

Course Description:

In this course, students will identify important scientific discoveries and the scientific method, describe the engineering design process, and explain different types of technology found in everyday life. They will also examine matter, energy, forces, magnetism, and conclude with explaining astronomy and the solar system. While they are covering important content, they will also work on their organization and investigation skills in science, analyzing and interpreting data to find answers for themselves. Students will learn that science often has multiple answers to the same question, and it is up to us as individuals to look at the data and results to find the answers. Students will also be using higher-level thinking to evaluate the questions asked and make detailed observations to determine a hypothesis.

Course Objectives:

- Use the scientific method to plan, do, and explain an experiment.
- Do an investigation to show what happens when substances are mixed or separated.
- Use information and models to explain which things stay the same during a physical change or chemical reaction.
- Do an experiment to show how force, mass, and motion are connected.
- Give proof that objects are pulled toward the center of the Earth because of gravity.
- Talk about different types of energy, what they're like, and how we use them.
- Talk about the things in our solar system and galaxy, what they're like, and how they relate to each other.
- Explain how people in the real world can use science to keep learning and making new discoveries.
- Analyze data or evidence to make good explanations and descriptions that are well supported.
- Explain how science, technology, and everyday life are connected.

Course Overview:

This course is made up of 6 units. Each unit has five lessons. Lesson 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:

- ball (small)
- balloon (regular)
- batteries (2)

- beach ball or basketball
- books or other objects with weight (15)
- buzzer
- cardboard (1 piece)
- cardboard boxes (2)
- card stock (3 sheets)
- colored clay
- colored paper (1 red, 1 black, and 1 white)
- comb
- copper wire
- dinner knife
- drinking glass (clear)
- drinking straw
- duct tape (1 roll)
- electric light bulb
- feather
- flashlight
- flashlight bulb
- fork
- fur (1 piece)
- glass rod
- hole punch
- iron nail
- lamp
- lemon juice (1 teaspoon)
- marbles (2)
- masking tape
- napkin
- notebook
- paper
- paper clips (10-12)
- paper towel tube
- pencils
- ping pong ball
- plate
- pot
- printables (see Course Syllabus for link)
- printer and printer paper (for printables)
- push pins or thumb tacks (4)
- ramp
- rubber band (large)
- rubber band (thick)
- rubber band (thin)
- rubber rod
- ruler with standard and metric units
- sandwich bag

- scissors
- small conducting wires
- soda can (empty)
- spoon
- stick or dowel rod
- stove
- sugar (1 teaspoon)
- table or stool
- tall blocks (12)
- tape measure with standard and metric units
- tennis ball or other similar size ball that can bounce
- thread (1 foot)
- timer or clock with a second hand
- tissue paper (2-3 sheets)
- toothpicks (1 pack)
- toy cars (2)
- tuning forks (2) (**teacher**)
- US map with scale
- water
- white paper
- wire to make a circuit
- wooden board
- wool sock or sweater

Optional

- globe