



HIGH SCHOOL BIOLOGY LABS

Fridays, September 17-December 17 (no class Oct 15, Nov 26; 12 weeks)

11:30am-1:00pm

Ages 14+

In our High School Biology Labs, students investigate the fundamentals of life from cells and biological processes (fall semester) to invertebrate and vertebrate anatomy (spring semester). Students learn laboratory techniques and perform hands-on science experiments commonly required in many high school biology curricula. A brief review of relevant material starts each lab, followed by a lab period which includes lab preparation, experimentation and clean-up. Students work semi-independently to conduct each lab, and have the option to complete reports for each investigation (to be evaluated by the parent). All lab costs are included in registration fees.

Instructor: Coral Vega, MEd

Location: STEM Lab (suite 21)

Course fee: \$275 OR \$25/lab

Early registration (10% off) through August 6

10% sibling discount beginning August 7

Register for full semester or individual labs.

LAB SCHEDULE:

SCIENTIFIC METHOD AND METRIC SYSTEM - Friday, September 17

We review the scientific method how to properly use scientific tools to measure mass, volume, distance, and temperature using the metric system.

CELL STRUCTURE AND FUNCTION - Friday, September 24

In this lab, we review microscopy techniques and biological illustration as we examine animal and plant cells under microscope to describe their structural differences and organelle distribution and function.

DIFFUSION AND OSMOSIS - Friday, October 1

We conduct experiments with chicken eggs and plant cells to evaluate the processes of diffusion and osmosis, and the importance of passive transport to cell structure and function.

BLOOD TYPING - Friday, October 8

Students study blood types and how blood is characterized, learn how antibodies are used to determine blood antigens, and conduct a blood type analysis on synthetic blood.

PHOTOSYNTHESIS - Friday, October 22

We study chemistry and biology of photosynthesis as we examine variables that alter the rate of the photosynthetic reaction, and review where this process occurs within plants.

ENZYME LAB - Friday, October 29

Students experiment with reaction rates as we learn about the enzyme, catalase, its function within cells and its interaction with hydrogen peroxide.

STRUCTURE AND FUNCTION OF DNA - Friday, November 5

We review the basics of DNA, including its structure and function, create a model of a DNA strand and extract DNA from an octoploid organism following a scientific protocol.

MITOSIS AND MEIOSIS LAB - Friday, November 12

In lab today, we model the processes of mitosis and meiosis to study how DNA replication is incorporated into the cell cycle, and visualize each stage of mitosis in cells using microscopy.

HEREDITY - Friday, November 19

Students use a Punnett square card game to investigate how alleles are inherited and to study the behavior of dominant and recessive genes.

GENOTYPES AND PHENOTYPES - Friday, December 3

This week, students investigate genotypes and phenotypes to learn how genetics influences physical traits, and how natural selection acts on phenotypes of individuals.

EVOLUTION LAB - Friday, December 10

We investigate factors that influence the frequency of alleles in a population, and how populations evolve to become distinct species.

BACTERIAL INVESTIGATIONS - Friday, December 17

We study microbes in this lab as we classify bacteria by cell and colony characteristics, learn protocols for bacterial culturing and Gram staining, and design a proper microbial experiment.