

# VolsTeach/CEEMS Instructional Materials Library

## General Science Inventory and Item Descriptions

### AP Physics Lab #4: Impulse/Momentum

In this experiment, a ball rolled horizontally off a table allows students to measure its launch velocity and reinforces the idea that horizontal velocity remains constant, while the vertical velocity increases. The kit includes a curved ramp, steel and wooden balls, plumb line, C-clamp, golf ball, stopwatch, calipers and a catch cup. Required but not included are a meter stick and a photo gate system.



Quantity: **10 kits**

### AP Physics Lab #12: Simple Harmonic Motion

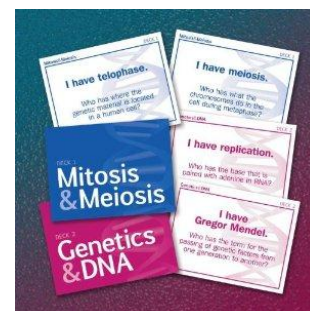
Challenge your students to create a video documentary of a two-part experiment in which they will determine the spring constant of a spring by measuring the period of a mass-spring system. They will then verify the results by measuring the restoring force of the spring. The kit includes a sturdy spring, pendulum clamp, support stand and a C-clamp. Required but not included are a video camera and hooked masses.



Quantity: **10 kits**

### Cell Division and Genetics Challenge

Includes two fun, fast-paced games that help students explore and review the concepts of mitosis, meiosis, genetics and DNA. These games use the Round Robin I have, Who has game style and are a race against the clock, as the entire class works together to understand the science that occurs in these cellular activities.



Quantity: **1 set**

### Cell Lesson Replacement Kit

A series of VolsTeach Student generated materials including displays, transparencies, and worksheets intended to use to teach the concepts of Cell division and structure of various cell types.

Quantity: **1 box**

## Chemistry of Nutrients Kit

Students construct models of carbohydrates, fats, and proteins. Complete instructions are provided for building and comparing the structures of these nutrients. These models aid in understanding digestion and synthesis.

Quantity: **1 kit of 12 model sets**



## Density Ball Set (12 pieces, drilled)

Used for comparing the densities of various substances.

Quantity: **1 set of 12**



## Density Cube Set

Used for comparing the densities of various substances.

Quantity: **1 set**



## Dicot Flower Model

Illustrates the processes of pollination and fertilization. Separates into seven parts. As your students explore this greatly enlarged model, they will discover the arrangement of floral components, and the reproductive function of flowers.

Quantity: **1**



## DNA Structure and Function Kit

This interactive kit contains enough molecule and bond pieces for students to construct a DNA molecule with 30 nucleotides (15 base pairs). Students explore the structure of DNA, the Double Helix, and the process of mutations.

Quantity: **1 kit**



## EcoZone System

With three interconnected chambers, students can model the interaction between three different ecosystems. Choose the traditional terrestrial, aquatic, and decomposition arrangement or create unique biomes to model and measure. Decouple the system for isolated investigations. Works well with many of the LabQuest probes.

Quantity: 1



## Force Table Kits

This complete force table kit allows students to experiment with multiple forces, easily visualizing and measuring each component force.

Quantity: 4 kits



## FOSS Kits

The Full Option Science System springs from a philosophy of learning at the Lawrence Hall of Science that has guided the development of successful active-learning science curricula. Teachers and students do science together when they open the FOSS kits, engaging in enduring experiences that lead to deeper understanding of the natural world. FOSS kits available include:



### 1. Physics of Sound:

The Physics of Sound module consists of four sequential investigations, each designed to expose a specific set of concepts. Students learn to discriminate between sounds generated by dropped objects, how sounds can be made louder or softer and higher or lower, how sounds travel through a variety of materials, and how sounds get from a source to a receiver.

### 2. Ideas and Inventions:

The Ideas and Inventions module consists of four sequential investigations that promote student creativity and inventiveness. Each investigation provides valuable science content while introducing a conventional technique for revealing the unseen.

### 3. Variables:

The Variables Module has four investigations that help students discover relationships through controlled experimentation. Students will fling, float, fly, and flip objects as they discover relationships in each investigation.

#### 4. Earth Materials:

The Earth Materials module consists of four sequential investigations dealing with observable characteristics of solid materials from the earth—rocks and minerals. The focus is on taking materials apart to find what they are made of and putting materials together to better understand their properties.

