

Experiment Supplies

Many of the experiments in this course require a kit that contains some specialized equipment and chemicals, which are listed below:

Contents of the Experiment Kit

Safety goggles	Watch glass
Funnel	Filter paper
Two 50-mL graduated cylinders	Litmus paper
Two medicine droppers	Alcohol burner
Mass scale (accurate to 0.1 g)	Thermometer
250-mL beaker	Stirring rod
100-mL beaker	Sodium hydroxide (40 g)
Four test tubes	Strontium chloride (20 g)
	Cupric sulfate (40 g)

Please note that the alcohol burner requires some setup, and it also requires denatured alcohol, which can be purchased at any hardware store. Please read the instructions included in the alcohol burner before you use it for the first time.

If you cannot purchase the kit, you can still do 27 of the experiments. Appendix C tells you what experiments can be done and how to adjust them so that you don't need the kit.

Other Materials for the Experiments

In addition to the kit, there are some readily available things you will need in order to do the experiments. Most of them are items you have around the house, but there are some you may have to purchase ahead of time. They are printed in bold in the chapter-by-chapter list given below:

Chapter 1:

- A softcover book
- A ruler that uses both centimeters and inches (or two different rulers, one that uses centimeters and one that uses inches)
- Table salt in a salt shaker
- A small cylindrical container, like a pill bottle or the jars in which spices are sold (It needs to be able to hold water.)
- Water and a sink
- Cooking oil

Chapter 2:

- A $\frac{1}{8}$ measuring teaspoon
- Table salt
- Chervil (This is an herb. Any leafy herb, such as chopped parsley, will work. It can be dried or fresh.)
- Water and a sink
- Milk
- Vinegar
- **Hydrogen peroxide (sold in drugstores for disinfecting wounds)**
- **Active dry yeast (sold in supermarkets for baking)**
- A $\frac{1}{4}$ measuring teaspoon
- Matches or a lighter
- Toothpicks (You need only one, but you might want a spare or two.)

Chapter 3:

- A microwave oven
- Two small glasses, like juice glasses
- A glass casserole dish that is large but fits in the microwave
- 4 eggs
- A whisk
- A bowl
- A ruler
- Table salt
- A small ceramic (or other hard material) plate, like the saucer for a coffee cup
- **Denatured alcohol** (You can get this in any hardware store that sells paint. This is the same alcohol you need for your alcohol lamp.)
- A ¼ measuring teaspoon
- A sink in a room that can be dimmed
- A dish towel
- Something to ignite the alcohol, such as long matches or a long lighter

Chapter 4:

- A feather (It can be one you found outside or one purchased from a craft store. If you are using one you found, please note that many bird feathers, like eagle and hawk feathers, are actually illegal to have, even if you just pick them up from the ground. Duck and goose feathers are legal. You want a feather that is at least partially flat. It can't be all fuzzy. Also, the lighter the color, the better. There is a picture on page 97 that shows some examples of the kinds of feathers that will work.)
- A lamp with a bare bulb (Remove the shade if there is one.)
- An index card
- A sharp knife
- A ruler
- Aluminum foil
- Charcoal (you need only four briquettes)
- Two paper plates
- A plastic bag that is about the size of a large sandwich bag (A Ziploc freezer bag is ideal.)
- A hammer
- Two ice cubes of similar size (The closer to exactly the same size, the better.)
- A 9-volt battery
- A clear plastic cup
- Two metal thumbtacks
- **Distilled water** (You can get this at any large grocery store. It is sold where the drinking water is sold, but be sure to get a bottle that says "distilled water." You will use this from time-to-time in the course, so go ahead and get half a gallon, or two liters).
- Table salt
- Sugar
- A measuring tablespoon

Chapter 5:

- **A balloon**
- Dish soap
- Water
- Vegetable oil
- Olive oil (or any other oil that is different from the vegetable oil)
- A sink
- Two spoons
- A magnifying glass (optional)

Chapter 6:

- **Denatured alcohol**
- A sheet of paper

- Water
- Blue food coloring (It must be liquid, not a gel.)
- Three tall glasses of roughly the same size
- A small pan for boiling water (one with a pouring spout would be ideal)
- A stove
- A spoon
- Ice

Chapter 7:

- Aluminum foil (You won't need this if your cupric sulfate is powdered or in the form of tiny crystals.)
- A hammer (You won't need this if your cupric sulfate is powdered or in the form of tiny crystals.)
- Water
- Three ½-liter bottles, like the kind water comes in
- Baking soda

Chapter 8:

- Baking soda
- A teaspoon

Chapter 9:

- A can or bottle of soda pop that has been in the refrigerator and has not been opened.
- Three small glasses, like juice glasses
- Table salt
- Water
- Ice
- A sink
- **Denatured alcohol**
- A small ceramic (or other hard material) plate, like the saucer for a coffee cup (It cannot be paper or plastic, as you will burn a small volume of liquid on it.)

