

GOOD SHEPHERD EPISCOPAL SCHOOL

8TH GRADE SCIENCE YEAR AT A GLANCE

Month	Unit/ Content Focus	Skills	NGSS Aligned
August	8 th Grade COE		
September (4 Weeks)	Expectations Lab Safety Genetics Heredity	Lab safety/ Scientific Method Plan and carry out an investigation Develop Models Probability Predications	MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. 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.
October (5 Weeks)	Genetics/ Heredity Natural Selection & Adaption	Design a solution to a problem Plan an investigation Probability Predications Construct and interpret graphical displays of data Group Presentation of Research	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. MS-LS4-2: 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. MS-LS4-4: 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. 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.

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<p>November (3 Weeks)</p>	<p>Genetics/ Heredity Space: Stars (1 week)</p>	<p>Design a solution to a problem Plan an investigation Construct, analyze, and interpret graphical displays of data Develop and use a model Collect, analyze, and interpret data Ask questions to clarify evidence</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. 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. MS-LS4-5: Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. MS-ESS1-2: Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe.</p>
<p>December (3 Weeks)</p>	<p>Galaxies Theories of the Universe Engineering a Rocket</p>	<p>Collect, analyze, and interpret data Ask questions to clarify evidence</p>	<p>MS-ESS1-2: Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe. MS-ESS1-3: Engineering advances have led to important discoveries in virtually every field of science and scientific discoveries have led to the development of entire industries and engineered systems.</p>
<p>January (4 Weeks)</p>	<p>Chemistry: Matter Physical Changes Atom Periodic Table</p>	<p>Develop and use a model Use argument supported by data Conduct an investigation to provide evidence</p>	<p>MS-PS1-1: Develop models to describe the atomic composition of simple molecules and extended structures. MS-PS1-3: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. MS-PS1-4: Develop a model that predicts and describes changes in the particle motion, temperature, and state</p>

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		Gather and Synthesize information	of a pure substance when thermal energy is added or removed.
February (4 Weeks)	Chemistry: Molecules Periodic Table Chemical Reactions	Develop and use a model Use argument supported by data Conduct an investigation to provide evidence Gather and Synthesize information Analyze and interpret data Construct and present arguments using data as evidence	MS-PS1-2: Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. MS-PS1-5: Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved. MS-PS1-6: Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.
March (2 Weeks) ERBs	Chemical Reactions (1 week) Physics: Forces Motion	Analyze and interpret data Construct and present arguments using data as evidence Develop and use a model	MS-PS2-1: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. MS-PS2-5: Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

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April (5 Weeks)	Physics: Forces Motion Newton's Laws	Construct a scientific explanation based on evidence Develop a model Plan and carry out an investigation	ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. MS-PS2-1: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. MS-PS2-2: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. MS-PS2-3: Ask questions about data to determine the factors that affect the strength of electric and magnetic forces. MS-PS2-5: Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.
May (2 Weeks) FINALS	Human Impacts	Construct a scientific explanation based on evidence Develop a model Plan and carry out an investigation	MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. MS-ESS3-3: Apply scientific principles to design a method for monitoring and minimizing the human impact on the environment. MS-ESS3-4: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

* This YAG will change. It is meant only to provide a quick look at the topics that will be addressed during the school year. Class progress, ERB testing, school trips, and inclement weather will all merit YAG adjustments.