Science 4 (1 of 2)

Course Description:

In this course students will examine the scientific method, solving problems regarding engineering, matter, energy and magnetism. They will also explore space including Earth's place and its movement, as well as the different planets and objects in our solar system.
In addition to those fundamentals, they will also be working to design, test, and assess experiments and demonstrations. They will look at how science, as a whole, finds answers and then questions those answers. Students will also discover that finding answers is not easy. This course will push their understanding of the important work that science does and the many benefits it brings to our everyday lives.

Course Objectives:

- Use science to find answers to questions about the world.
- Explain why and how science careers are important.
- Explain and study about the differences between ideas, observations, opinions, claims, and scientific explanations.
- Explain and use scientific models correctly.
- Explain why and how engineering and technology careers are important.
- Make, study, compare, and test different solutions for a problem.
- Measure, sort, and find what is the same or different between objects.
- Understand different materials and how they can change when mixed together.
- Learn about motion and how it relates to energy and forces.
- Explore how electromagnetic energy is used to create a simple circuit.
- Explain how energy can transform and move from one place to another.
- Learn about different types of energy like light, heat, sound, and electromagnetism, and how they interact with objects.
- Study data on the seasonal patterns of stars to understand how Earth moves around the Sun.

Course Overview:

This course is made up of 6 units. Each unit has five lessons. Lessons are made of up activities that include the following types of learning:

- **Warm-Ups** allow for practice of skills or concepts taught in previous lessons. These are graded activities.
- **Direct Instructions** provide modeling of new skills and concepts. These are not graded activities.
- **Guided Practices** allow for practice of a skill with support. These are graded activities only on a completion basis.
- **Independent Practices** allow for practice of a skill without support. These are graded activities.
- **Checkpoints** test mastery of skills from lessons. These are graded activities.

- **Unit Reviews** allow for practice of skills prior to taking unit exams. These are not graded activities.
- **Unit Exams** test mastery of skills from the unit. These are graded activities.
- **Projects** provide an opportunity for practice of more complex skills across several activities or lessons within a unit. These activities require a final graded submission.

Required Materials:

Required:

- 3 books
- a handful of dirt or sand
- a handful of rocks or gravel
- aluminum foil
- baking soda
- balloons
- battery
- battery holder
- buzzer/bell
- cardboard
- chocolate (1 piece)
- circuit board
- cotton balls
- coffee filter
- connector wires with alligator clips
- copper wire
- D-cell battery
- dirty water
- flashlight
- glass
- graham crackers
- insulated wires
- large bowl
- light bulbs
- light bulb holder
- magnets
- marble or small ball
- marshmallows
- mirror
- nail
- paper
- paperclips

- paper towels
- pencil
- plastic bottle
- plate
- rubber band
- ruler
- scale
- scissors
- study lamp
- stopwatch
- switch
- tuning fork or thin metal rod
- vinegar
- water

Optional

- heat lamp (if no direct sunlight is available)
- potential/kinetic energy example