Chapter 10:

- **A small jar, like a baby food jar** (Be sure any labels on the jar are removed so it is very easy to see inside the jar.)

- **A galvanized nail** (It should look silvery, not like it is made of iron.)
- Some thread
- A ¼ measuring teaspoon
- **Some steel wool** (you don't need much)
- A 9-volt battery
- A metal pie pan
- A stove

- A teaspoon
- Vinegar
- A turkey baster
- A piece of waxed paper
- **Three round balloons** (7-12 inch diameter round balloons work best)
- **An Alka-Seltzer tablet** (Any effervescent tablet will do.)

- Vinegar

- A room that can be made fairly dark and has a sink
- A towel
- A lighter or matches
- Sugar
- **Three Styrofoam or paper cups**
- A marker or crayon to mark the cups
- A freezer with room for the three cups
- A thermometer that reads to a few degrees below 0 °C

- A funnel whose large opening is bigger than the jar's
- **Some Play-Doh or modeling clay**

- **A small balloon** (It needs to fit inside the jar when it is just barely inflated.)
- A wall mirror
- A small glass, like a juice glass (It needs to be made of glass, because you need to see inside.)
- A small plate or saucer that will cover the small glass
- A pot for boiling water
- A stove
- **A round balloon** (A 7-12 inch diameter works best)
- A freezer
- A towel or paper towels
- Tape (Masking tape is best, because you are using it to mark the water level in a glass.)
- **A canning jar** (It needs to be a transparent jar that can withstand big temperature changes and has an airtight lid.)
- A plastic bag

Chapter 11:

- A bar of soap (It doesn't have to be a new bar.)
- Liquid hand soap (optional)
- Orange juice or lemon juice
- An apple
- Soda pop
- Bleach
- A glass cleaner (the kind you use to clean windows)
- A tub and tile cleaner
- Baking soda

Chapter 12:

- **Steel wool**
- White vinegar
- Aluminum foil
- **Three Styrofoam or paper cups**
- Scissors
- Water
- Table salt

- Ice
- Water
- A microwave oven
- A few small pebbles
- Pot holders or oven mitts
- **Hydrogen peroxide**
- **Active dry yeast**
- A ½-liter plastic bottle, like the kind in which water is sold
- **A round balloon** (The diameter needs to be 7-12 inches.)
- A turkey baster
- Some string
- Scissors
- A ruler
- A weather report that tells you the atmospheric pressure.

- Tap water
- Milk
- Laundry detergent (liquid or solid)
- Yogurt (optional)
- A sink
- A small glass, like a juice glass
- A knife
- Red (sometimes called “purple”) cabbage
- White vinegar
- **Distilled water**

- A paper towel
- A spoon
- A shiny penny (or any copper coin)
- A battery (any of the smaller conventional sizes, such as AAA, AA, or C)
- A ½ measuring teaspoon

Chapter 13:

- A funnel
- Water
- **Two identical balloons** (7-12 inch diameter round balloons work best.)
- A candle that can stand on its own or is in a holder
- Something with which you can light the candle
- A sink
- A metal object, such as a washer or nut (It should have a mass of at least 5 grams. Ideally, the mass will be 10-15 grams.)
- Cardboard
- Kitchen tongs
- Scissors
- **Four Styrofoam cups**
- A ½-cup measuring cup
- Ice
- A large bowl
- A spoon for stirring
- A strainer
- A pan in which to boil water
- A stove
- Vinegar
- Baking soda
- A ¼-cup measuring cup
- A measuring teaspoon

Chapter 14:

- Waxed paper
- A knife
- Vinegar
- A rubber band

Chapter 15:

- Vinegar
- **Two antacid tablets** (TUMS or some other antacid whose active ingredient is calcium carbonate.)
- Water
- A knife
- A spoon
- Aluminum foil
- **Hydrogen peroxide**
- **Active dry yeast**

Chapter 16:

- **Three Styrofoam cups**
- A pen or sharpened pencil
- A knife
- A sink with a faucet
- **Ammonia**
- Water
- Two small glasses, like juice glasses
- White vinegar
- Two small glasses, like juice glasses
- Red (sometimes called “purple”) cabbage
- Ice
- A pot for boiling
- A stove