APPENDIX C
A COMPLETE LIST OF LAB SUPPLIES

Items in boldface, blue type are found in the laboratory equipment set that is sold with the course. The other materials are available at supermarkets, hardware stores, or drug stores.

Module #1

- **Safety goggles**
- A meterstick (A yardstick will work as well; a 12-inch ruler is not long enough.)
- Two 8-inch or larger balloons
- Two pieces of string long enough to tie the balloons to the meterstick
- Tape
- A tall glass
- A paper towel
- A sink full of water
- Book (not oversized)
- Metric/English ruler or rulers
- Water
- Vegetable oil
- **Graduated cylinder** or measuring cups
- Maple syrup (Natural syrup does not work as well as something like Mrs. Butterworth's®.)
- **Mass scale**

Module #2

- **Safety goggles**
- **Thermometer**
- **250 mL beaker** (A small glass container will do, but make sure it is safe for boiling water.)
- Water (preferably distilled water, which can be purchased at any supermarket)
- Ice (preferably crushed)
- **Alcohol burner** or something like a hot plate or stove
- **Mass scale**
- Two Styrofoam cups
- A chunk of metal that has mass of at least 30 grams (a lead sinker or a very large steel nut, for example)
- Boiling water (either in a pot or a beaker)
- Kitchen tongs

Module #3

- **Safety goggles**
- **100-mL beaker** (A juice glass can be used instead.)
- **250-mL beaker** (A juice glass can be used instead.)
- **Watch glass** (A small saucer can be used instead. It must cover the mouth of the 100-mL beaker or juice glass listed above.)
- Teaspoon
- Lye (This is commonly sold in supermarkets with the drain cleaners. A popular brand is Red Devil® Lye. If you cannot find lye, any *powdered* drain cleaner ought to work.)
- White vinegar
- Several leaves of red (often called "purple") cabbage
- Water
- Small pot for boiling water
- Measuring cup
- Stove
- **Mass scale**
- **Stirring rod** (A spoon will work.)
- Rubber cleaning gloves
- Distilled water (available at grocery stores - half a gallon is plenty)
- Baking soda
- Sugar
- 2 pieces of wire (preferably insulated), each of which is at least 15 cm long
- Scissors or wire cutters to strip insulation from wire (if it is insulated)
- Tape (preferably black electrical tape)
- 9-volt battery (***DO NOT*** use an electrical outlet in place of the battery. The energy contained in a wall socket can easily kill you!)

Module #4

- **Safety goggles**
- **Two beakers - 100 mL and 250 mL** (or two glasses - one large and one small)
- Sand (Kitty litter is an acceptable substitute, but don't use the kind that clumps.)
- Table salt
- **Funnel**
- Water
- **Filter paper** (You can cut a circle out of the bottom of a coffee-maker filter.)
- Stirring rod (or small spoon)
- Teaspoon
- Heat source such as a stove or **alcohol burner**
- **Plastic graduated cylinder** (A rain gauge will work as well. A measuring cup may work, but if you have a frost-free freezer, the opening of whatever you use should be very small.)
- Egg in its shell
- Toilet bowl cleaner (The list of ingredients must include hydrochloric acid or hydrogen chloride. The Works® was the brand used when this experiment was tested. You can use vinegar if you cannot find a proper toilet bowl cleaner, but the experiment will have to sit overnight in order for it to work. However, if you *do* use vinegar, the egg will be *much* more interesting to observe!)

- Tall glass
- Spoon
- Rubber cleaning gloves
- Rectangular metal can with a lid (Turpentine and paint thinner are usually sold in such cans. The can must be empty and thoroughly rinsed out.)
- Hot pads
- Two glass canning jars or peanut butter jars, both the same size
- Food coloring (any color)
- A pan and stove to boil water

Module #5

- **Safety goggles**
- **Eyedropper**
- **Stirring rod** (or spoon)
- Water
- Large glass (at least 16 ounces)
- **Graduated cylinder** (Measuring cups and measuring spoons can be used, but they will be less precise.)
- Dishwashing liquid (It must be the kind used for washing dishes by hand, NOT the kind used in automatic dishwashers. Preferably, the brand should be Joy® or Sunlight®.)
- Large bowl (It should have a diameter larger than 10 inches but smaller than 12 inches. If you don't have a bowl in that size range, then use one larger than 12 inches; it will just make it a little harder to use the ruler.)
- Pepper
- Ruler

Module #6

- **Safety goggles**
- Baking soda
- Vinegar
- String or tape measure
- **Graduated cylinder** (or measuring cups and spoons)
- Ruler
- Round balloon
- Plastic 2-liter bottle (or other large bottle)
- **Mass scale**
- **Funnel** or butter knife (Read the experiment to see what is meant.)

Module #7

- **Safety goggles**
- Comb
- Aluminum foil
- Cellophane (Scotch®) tape
- Two plain white sheets of paper (There cannot be lines on them.)
- A bright red marker (A crayon will also work, but a marker is better.)

Module #8

There are no experiments in this module.

