

OK, we're pretty rife with goodies at the Las Cruces Academy and I'll list them, at least categorically in some cases (I won't list all the types of electrical resistors, for example). You may end up accumulating a number of things listed, but not all of them. This is an eclectic collection. For yourself you might consider it a wish list, which could be more helpful if it were practical to cross-index each item with the different experiments. It's not practical, but you can suss where items are needed from each demo or experiment. In various cases I list the price, or the supplier (not always easy to find), and a comment as merited. I know I'm overlooking things, so I'll fill in later.

Household items

Sodium bicarbonate
Vinegar
Borax
Ammonia (ammonium hydroxide solution)
Bleach (sodium hypochlorite solution)
Table salt
Sugar
Paper towels, lots
Plastic bottles and bins
Wax
Matches
Candles
Wood pieces for supports
"Junk" repurposed – e.g., steel rod for experiment on heat diffusion; bottle caps, for same; cardboard, plastic sheets
Aluminum foil and pieces of bulk aluminum (sheet, rod, ...)
Magnetite sand – easy to find in our arid area, for experiments and demos on magnetism
Hydrogen peroxide 3% or more active 20% from a hair salon supply store
Vegetable oil
Meat tenderizer, such as papain or pepsin
Old spray bottles, small, as for lens cleaner, for flame color demos/experiments
Ear of corn, for amylase enzyme experiment
Cornstarch, similarly, and for a fire demo (carefull!)
Sodium bicarbonate (baking soda)
Fine sand for bouncing along the Chladni plate

Common lab items

Lots of chemical labware

Plastic pails to hold materials to control acid or base spills (lime for acids, citric acid for bases)
Fire extinguisher at known location – know how to aim it properly at base of fire)
Beakers, graduated cylinders, flasks (Erlenmeyer, vacuum, volumetric) in small to large sizes
Some glass burettes, 50 ml
Ring stands and clamps for glassware
Test tubes and test tube rack, small; test tube clamp for handling tests tubes
Test tube and burette cleaning brushes
Small spatula for transferring small samples, as into test tubes
Funnels, incl. filter funnel; filter paper to fit it
Mortar and pestle for grinding samples
Stirring hotplate (\$70; very handy) and Teflon stirbars
Small-capacity electronic scales (or true balances – pricey)

Tygon tubing in various sizes
Teflon-coated stir bars
PPE – lab coats, vinyl gloves, goggles; thermally insulating gloves for hot items
pH meter (\$80; very handy; good source is Test Equipment Depot)
Small electronic “balance” to 10 g and to 100g; really a magnetic scale
Weighing paper and filter paper
Graduated cylinders
Pipettes – go for precision adjustable pipettors, 0.1 to 5 ml (\$140 + supply of tips; Carolina Biological Supply)
Small blender (don’t use your home kitchen blender) (\$22 at Target)
Reagents – we have about 120 but a notably smaller selection will do; check Carolina Biol. Supply
Acids (sulfuric, nitric, hydrochloric – some very expensive to ship), bases (NaOH, KOH)
Solvents and such: denatured ethanol, glycerol (glycerin), methanol (only from chemical supply house)
Oxidizers – potassium nitrate, potassium dichromate, potassium permanganate (stunning color and optical density related to special electronic structure)
Reducing agents – ascorbic acid (vitamin C pills have obnoxious binder)
Dyes – methylene blue, phenolphthalein, crystal violet (hazardous)
Metal salts – potassium iodide, copper sulfate, silver nitrate, strontium nitrate (for flame colors)... and I like rubidium chloride, cesium chloride
...and for plant hydroponics: zinc sulfate, sodium molybdate, Versene (ferric EDTA; from a plant nursery), calcium nitrate, magnesium sulfate, sodium phosphate dibasic, cobalt sulfate
Zeolite for absorbing water from reagents
Other – luminol for chemoluminescent glow, sulfur powder
pH buffer solutions for calibrating pH meters
Graphite welding rods for electrolysis experiments; scrape off the copper at the top
Magnesium ribbon for flame demo (vision hazard!)

Between chemistry and geology

Mineral samples
Metals and semimetals – Ga, In, Sb, Sn, Cu, Bi, Zn, Si – supplier is Totalelement.com!
Other elements – carbon as charcoal or graphite (purer)

Many electrical and electronic supplies and pieces of equipment

Very good and economical suppliers include DigiKey and Newark; hobbyist stuff at Jameco
Electronics learning kits - handy
Passive components – resistors (1/8 W, and a few power resistors), capacitors (ceramic, polymer, electrolytic), inductors, diodes (incl. Zener)
Discrete active components – transistors (simple NPN, PNP; MOSFET)
Integrated circuit chips (NAND gates, shift registers, latches, op amps (really handy)
555 timers, photodiodes, LEDs (small and power)
Tools, incl. soldering irons, desoldering pads, needle-nose pliers, wirestrippers, side-cutters
Wire-wrap wrapper (you don’t need to do wire-wrap but it’s good for dense circuits)
Magnet wire (very thin insulation)
Multimeter(s)
Project boards (breadboards), powered or not
Much insulated wire in various gauges, esp. 30 (wire-wrap), 26, 22, 18 (lamp cord, power)
Selection of connectors
Power adaptors, esp. regulated 5V and 12V
Heat gun and heat-shrink tubing – useful in other projects, too

