

Summer 2024

Chemistry 134L

This laboratory course is normally taken by students enrolled in Chemistry 161. In Chem 134L you will learn the basic skills that chemists utilize in the laboratory to investigate the nature of matter, chemical reactions, and the changes in energy associated with chemical processes. While lecture and lab courses are separate, one should reinforce the other, with the lab allowing you to learn the practical application of the theories and concepts covered in lecture.

This course assumes no prior lab experience or experience with data analysis, graphing, or computer skills. Much time and attention will be paid to ensuring all students learn lab safety, fundamental chemistry lab skills, scientific writing, data analysis, and graphing which may form the basis of future scientific endeavors.

Instructor: Dr. Paul Cooper Office: SCL209 E-mail: paul.d.cooper@yale.edu

Office Hours: Dr Cooper will be available after lab each session and by appointment. If making an appointment, send an email to arrange a time.

Canvas is used for the course website, and you are responsible for reading and knowing the course information described there.

Class Times

Enrollment will be offered in Summer 2023 for CHEM 134L on T/Th 12:30-4:30pm. Your availability during these class times is required.

Schedule

	Tuesday	Thursday
Week 1	Orientation and Density of Solids	Graphing Workshop
Week 2	Density of Water and Identification of an Ionic Compound	Quantitative Determination of Acetylsalicylic Acid in an Aspirin Tablet
Week 3	Lab Report Writing Workshop	Gas Laws
Week 4	Electrolysis to Find Avogadro's Number, Molar Mass of Copper	Calorimetry, Hess's Law, and Enthalpy of Formation
Week 5	Atomic spectra, Photoelectron Spectra, and Molecular Spectra	

Required Resources

A laboratory notebook. You may opt for a duplicate tear-out style notebook, but for Covid safety, no duplicate sheets will be submitted or required. Any permanently bound (not spiral) notebook is acceptable. If you have pages left in an old lab notebook, then also feel free to use it.

Chemistry 134L lab manual. Download from Canvas.

A scientific calculator. Cost – varies by vendor.

A white laboratory coat. (from the Yale Book Store or other vendors). Cost – varies by vendor.

A USB/flash drive. Cost – varies by vendor.

Lectures

Lectures are a different course (Chem 161), and the organization and grades are separate.

Grading

There are 360 points available for the course in total.

- **Formal Laboratory Reports (total 300 points).** In total, 7 laboratory reports will be submitted. One lab report grade will be dropped, leaving the 6 highest scoring lab reports.
- **Quizzes (total 60 points).** In total 9 prelab quizzes will be submitted. None will be dropped.

Letter Grades. Letter grades will only be assigned to the entirety of the semester's work and not to individual assessments. Typically, a final letter grade of B+/A- corresponds to the class average.

Academic Honesty Policy

Plagiarism is defined in the *Undergraduate Regulations* page, as are the penalties associated with cheating:

<http://catalog.yale.edu/undergraduate-regulations/>

We encourage you to form study groups and to work together to understand the material, but all of your work should be your own.

Disabilities

If you have a documented disability that requires special accommodations, you must bring a Letter of Accommodation to Dr. Cooper at least a week before the due date of the assignment requiring this accommodation. If your accommodations affect tests for the whole semester then your Letter of Accommodation should be given to Dr. Cooper as early in the semester as possible.

Diversity, Equity, Inclusion & Belonging

Science is greatly enriched by a diversity of ideas and contributions from people of wide-ranging backgrounds, values, and experiences. Our goal in this course is to facilitate access to participation in the scientific enterprise for all interested students of any racial, ethnic, or gender identity, any nationality, and any socioeconomic, class, educational, and religious backgrounds. We welcome and value all students' contributions in this course.