



HIGH SCHOOL PHYSICAL SCIENCE LABS

Thursdays, September 15-December 15 (no class Oct 10-14 and Nov 21-25; 12 weeks)

11:15am-12:45pm

Ages 14+

The focus of our High School Physical Science Labs is exploring fundamental principles of physics by conducting investigations of force and motion, electricity and magnetism, and properties of waves. Students learn laboratory techniques, and perform hands-on science experiments commonly required in many high school physical science curricula. Please note: labs related to chemistry are conducted during our High School Chemistry Labs course. A brief review of relevant material starts each lab, followed by a lab period which includes lab preparation, experimentation and clean-up. Labs will be based on the Glencoe Physical Science Lab Manual and is recommended for students to complete labs and lab reports (to be evaluated by the parent). We recommend students register for the full semester (ideally year), but students can also register for individual labs. All lab costs are included in registration fees. Lab enrollment is limited to 12 students.

Instructor: Candra Eden, BSc

Location: STEM Lab (suite 21)

\$275/semester OR \$25/lab

10% off sibling discount available

Register for full semester or individual labs.

LAB SCHEDULE:

FOOD CALORIMETRY - September 15

Today, we learn how "calories" in food are a measure of energy contained in the things we eat, and calculate the amount of energy in a variety of food samples by burning them.

WAVES - September 22

Students study how energy moves through waves as we experiment with periodic motion, properties of waves and oscillations of springs.

SOUND WAVES AND PITCH - September 29

We study how sound is produced and transmitted by vibrations of molecules and explore the relationship between pitch and frequency of sound waves.

LIGHT WAVELENGTHS - October 6

Light consists of a spectrum of wavelengths, and students explore how these wavelengths can be separated and visualized as colors.

REFLECTION OF LIGHT - October 20

Students observe how light travels in straight lines but is reflected as it strikes a surface. We conduct an experiment to measure the angles of incidence and reflection.

MAGNIFICATION - October 27

Kids learn how convex lenses refract light to magnify objects as they experiment with a variety of lenses to investigate magnifying power and focal length.

WET CELL BATTERY - November 3

Students explore the chemical reactions that produce electricity inside batteries as we construct a wet cell battery and measure the current that is produced.

SIMPLE CIRCUITS – November 10

Series and parallel circuits are constructed as students learn the components of a simple circuit and how they function to conduct electricity.

ELECTROPLATING – November 17

We use electricity and chemistry to coat one metal onto the surface of another metal as we learn the science of copper-plating coins.

MAGNETIC FIELDS - December 1

Students explore interactions of magnets and their magnetic fields, and compare the magnetic fields and strengths of different types of magnets.

ELECTROMAGNETS - December 8

In today's lab, we experiment with electromagnet design to test the strength of the magnetic fields and the factors that affect its strength.

SOLAR ENERGY - December 15

We study solar energy and how solar cells work to convert radiant energy into electrical energy.