Raspberry Pi or Arduino computer – small, cheap, and with fantastic features for sensing and control that you won't find handily anywhere else. Look these up on the Web, including their accessories such as USB hubs, breakout boards, wireless card, and ribbon cables
Use with old computer monitor (get an adapter, HDMI male to VGA male; \$25) and keyboard, mouse

Optical goods

Selection of lenses, and holders (or make your own)
Color filters and polarizing filters
Welding glass for viewing solar eclipses
Simple prisms
Fresnel lens sheet
Liquid crystal sample sheets
(We also have hot mirrors and heat absorbing glass, not widely useful)
Handheld spectrosopes (just black cases with a diffraction grating and a slit; inexpensive)
Loose diffraction grating slides (inexpensive; great for patterns, esp. wit laser pointers)
Laser pointers in colors. We have standard red plus green (eye-hazardous) and violet (great for fluorescence studies)
Light sources – LED lamps (we also have them in photographic light boxes – B&H PhotoVideo)
An LED RGB color mixer I designed and made – I can send plans
Optical illusion cards; color-blindness test cards
Small (or large!) solar panels (photovoltaic)
Dissecting microscope (\$180)
Compound microscope (\$100-300)

Mechanics, heat, sound, magnetism, and more

Newton's cradle (ball bearings on monofilament to show momentum transfer) (\$20)
Springs – extension and compression, several sizes
Gyroscopes (inexpensive)
Pressure gauge with fitting for tubing
Magnets – esp. rare-earth buttons in several diameters
Tuning fork(s)
Pulleys – from hardware store
Sheet metal (2' square for Chladni plate is worth it – ca. \$15 at hardware store)
Thermocouple thermometer, e.g., Omega (\$90; really useful), and thermocouple wire and connectors
Butane torch
Insulating pad for hot experiments
Copper tube, $\frac{3}{4}$ " ID by 18" length, for great induced-current demo/expt. (\$6) – at hardware store
Tweakers high-impedance speakers to use on solid surfaces, esp. good for Chladni plate
Dial pressure gauge with tubing fitting, for vacuum system and other cases
Plasma ball (\$36) – dazzling display that can be used in experiments
Ferrofluid for amazing display of symmetry-breaking with strong magnets (\$26)
Big ball bearings for demos/experiments in gravity, rolling motion, etc.

Physics specialty – model rockets, from Estes or local hobby store; excellent for demo beyond gee-whiz and for experiment as we did measuring altitude attained with rocket engines of different impulse

Biological items – in addition to general chemical labware and microscopes

Most of these are from Carolina Biological Supply
Petri dishes
Bacterial culture flasks
Parafilm for sealing Petri dishes (\$28)

Pressure cooker, in lieu of expensive autoclave
Glucose test meter (\$40 – for enzyme assays)
Dissecting equipment, incl. scalpels, tweezers
Microbial cultures, such as cyanobacteria – from Carolina Biological Supply
Specialty item: Wisconsin Fast Plants genetics set (\$116) – ditto
Microscope digital camera fitting into eyepiece (\$95)

General use items

Many fasteners – nails, brads, screws, bolts, washers, grommets; duct tape
Hand and power tools to make our/your own devices such as optical system mounts
Saw, hacksaw, hammer, mallet, side-cutters
Electric drill, ¼" or 3/8" chuck; drill bits
Pliers, vise-grips, flat-blade and Phillips screwdrivers, awl
Level, tape measures (50 meter one, for outdoor experiments as in rocketry)
Terrarium for containing experiments

On demand items("volatile")

Dry ice – from your supermarket, often (about \$3/lb)
Liquid nitrogen – from a welding supply place; you'll need a Dewar flask to hold it (oof, \$300)

Useful much of the time

Deionized or reverse-osmosis water, to mix pure solutions. Buy by the liter or install an RO/DI system (\$358; we ran into serious plumbing problems in a very tight space, but one should work for you)

Specialized and/or rather expensive, at the LCA

Distillation kit, including electrical heating tape (\$93) → Not in a post currently
Boiling chips (marble, or clean rough-surface rock)
Spectrophotometer (\$1500; inherited from university career; used in many good chemistry expts.)
Spectroradiometer – rarely used, but cute (\$3000; also inherited) → Not yet in a post
Vacuum system – pump, tubing, large bell jar with base (\$400; for intriguing demos & experiments)
FLIR One Pro thermal imager for an Android phone (\$370; great spatial resolution of temperatures)
Geiger counter (\$110 as kit + 90 uranium ore sample)
Temperature controller I made (equivalent store-bought ca. \$250); add submersible water pump (\$40)
Autotransformer (can use big isolated transformer) (\$600)
Plastic replica of human skeleton, full-sized (\$465) – from Carolina Biological Supply
Sling psychrometer for measuring relative humidity a very physical way (\$83)
Casio Exilim ZR-100 camera that can film 1000 frames per second at low resolution (discontinued; search for other point-and-shoot cameras that hit at least 240 fps; GoPro Hero9 a \$350 can do this)