***PLTW-IT-8*-Magic of Electrons/Electricity/Electronics w/ Mr. Falk:**

In this course students explore the area of Electrical Engineering. They will design circuits, build electric motors, electro-magnets, and use electronic components to control electricity. Students also examine the behavior and parts of atoms, as well as the impact of electricity on the world around them.

Atomic Structure of Electricity- **Basics of Electricity**-A look at Electrons and Elements and Electrical Flow

Conductivity-A look at Conductors, Insulators, and Semi-Conductors

Electrical and Electronic Circuit Building-You will build Circuits using Snap Circuits Extreme

Electromagnet Construction-You will build an Electromagnet

DC Motor Construction-You will build a DC Electric Motor

Generator Construction using VEX Robotics Parts-You will build a Generator using VEX Robotics

Invisible River of Electricity-Gain a fundamental understanding of electrical energy, static and current electricity, parallel, series, and computer circuits, magnetism, electric force, and generation of electricity

DC Motor Construction-You will build another more complex DC Electric Motor

Circuit Design-You will Diagram and build Series Circuits, Parallel Circuits, and Series-Parallel Circuits

Schematics-You will Draw Circuits using the Schematics Symbols for the parts in the Circuits

Wiring 110V Circuit Breakers, Switches, Outlets, and Lights-You will mount Electrical Boxes and Wire in Circuit Breaker, Switches, Outlets, and Lights

Switches, Diodes, and Light Emitting Diodes (LED)-You will build Circuits using Switches, Diodes, and LED's to understand the Flow and Control of Electricity

Resistance-You will build Circuits using Resistors to understand Voltage Control

Resistor Color Coding-You will Measure and Identify Resistors based on the Color Coding

Ohm's Law-You will use Ohm's Law to build Circuits and measure outputs

Capacitors-You will build Circuits using Capacitors to understand Voltage Control and Discharge

Soldering-You will Solder wires and learn common Wire Joints

Transistors-You will build Circuits using Transistors to Boost and Control Sounds

Digital Number Systems-You will use Digital Numbering to understand Binary Communication

Logic Gates-You will build Circuits using Digital Signals 0 and 1

Transistor Gates-You will build Circuits using Transistors as Switches, Gates, and Integrated Chips

Reversible Fuel Cell-You will use a Hydrogen Fuel Cell to generate Electricity