

Instructor: Dr. Bradley A. Bielski
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Introduction: Chemistry Lab 120 is designed to provide for those students majoring in chemistry, or those areas supported by chemistry, a basic understanding of the structural, synthetic, and dynamic aspects of chemistry. The laboratory should familiarize students with basic laboratory techniques, as well as enhance student learning of principles discussed in lecture. Chemistry 120 Lab requires current enrollment in Chemistry 120 Lecture.

Materials: Each student will have purchased the following items before attending laboratory.

1. A pair of laboratory safety goggles. These are worn at all times in the laboratory.
2. Laboratory notebook.
3. Laboratory manual.
4. Scientific calculator.

Laboratory Preparation: A student needs to prepare for lab by performing the following tasks:

1. Read each experiment thoroughly before coming to class.
2. Complete and hand in at the beginning of the lab period any reports/ assignments from the previous experiment.
3. Prepare the beginning sections of the report for the current lab. These sections include the title, purpose, and procedures, involved in the experiment. These sections will be checked at the beginning of the lab period. The lab report should be prepared in the laboratory notebook.

Report Format: Each weekly report should be prepared in the following format.

1. Title – The title of the experiment as stated in the lab separates.
2. Purpose – Each experiment has at least one, if not several goals. Stating these goals is critical in order to derive meaningful conclusions.
3. Procedure – A recipe for completing an experiment. Write the procedure such that you can perform the experiment from your own experience. For instance, if the lab separate gives detailed information about cleaning and filling a burette, and you already know how to do this, don't copy verbatim. Paraphrase instead.
4. Data and Observations - Data should be presented in tabular (like the manual) form when possible, with appropriate units and significant figures. Observations are critical in supporting validation of the experiment. Include all observations, especially when chemical reactions occur. Note formations of precipitates, gases, heat, and color changes, in your notebook.
5. Calculations – A sample calculation of each type is required. However, if multiple trials of the same calculation are performed, one is sufficient. Keep track of significant figures.
6. Conclusion – A conclusion should state whether or not the goals of the experiment were met, but in addition offer **justification** for your conclusion. Justification involves closeness to the true or accepted value (accuracy), and how close multiple data sets are internally (precision). **Do not include:**
 1. Maybe I misread the thermometer
 2. Maybe I didn't add enough acid
 3. This experiment was fun! fun! fun!Statements 1 and 2 are mistakes, and do not belong in a report. Statement 3 is a value judgement which cannot be backed up with scientific data.
7. Post-Lab Questions (5 points)- Answer in complete sentences including any needed calculations.

Sections 1-3 should be prepared prior to coming into the lab. Sections 4-7 should be completed before next weeks lab.

Grading: Grades are determined as a percentage of the total points accumulated vs. points possible. Points are accumulated through performance on the weekly reports (50 each), a midterm and final examination (50 each), and a formal laboratory report (100 points). The format of the formal lab report is given as a separate sheet. Consult the syllabus as to due dates and dates of exams. The following scale is used:

A = 90%
B+ = 87%
B = 80%
C+ = 77%
C = 70%
D+ = 67%
D = 60%
F = below 60%

Policy: Assignments are expected complete and on time. Late assignments are penalized at 5 pts/ day. If a student misses an experiment, the experiment counts as a zero. Lab safety is of paramount importance. Students should behave generally in accordance with the **Student Honor Code**. If a student is operating in an unsafe manner, the instructor reserves the right to remove the student from lab. If the student is operating in an intentionally unsafe manner, the student will be removed from the course. Any confusion concerning the policies and procedures followed in this course should be addressed by the second week of the semester. Make-up labs are generally discouraged, but permitted pending instructor approval. In order to make-up a lab, a student must get permission from their instructor, as well as the make-up lab instructor. The student must fill out a make-up lab form, and perform the experiment within one-week of the lab missed. No more than two make-ups are permissible in a semester.

Syllabus : The following is a listing of the experiments with due dates and assignments.

Week of:	Experiment	Due Date (week of)	Notes
August 20	Check in and Safety.	Laboratory Safety Quiz to be Completed. Pg. 6 of "Laboratory Handbook for General Chemistry". Due August 27th	Complete all pertinent lab check-in sheets, watch safety video.
August 27	Experiment I: Statistical Analysis of Experimental Data	Sept 3	Lab Safety Quiz Due
September 3	Empirical Formulas and Theoretical Yields	September 10	.
September 10	Chemical Reactions of Copper	Sept. 17	
September 17	Synthesis of Aspirin	September 24	
September 24	IR Analysis of Aspirin	October 1	.
October 1	Percentage of Acetylsalicylic Acid in Aspirin	October 8	
October 8	Midterm Exam		Lab Safety – All Aspirin
October 15	Synthesis of Alum	October 22	
October 22	Preparing a Standard Solution	October 29	Rough Draft on Formal Report Due (Synthesis and IR Analysis of Aspirin)
October 29			Feast of All Saints
November 5	Determining the Molar Concentration of Vinegar	November 12	
November 12	Evaluating the Gas Law Constant	November 26	Final Draft of Full Report Due
November 19			Thanksgiving
November 26	Final Exam		