

# GOOD SHEPHERD EPISCOPAL SCHOOL

## 7<sup>TH</sup> GRADE SCIENCE YEAR AT A GLANCE

Month	Unit/Content Focus	Skills	NGSS Aligned
<b>August</b> (1/2 week)	Start of Year	Lab Safety	Not applicable
<b>September</b> (4 weeks)	Start of Year Plate Tectonic Theory	Lab Safety Metric System Scientific Investigations Invention Convention Science Fair Construct and support an explanation Analyze and interpret data	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
<b>October</b> (5 weeks)	Plate Tectonic Theory Population Dynamics	Construct and support an explanation Analyze and interpret data Evaluate design solutions	Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.  Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.  Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
<b>November</b> (3 weeks)	Population Dynamics Biochemical Processes	Analyze and interpret data Evaluate design solutions Develop a model Plan and conduct an investigation	Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.  Evaluate competing design solutions for maintaining biodiversity and ecosystem services. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.  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.

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			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.
<b>December</b> (3 weeks)	Cycles of Matter	Develop a model Construct and support an explanation	Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.  Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
<b>January</b> (3 weeks) COE	COE Field Guide Conservation of Energy/ Thermal Energy	Create a detailed field guide Construct and defend an argument Plan and conduct an investigation Develop a model	Field Guide is a review of the first half of the year, incorporating plate tectonics, Earth's history, and plant/animal needs.  Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
<b>February</b> (4 weeks)	Conservation of Energy/ Thermal Energy	Construct and defend an argument Plan and conduct an investigation Develop a model	Construct, use, and present arguments to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.  Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.
<b>March</b> (2 weeks) ERBs	Waves	Use mathematical representations Develop a model Support a claim with data	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.  Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.
<b>April</b> (5 weeks)	Waves Solar Oven Project	Use mathematical representations Develop a model Support a claim with data Design, construct, and test a device (Engineering principles)	Integrate qualitative scientific and technical information to support the claim that digitized signals are a more reliable way to encode and transmit information than analog signals.  Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.

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<b>May</b> (2 weeks) FINALS	Human Reproduction	Construct and support an explanation	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.
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\* 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.