#### Globes

12 inch globes on rotating stands for desktop display. Can be used for science experiments showing how the angle of the sun's rays affect the surface temperature of the earth.

Quantity: 4



#### Gyroscope

This large scale gyroscope demonstrates gyroscopic movement and an axil's tendency to resist changing directions.

Quantity: 1



#### Hooked Weight Set (9 pieces)

When you need weights that do more than sit around, this black enamel weight set features hooks for easy use in a range of experiments. Set includes one each of 10-, 50-, 100-, 500-, and 1,000-gram weights, as well as two each of 20- and 200-gram weights.

Quantity: 4 sets



#### Human Genetic Traits Set

For a class of 30 students. The expression of several genetic traits of the human body is studied including PTC paper taste, tongue roll, and mid-digit hair. Family and community studies are also possible. With instructions.

Quantity: 1 kit



## Mass Set-Square (Stacking)

Excellent for teaching weighing concepts, the set of square shapes is molded from durable plastic with recesses so the masses are stackable. They are also color coded to correspond with the value of each mass. The weight is molded into the top of each piece.

Quantity: **1 full set** (\*inventory as separate yellow, blue, and red sets\*)



## Meiosis 3D Chart

Help explain individual human characteristics and genetic differences. Visualization and understanding of meiotic cell division are promoted through enlarged views of chromosomes, cytoplasm and chromatic and polar bodies. Display comes with accompanying instructional materials.

Quantity: **1**



## Meiosis Model

Durable plastic model set used to demonstrate meiosis.

Quantity: **1**



## Modeling Mitosis and Meiosis Kit

Enhance your students' understanding of mitosis, chromosome replication, meiosis, and genetic inheritance with this kit. These kits help your students gain a concrete understanding of the form and function of chromosomes. Each model chromosome can be detached into individual chromatids that have multiple locations for placing alleles.

Quantity: **1 kit**



## Monohybrid Corn (Black and Yellow)

Used in the “Monohybrid Genetics with Corn Kit” (below).

Quantity: **16 ears**

## **Monohybrid Genetics with Corn Kit**

Requires little or no prior knowledge. For up to 32 students working in pairs. This is an introductory genetics activity for a beginning high school or middle school biology course. Students study the inheritance of grain color using ears of corn. Each grain is the F<sub>2</sub> of a cross between a homozygous red corn and a homozygous white corn. Covers the basics of Mendelian genetics including the inheritance of a single pair of alleles, one of which is dominant and the other recessive. Students score the phenotypes of the F<sub>2</sub> and compare their data to their predictions.



Quantity: 1

## **Moment of Inertia Demonstrator**

Wooden meter stick with two wooden blocks clamped to it. By moving the blocks to different locations on the meter stick and spinning it, students can see how much force is required depending on the location of the blocks.

Quantity: 1



## **Optical Bench (Meter Stick and Accessories)**

The meter stick optical bench is a set of optical pars for demonstrating image formation by lenses and mirrors and for verifying the thin lens formula for locating images. Includes all of the parts needed except the mirrors and lenses, which are inventoried separately.

Quantity: 10 sets (1 meter stick and 1 accessory box each)



## **Plant and Animal Cell Model**

Model has most basic parts of the cell illustrated and labeled. More firmly represents a plant cell, though could be used as either.

Quantity: 1

## Pop – It Beads

Small interlocking beads used to demonstrate the process of DNA replication. Students use the beads to build color coded models of DNA which are then used as a hands-on demonstration of DNA replication.

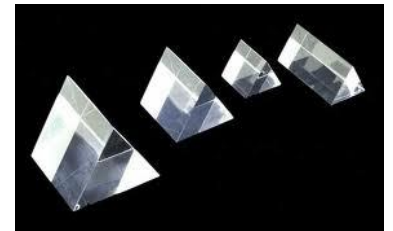
Quantity: **1 set**



## Prisms

We have a multitude of prisms available in the library ranging in shape and material (crystal, glass, acrylic, etc.). These can be used for a variety of lessons demonstrating the characteristics of light at any age level.

