TEXT/MATERIALS: Laboratory worksheets and POGIL handouts are available on the Blackboard website.

Lab Schedule: Tuesdays/Thursdays 9:30 am - 12:15 pm in Far. 207  
TA: Michael Thompson

REQUIRED EYE PROTECTION: Students must wear the approved goggles issued by the department at all times in the laboratory—NO EXCEPTIONS.

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<th>WEEK/DATE</th>
<th>EXPERIMENT</th>
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| 1. June 20th | CHECK-IN / SAFETY ORIENTATION  
Safety in the Laboratory; Glassware & Equipment/Data Representation and Recording |
| 2. June 25th | Significant Figures and Measurement of Density |
| June 27th | Paper Chromatography: Separation of Inks in Pens |
| 3. July 2nd | Classifying of Solid Substances |
| July 4th | NO LAB - JULY 4TH HOLIDAY |
| 4. July 9th | Molecular Models |
| July 11th | Water of Hydration |
| 5. July 16th | LAB MIDTERM EXAM |
| July 18th | Law of Multiple Proportions |
| 6. July 23rd | A Series of Copper Reactions |
| July 25th | Gravimetric Determination of Sulfate |
| 7. July 30th | Measurement of pH of Solutions |
| August 1st | Titration of Vinegar/CHECK OUT |
| 8. August 6th | LAB FINAL EXAM |

FAILURE TO CHECK OUT MAY RESULT IN A FAILING GRADE FOR THE ENTIRE SEMESTER.

Grading: The overall lab grade is a weighted average, and is calculated using the formula below:

\[
(\text{Lab average} \times 0.70) + (\text{Midterm Exam} \times 0.15) + (\text{Final Exam} \times 0.15) = \text{lab grade}
\]

Letter grades are assigned based on the overall lab grade compared to the following cutoffs:

\[
90\% = A; \quad 80\% = B; \quad 70\% = C; \quad 60\% = D; \quad <60\% = F
\]
LABORATORY DIRECTIONS AND COURSE OBJECTIVES

1. **APPROVED EYE PROTECTION IS REQUIRED IN THE LABORATORY AT ALL TIMES BY ILLINOIS LAW.** Shorts, skirts, and open-toe shoes or shoes without socks are *not* permitted (i.e., no bare skin below the waist). Shirts covering the entire torso and having sleeves are also required. Students *will not be permitted* in the laboratory without eye protection and proper clothing in place.

2. If you are injured in *any* way during the laboratory, immediately report it to your lab instructor.

3. The laboratory is to be conducted in a quiet and orderly manner.

4. Do your laboratory work and your report independently unless otherwise instructed. Laboratory questions should be directed to your laboratory instructor.

5. Use only designated chemicals. Read labels and follow directions carefully. Do *not* do unauthorized experiments.

6. (a) **USE AS LITTLE REAGENT AS NEEDED TO PERFORM YOUR EXPERIMENT.**

   (b) Avoid contamination of the reagents! Never return unused chemicals to the stock bottles, as this may cause other students’ experiments to suffer.

   (c) The reagent bottles should not be carried to your bench. Use clean test tubes or beakers for carrying liquids. Use beakers, watch glasses, or small squares of paper for carrying solids.

   (d) Pour the reagent solutions into your own containers, in order to avoid contamination of the stock solutions. Do not insert your own pipettes or medicine droppers into the reagent bottles.

   (e) Hold bottle stoppers in your hand to avoid picking up any impurities from the bench and thus contaminating the solution when the stopper is put back on the bottle.

   (f) Replace stopper or cap tightly to avoid evaporation or spillage.

7. Clean up and properly dispose of all spills—liquids or solids—*immediately*. This is especially important in and around the balances. Some corrosive chemicals may permanently damage equipment or laboratory fixtures.

8. Throw all chemicals to be discarded into the waste containers and record them on the waste inventory sheet. Wastepaper belongs in the wastebaskets. Broken glass should *only* be discarded in the glass containers.

9. At the close of each laboratory period, leave your glassware clean and dry. Wash and wipe off the bench top.

10. If you withdraw from the course before the end of the semester you must still check out of the laboratory, or your withdrawal cannot be completed. At the end of the semester, failure to check out during the assigned time may result in a *failing grade* for the lab.

**Course Objectives**

On completion of this course, students are expected:

1. To have learned how to write chemical formulas, name compounds, perform chemical calculations, make observations and record the data from those observations appropriately.

2. To be familiar with the behavior and properties of gases, liquids, solids, and aqueous solutions.

3. To have learned how to work safely in a chemistry laboratory.

4. To have learned how to manipulate scientific equipment and to carry out laboratory experiments.

**Course Grades**

Laboratory grades will be determined using a weighted average as follows:

\[
\text{Lab grade} = (\text{avg. on lab exercises x 0.70}) + (\text{lab midterm exam x 0.15}) + (\text{lab final exam x 0.15})
\]

Final grades will be assigned based on location of weighted average in the following distribution:

- A = 90%
- B = 80%
- C = 70%
- D = 60%
- F < 60%

(rev 8/96 WRM; 1/06 DSB/MJS; 7/08 DSB)