Module #9

- **Safety goggles**
- Glass of water
- Vegetable oil
- Styrofoam or paper cup
- Comb
- Pen
- **Two test tubes** (Thin glasses will work, but they must be transparent)
- Table salt

Module #10

- **Safety goggles**
- **Red litmus paper**
- **Blue litmus paper**
- Apple
- Orange juice or soda pop
- Toilet bowl cleaner (Both The Works® and Lime-Away® have been tested, but any toilet bowl cleaner designed to combat lime should work.)
- Bar soap (make sure it doesn't say "pH balanced")
- All-purpose cleaner (Windex® and 409® have been tested, but any spray cleaner not specifically designed for toilets should work.)
- Powdered drain unclogger (like Dran-O® or Red Devil® Lye) or scouring powder (like Comet®).
- **4 test tubes** (small cups will work)
- **Watch glass** (a small saucer will work)
- **Stirring rod**
- Rubber gloves (Gloves are recommended whenever you use powdered drain uncloggers and toilet bowl cleaners, because these chemicals are caustic.)
- **Eyedropper**
- **Mass scale**
- Distilled water (available at any grocery store)
- White sheet of paper (no lines)

- **Stirring rod** (or a small spoon)
- A few leaves of red cabbage (it must be red cabbage, not regular cabbage)
- **2 beakers** (If you don't have beakers, one should be a short, fat glass that is transparent, and the other can be a small pot to boil water in.)
- **Alcohol burner** or stove for heating
- **Graduated cylinder** (Measuring cups and spoons will work, but the experiment will be much harder.)
- Clear ammonia solution (This is sold with the cleaning supplies in most supermarkets. It must be clear. A colored solution will mess up the endpoint.)
- Clear vinegar (Once again, colored vinegar will mess up the endpoint.)

Module #11

- **Safety goggles**
- **250 mL beaker** (A short, fat glass or canning jar might work, but **be careful**. Glasses tend to crack when subjected to the temperature extremes of this experiment. If you don't have a beaker, you may want to just read this experiment, unless you aren't afraid of losing a glass or two.)
- **100 mL beaker** (Another short, fat glass or canning jar might work.)
- **Graduated cylinder** (A ¼ measuring cup will work.)
- **Alcohol burner** (A stove will work.)
- **Stirring rod** (A spoon will work.)
- **Thermometer**
- **Mass scale**
- **Filter paper** (You can cut circles out of the bottom of a coffee filter to make your own filter paper.)
- **Funnel**
- **Two beakers** (Two saucepans will work.)
- **Test tube** (A tall, thin glass will work, but it must fit easily in the saucepans.)
- Ice
- Cold soda pop (Pepsi®, Coke®, Sprite®, etc. It must be carbonated.)
- Lye (This is commonly sold in supermarkets with the drain cleaners. A popular brand is Red Devil® Lye. If you cannot find lye, any *powdered* drain cleaner ought to work.)
- Rubber gloves
- Water
- Sink
- Tablespoon

Module #12

- **Safety goggles**
- **Mass scale**
- Plastic 2-liter bottle
- Round balloon with an 8-inch diameter
- Vinegar
- Baking soda
- Seamstress' tape measure (A piece of string and a ruler will work as well.)
- **Thermometer**
- Weather report that contains the atmospheric (sometimes called barometric) pressure for the day (If you don't have this, don't worry. You can assume that the atmospheric pressure is 1.00 atm.)

Module #13

- **Safety goggles**
- Two Styrofoam coffee cups
- **Thermometer**
- Vinegar
- **Mass scale**
- Measuring tablespoon and ½ teaspoon
- Lye (This is commonly sold in supermarkets with the drain cleaners. A popular brand is Red Devil® Lye. If you cannot find lye, any *powdered* drain cleaner ought to work.)

Module #14

- **Safety goggles**
- Liquid toilet bowl cleaner (The Works® was used when this experiment was tested, but any liquid that contains hydrochloric acid or hydrogen chloride should work. Stay away from the thickened toilet bowl cleaners that cling, however.)
- Antacid tablets (TUMS® works best. In principle, any antacid tablet that has calcium carbonate as its main ingredient should work.)
- Sharp, nonserrated knife
- Spoon
- **Stirring rod** (Something thin enough to stir the contents of the test tubes.)
- **Four test tubes** (Small glass containers will work.)
- **Alcohol burner** (An oven burner will work.)
- **Large beaker** (A short, fat glass will work.)
- **Small beaker** (A short, fat glass will work. If you are not using test tubes, make sure that one of your glass containers fits into this.)
- Rubber gloves
- **Watch glass** (A small saucer that covers the beaker will do.)
- **Graduated cylinder** (A 1/8 measuring cup will work.)
- ¼ measuring teaspoon
- Hydrogen peroxide (available at supermarkets and drug stores)
- Baker's yeast (Any kind of bread yeast, even bread machine yeast, will do.)

Module #15

- **Safety goggles**
- Three plastic two-liter bottles (Plastic milk cartons will work as well.)
- Four small cups
- Two bowls that are taller than the small cups
- Serrated knife (like a steak knife)
- Small, Phillips-head screwdriver
- Water
- Person to help you
- Kitchen counter
- Towels
- **Two test tubes**
- **Two eyedroppers**
- **Two beakers**
- Two small cups
- Clear ammonia solution (This is sold with the cleaning supplies in most supermarkets. It must be clear. A colored solution will mess up the colors you are supposed to see.)
- White vinegar (It must be white. Colored vinegar will mess up the colors you are supposed to see.)
- **Alcohol burner** or stove
- Pot for boiling water on the stove
- Ice (preferably crushed)
- A few leaves of red cabbage (It must be red cabbage, not regular cabbage.)

Module #16

- **Safety goggles**
- Large bowl
- Blank notebook paper without lines
- Scissors
- Q-Tip or small paintbrush
- Lemon juice (This must be *real* lemon juice, either fresh or from concentrate.)
- Iodine solution (This is available in large drugstores. The pharmacy department within your supermarket will probably not have this and neither will a small corner drugstore. A major chain will have it, however. Please note that *iodide* will not work. Iodide, as you should know, is I^-, while iodine is I_2.)
- Water
- Measuring cups
- **Medicine dropper**
- **Stirring rod** (A **plastic** spoon or knife will work as well. Do not use any flatware around the iodine solution, as iodine will rust metal.)