Quantity: **several**



## Pulleys in Motion Class Kit

Versatile classroom pulley set designed to teach the mechanical principles of pulleys to a whole class. The focus of the set is to provide hands-on activities that are easy to understand as well as offer both intellectual and practical experience for students. Contains reproducible student activity sheets and assessment ideas. Contains:

- **18 x Single Sheave Pulleys**
- **12 x Double Sheave Pulleys**
- **12 x Triple Sheave Pulleys**
- **20 x Pulley Chain Link**
- **6 x Spring Scales**

Quantity: **1 kit**



## RealBug: Life Cycle Displays

RealBug® displays are a great way to show the variations in life cycles between different organisms. Each display includes preserved examples of each step of the life cycle encased in resin. The library has life cycle displays for silkworms, frogs, house flies, and bean germination.

Quantity: **1 of each**



## Screen Sieve Set

The study of soil particles is sometimes called pedology. Soil is composed of a multitude of particles with various shapes and sizes. These characteristics allow it to be separated into size ranges by sieving. These Sieve Sets allow students to separate soil pedons/particulates by their shapes and sizes for further observations.



Quantity: **2 kits**

## Seed Germination Model

Model demonstrates the germination of a common bean seed in multiple stages on one board. A single 3D model that could be used as a beneficial tool for teaching plant reproduction and germination.

Quantity: **1**

## Slotted Mass Set

Set of brass slotted masses designed not to slip off of the weight hanger. Contains 12 slotted masses: 20 g (9), 10 g (1), and 5 g (2). Supplied with 50-g weight hanger approximately 3 1/2" H.



Quantity: **10 sets**

## Snap Circuits Pro-kit

Engineer over 500 exciting, useful electronic gadgets & play lively electronic games with Snap Circuits Pro! This kit features a collection of materials. The colorful and easy-to-follow format of the instruction manual makes circuit assembly stress-free and fun. All parts are mounted on plastic modules and snap together with ease.



Quantity: **1 kit**

## Spin Stand

Turn your students into human gyroscopes with our stable rotating platform. Now you can do the "skater's spin" without skates, rink or ice! This 16" (40 cm) wide black wooden disc has a nonslip surface and safely holds up to 220 pounds (100 kg). Intended for hands-on (or feet-on) use, it has very low friction with a weight of 100 pounds.



Quantity: **1**



## Spring Scale

Use to measure the force applied by given objects when placed on the hooked end of the spring. Measures in grams/xN. Various sizes available: 100g/1N, 500g/5N, and 2000g/20N.



Quantity: **1 of each**

## Typical Animal and Plant Cell Slide Set (5 slides/set)

Slides depicting cellular processes of various animal and plant cells.

Quantity: **2 sets of 5**

## Wood Gliders

Small balsa wood planes/gliders that students can construct. Can be used for physics of motion or flight lessons.



Quantity: **5 sets of 5**

## Other Items in the General Science Section

Alligator Clips (no wire)

Barometers (electronic versions in Technology)

Basketballs

Black Streak Plates

Blade Switch

Bouncy Ball

Buckets (Gallon and 12 Quart)

Cafeteria Trays

Call Bell

Clip Boards

Coffee/ Hot Water Dispenser

Colored Gel Packs

Compasses (16mm, 1 in, and 4 in models)

Craft Mats

Cutting Board (Glass)

D-Cell Modular Battery Holder

Desk lamps

Galena, Cleavable

Glass Mirrors (100 mm) (Concave and Convex)

Golf balls

Incandescent Flashlight

Iron Filings

Launchers (Air pressure of Wooden)

Light Duty Spring Sets

Magnifiers

Metal Disks (1 3/8 in)

Measuring Tapes (multiple sizes)

Miniature Light Bulbs

Mirrors (multiple varieties)

Nails

Paint Brushes

Ping Pong Balls

Pitchers

Pizza Cutter

Plastic Cube

Plastic Ice Tray

Plastic Planters

Plastic Racecar Track

Plastic Turkey Baster

Pliers

Poppers

Porcelain Lamps

Racquet Balls

River Stones

Rolling Pins

Rope

Resistors (1KOhm, 1/4 Watt, 5% tolerance)

Slinky (Metal and Plastic)

Soccer Balls

Steel Bolts

Squeegee

Tennis Balls

Tinker Toy Tins (2)

Toy Cars

Wires

Wire Cutters

Zinc Electrodes

3D Glasses

6" x 12" Aquarium, Glass