

# Introduction to Exploring Electricity



In the STEM Exploring Electricity course, students discover how the four disciplines connect as they explore and practice the skills needed to work with electricity. Once they are familiar with electric circuits, they will have the opportunity to design innovative solutions to real-world problems, challenges, and needs. The purpose of the STEM Exploring Electricity course is to challenge students to design electric circuits that are required to solve electrical problems typically found in both residential homes and commercial industry. As students explore and practice the skills needed to work with electricity, they will gain some of the basic knowledge required to work as licensed electricians or electrical contractors, or to become electrical engineers.

## Course Topics

- Electric Circuits
- Measuring Voltage, Current, and Resistance
- Series Circuits
- Parallel Circuits
- Logic Circuits
- Three-Way Switching Circuits
- The Ohm's Law
- Ohm's Law for Series Circuits
- Ohm's Law for Parallel Circuits
- Electromechanical Relays

## Core Competencies

- Gain an understanding of electric voltage, current, resistance, and power in series and parallel circuits.
- Practice wiring and testing electric circuits by connecting lamps, resistors, and electromechanical components, such as switches, a relay, and a motor.
- Demonstrate how to use a digital multimeter.
- Design electrical circuits to solve real-world problems.
- Apply Ohm's Law to calculate voltage, current, resistance, and power in series and parallel circuits.

## Equipment

- Exploring Electricity training system
- 4mm leads: 30 cm long, 60 cm long, 90 cm long

