

HCPS Grade 7 Science Course

Unit & Title	MSDE/NGSS Science Standards	Lesson Topic	
<p>Unit 1 - Ecology <i>8 weeks</i></p>	<p>MS-LS1-1: Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p>MS-LS1-6: 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.</p> <p>MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.</p> <p>MS-LS2-2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.</p> <p>MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.</p> <p>MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</p> <p>MS-LS2-5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.</p>	Experience 1-1	Living Vs. Non-living
		Experience 1-2	Characteristics of Living Things
		Experience 1-3	Biomes and Human impact on Maryland biome and or Chesapeake Bay and possible solutions
		Experience 1-4	Levels of Organization
		Experience 1-5	Plants and Snails
		Experience 1- 6	Photosynthesis Extension
		Experience 1-7	Flow of Matter Carbon and Nitrogen Cycles
		Experience 1-8	Modeling Evaluation
		Experience 1-9	Climate Change
		Experience 1-10	Renewable Energy
		Experience 1-11	Food Webs
		Experience 1-12	Owl Pellet Dissection
		Experience 1-13	Complex Interactions and Human Impact
		Experience 1-14	Types of Relationships
		Experience 1-15	Cookie Mining
		Experience 1-16	The Lorax
		Experience 1-17	Eco Product Engineering

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<p>Unit 2 – Cells</p> <p><i>7 weeks</i></p>	<p>MS-LS1-1: Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p>MS-LS1-2: Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p> <p>MS-LS1-7: 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.</p>	Experience 2-1	Cell Theory
		Experience 2-2	Cell Cheek Lab
		Experience 2-3	Cell Types Inquiry
		Experience 2-4	Cellular Organelles
		Experience 2-5	Cell Casting Call
		Experience 2- 6	Vocabulary Match-Up
		Experience 2-7	Cell-fie
		Experience 2-8	Organelle Trail Project
		Experience 2-9	Cell Organelle Superhero Trading Cards
		Experience 2-10	Cellular Respiration
		Experience 2-11	Exercise and Cellular Respiration
		Experience 2-12	Cell Transport
		Experience 2-13	Iodine Diffusion
		Experience 2-14	Osmosis Exploration
		Experience 2-15	Mitosis
		Experience 2-16	Process Claymation

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<p>Unit 3 - Human Body <i>8 weeks</i></p>	<p>MS-LS1-3: Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.</p> <p>MS-LS1-7: 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.</p> <p>MS-LS1-8: Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.</p>	Experience 3-1	From Cells to You
		Experience 3-2	Tissues to Organs
		Experience 3-3	A Balancing Act: What is Homeostasis
		Experience 3-4	Overview of Human Body Systems (Skeletal, Muscular, Cardiovascular, Respiratory, Digestive, Excretory, and Nervous)
		Experience 3-5	Interactions of Body Systems
		Experience 3-5.1	Which Sense is the Fastest?
		Experience 3-6	Digestive Experience
		Experience 3-7	Muscle Fatigue Lab
		Experience 3-8	Cardio-Respiratory Lab
		Experience 3-9	Frog Dissection

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<p>Unit 4 – Heredity <i>6 weeks</i></p>	<p>MS-LS 1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.</p> <p>MS-LS3-1: Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.</p> <p>MS-LS3-2: 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.</p> <p>MS-LS4-5: Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p>	Experience 4-1	Traits Introduction Lesson
		Experience 4-2	Types of Inheritance (Sexual and Asexual Reproduction)
		Experience 4-3	A Recipe for Traits
		Experience 4-4	DNA Details
		Experience 4-5	Protein Synthesis
		Experience 4-6	Mutations – “Changing the Recipe”
		Experience 4-7	Genetics Vocabulary Practice
		Experience 4-8	Punnett Square Introduction and Practice
		Experience 4-9	Baby George Genetics Lesson
		Experience 4-10	Superhero Baby
		Experience 4-11	Genetic Engineering
		Experience 4-12	Selective Breeding: Chickens and Dogs

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<p>Unit 5 – Evolution <i>6 weeks</i></p>	<p>MS-LS1-4: 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.</p> <p>MS-LS4-1: 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.</p> <p>MS-LS4-6: Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</p>	Experience 5-1	Introduction to Evolution: Heredity and the Environment
		Experience 5-2	Behaviors and Adaptations or Aquaterra Lesson
		Experience 5-3	Fish Sticks Lab
		Experience 5-4	Darwin and Natural Selection
		Experience 5-5	Bird Beak Lab
		Experience 5-6	Fossils Lesson
		Experience 5-7	Comparative Anatomy Lesson
		Experience 5-8	Comparative Embryology Lesson
		Experience 5-9	Human History on Earth
		Experience 5-10	Lesson Choice: Kingdoms of Life/Threats to Biodiversity/Classification