on its axis, causing day and night, and revolves around the Sun causing changes in seasons	
8.5B	demonstrate and predict the sequence of events in the lunar cycle	
8.5C	relate the positions of the Moon and Sun to their effect on ocean tides	

Characteristics of the Universe		
8.5ii	**Earth and space.** The student knows characteristics of the universe. 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.*	
8.5D	describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell diagram for classification	8.5D.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 8.5D.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
8.5E	research how scientific data are used as evidence to develop scientific theories to describe the origin of the universe	

Impact of Natural Events		
8.5iii	**Earth and space.** The student knows that natural events can impact Earth systems.	
8.5F	relate plate tectonics to the formation of crustal features	8.5F.1 describe the historical development of evidence that supports plate tectonic theory
8.5G	interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering	

Climatic Interactions		
8.5iv	**Earth and space.** The student knows that climatic interactions exist among Earth, ocean, and weather systems.	
8.5H	identify and relate how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts	8.5H.1 recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds
8.5I	identify and relate the role of the oceans in the formation of weather systems such as hurricanes	

Interdependence of Living Systems		
8.6	**Organisms and environments.** The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student will explain how creation is an outward sign of God's love and goodness and, therefore, is "sacramental" in nature.*	
8.6A	investigate how organisms and populations in an ecosystem depend on and may compete for biotic factors such as food and abiotic factors such as quantity of light, water, range of temperatures, or soil composition	
8.6B	explore how short- and long-term environmental changes affect organisms and traits in subsequent populations	
8.6C	recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems	