# GOOD SHEPHERD EPISCOPAL SCHOOL
# 8th Grade Science Year at a Glance

**Unit: COE**

**Standards:**

- Culmination of outdoor skills to be used on 5-day backpack trip.

**Unit: Space**

**Standards:**

- Earth's Place in the Universe. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe.
- 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.
- Earth's Place in the Universe. Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.
- Earth's Place in the Universe. Communicate scientific ideas about the way stars, over their life cycle, produce elements.

**Skills:**

- Design a solution to a problem
- Plan an investigation
- Probability Predictions
- Construct and interpret graphical displays of data
- Group Presentation of Research Unit: Earth Science

**Unit: Earth Science**

**Standards:**

- 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.
- Earth's Place in the Universe. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth’s formation and early history.
- Earth's Place in the Universe. Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth’s formation and early history.
- Earth's Systems. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems

- Earth's Systems. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- Earth's Systems. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
- Earth and Human Activity. Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
- Earth's Place in the Universe. Evaluate evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics to explain the ages of crustal rocks.

**Skills:**

- 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

**Unit: Chemistry**

**Standards:**

- Develop models to describe the atomic composition of simple molecules and extended structures.
- Gather and make sense of information to describe synthetic materials that come from natural resources and impact society.
- 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.
- Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- 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.
- Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.

**Skills:**

- 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

- Create a video lab report that demonstrates student knowledge of the scientific method

**Unit: Physics**

**Standards:**

- Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.
- 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.
- Ask questions about data to determine the factors that affect the strength of electric and magnetic forces.
- 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.

**Skills:**

- Construct a scientific explanation based on evidence
- Construct a catapult project that will be tested on the last week of school
- Develop a model
- Plan and carry out an investigation

*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.*