Updated 3/2020

7th Grade Earth Science

Course Description

PCMS 7th Graders develop an understanding of Science by investigation, reasoning, modeling, and critical thinking. Our main focus pertains to Earth Science topics: weather patterns; distinguish properties related to Minerals; describe the Rock Cycle and Plate Tectonics; and finish the year by developing/using a model of the Earth-sun-moon systems and the roll of gravity in the Universe.

Big Ideas:

1. Earth scientists use repeatable observations, testable ideas, and graphs to understand and explain our planet.
2. Earth is a complex and continuously changing system between rock, water and air. People depend on Earth for these resources.
3. Natural hazards pose risks to people, and in turn, people can significantly alter the Earth by their decisions. In turn, it's important to look at other planets and galaxies for answers to our questions.
4. Beyond the focus of Earth Science:
    - Note taking tips, such as underlining key words/rereading the questions, organization, etc.
    - Giving "Proof" and citing evidence to support your answers.
    - "Check, Check, Re-check check" your answers.

ELO 1 **Engineering Design** MS-ETS1-1 MS-ETS1-2	• Students will define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions. • Students will evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
ELO 2 **Engineering Design** MS-ETS1-3 MS-ETS1-4	• Students will analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. • Students will develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
ELO 3 **Earth's Sys.** (Weather/Water) MS-ESS2-4 MS-ESS2-5 MS-ESS2-6 MS-ESS3-1 MS-ESS3-2	• Students will develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. • Students will collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions. • Students will develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. • Students will analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

<u>ELO 4</u> **Earth's Sys. (Rocks/Plate Tect.)** MS-ESS2-1 MS-ESS2-2 MS-ESS2-3 MS-ESS3-1 MS-ESS3-4	• Students will develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. • Students will construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. • Students will analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. • Students will construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes. • Students will construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
<u>ELO 5</u> **Earth's Place in the Universe** MS-ESS1-1	• Students will develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
<u>ELO 6</u> **Earth's Place in the Universe** MS-ESS1-2 MS-ESS1-3	• Students will develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. • Students will analyze and interpret data to determine scale properties of objects in the solar system.

Pacing:

Ongoing all year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
<u>ELO 1 & 2</u> Engineering Design	**<u>ELO 3</u>** Weather and Climate	**<u>ELO 4</u>** Rock Cycle & Plate Tectonics	**<u>ELO 5</u>** Earth Topics	**<u>ELO 6</u>** Space and Universe