



## G-E-T Middle School Curriculum

### Align, Explore, Empower

Scope and Sequence

Grade 8 Science

#### Inquiry Skills

~throughout school year

We are dedicated to enhancing the inquiry skills of all learners that come through our district. The inquiry skills we value are basic process skills and integrated process skills. Basic process skills include skills such as observing, predicting, and classifying. While integrated process skills include developing hypotheses, interpreting data, and drawing conclusions. In 8<sup>th</sup> grade, students will develop these skills throughout the year at a level three.

#### Unit 1 - Earth's Structure

~11 weeks

In this unit, students will learn that Earth is a planet that is continually changing. He or she will be introduced to the causes and effects of plate tectonics that make up Earth's crust and will also be exposed to the various structures that make up Earth's surface.

#### Standards for Grade 8 Science

The students will:

- ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 billion-year-old history.
- ESS2-2 Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
- ESS2-3 Analyze and interpret data on the distribution of fossils of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.
- ESS2-1 Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
- ESS3-2 Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects
- ESS3-1 Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral resources are the result of past and current geoscience processes.
- 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.

- ESS3-1 Construct a scientific explanation based on evidence for how the uneven distribution of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
- 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.

## Unit 2 - Astronomy and Space

~12 weeks

In this unit, your child will develop an understanding about how the Earth, the moon, and the sun interact. They will learn about how space exploration can benefit our understanding of the universe and everyday people. Your child will understand the Earth as a part of our universe which is continually changing, massive, and very old. The relationship between science, technology, society, and our solar system will also be explored in hopes to promote a better understanding of how all of these topics are intertwined.

## Standards for Grade 8 Science

The students will:

- PS2-4 Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects.
- ESS1-1 Develop and use a model of the Earth-sun-moon, and seasons.
- ESS1-2 Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
- ESS1-3 Analyze and interpret data to determine scale properties of objects in the solar system.
- PS3-1 Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

Unit 3 - Sound and Light

~9 weeks

In this unit, your child will learn about how waves transmit energy. They will also learn about light, sound, and the various parts of the electromagnetic spectrum and how they interact with different forms of matter.

Standards for Grade 8 Science

The students will:

- PS4-1 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.
- PS4-2 Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.
- PS4-3 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.

Unit 4 - Introduction to Chemistry

~4 weeks

In this unit, your child will learn how physical and chemical changes occur and about the conservation of mass and energy. They will develop an understanding about the organization of the periodic table and about the basic building block of matter, the atom. Your child will also be able to determine the various properties of a substance and/or solution based on bonding and chemical reactions.

Standards for Grade 8 Science

The students will:

- PS1-1 Develop models to describe the atomic composition of simple molecules and extended structures.
- PS1-6 Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.
- PS1-4 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.
- 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.
- 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.

Blue = Mastery Level Standard

Red = Content Knowledge Standard