

Unit Maps: Middle School Life Science

Cells		Unit	CHECKPOINT		
			1	2	3
LS.6	Organisms and environments. The student knows the structure, function, and information processing in cells. 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.*				

Learning Process Standards (Tools to Know)		Unit	CHECKPOINT		
			1	2	3
MS.2A	plan and conduct investigations				
MS.2B	collect information using appropriate scientific tools				

Content		Unit	CHECKPOINT		
			1	2	3
Cell Structure					
LS.6A	conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells				
LS.6A.1	identify the basic characteristics of organisms, including prokaryotic or eukaryotic, unicellular or multicellular, autotrophic or heterotrophic, and mode of reproduction, that further classify them in the currently recognized kingdoms				
LS.6A.2	diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem				

Functions of a Cell					
LS.6B	develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function				
LS.6B.1	differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuoles				

Body Systems					
LS.6C	use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells				
LS.6C.1	identify the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, excretory, reproductive, integumentary, nervous, and endocrine systems				
LS.6C.2	compare the functions of cell organelles to the functions of an organ system				

Learning Process Standards (Ways to Show)		Unit	CHECKPOINT		
			1	2	3
MS.2C	record and organize data and observations				
MS.2D	communicate observations about investigations				
MS.2E	represent the natural world using models				

Unit Maps: Middle School Life Science

Matter and Energy in Organisms and Ecosystems	Unit	CHECKPOINT		
		1	2	3
LS.6 Organisms and environments. The student knows that there is a relationship between organisms and the environment.				

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

Learning Process Standards (Tools to Know)	Unit	CHECKPOINT		
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Photosynthesis				
LS.6D construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.				
LS.6D.1 develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.				

Flow of Energy				
LS.6E develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.				
LS.6E.1 analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem				
LS.6E.2 describe how biodiversity contributes to the sustainability of an ecosystem				
LS.6E.3 observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds				

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Interdependent Relationships in Ecosystems	Unit	CHECKPOINT		
		1	2	3
<p>LS.6 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems.</p> <p>The student explains how creation is an outward sign of God’s love and goodness and, therefore, is “sacramental” in nature. *</p>				

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Interdependence				
LS.6F construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems				
LS.6F.1 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				
Environmental Changes				
LS.6G evaluate competing design solutions for maintaining biodiversity and ecosystem services				
LS.6G.1 explore how short-and long-term environmental changes affect organisms and traits in subsequent populations				

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Natural Selection and Adaption	Unit	CHECKPOINT		
		1	2	3
<p>LS.6 Organisms and environments. The student knows that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations.</p> <p>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. *</p>				

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Natural Selection and Adaption					
LS.6H	apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships				
LS.6H.1	analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past				
LS.6H.2	analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy				

Adaptation and Survival					
LS.6I	construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment				
LS.6I.1	investigate and explain how internal structures of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants				
LS.6I.2	explain variation within a population or species by comparing external features, behaviors, or physiology of organisms that enhance their survival such as migration, hibernation, or storage of food in a bulb				

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Unit Maps: Middle School Life Science

Growth, Development and Reproduction of Organisms		Unit	CHECKPOINT		
			1	2	3
LS.6	Organisms and environments. The student knows that reproduction is a characteristic of living organisms and that the instructions for traits are governed in the genetic material.				
The student will value the human body as the temple of the Holy Spirit. *					

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Genetic Variation					
LS.6J	use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively				
LS.6J.1	examine organisms or their structures such as insects or leaves and use dichotomous keys for identification				
LS.6J.2	construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms				

Reproduction and Heredity					
LS.6K	develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation				
LS.6K.1	define heredity as the passage of genetic instructions from one generation to the next generation				
LS.6K.2	recognize that inherited traits of individuals are governed in the genetic material found in the genes within chromosomes in the nucleus				
LS.6K.3	identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (<i>Geospiza fortis</i>) or domestic animals and hybrid plants				
LS.6K.4	The student will exhibit care and concern at all stages of life for each human person as an image and likeness of God. *				

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