Summer 2021 Chemistry S134L

This laboratory course is normally taken by students enrolled in Chemistry 161 or 163. 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.

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

Office Hours: Dr Cooper will both be available for office hours by appointment. Send an email to arrange a Zoom meeting.

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

Class Times

Both in-person and remote lab options will be offered in Summer 2021 on T/Th 12:30-4:30pm. Your availability during these class times is mandatory.

Schedule

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<th>Tuesday</th>
<th>Thursday</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>A. Chemical Elements &amp; Periodic Table. B. Mass Spectroscopy. C. The BR Oscillating reaction. D. Basic measurements</td>
<td>A. Density. B. Mystery Solutions</td>
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<td>Week 2</td>
<td>Standardization of Thiosulfate</td>
<td>Quantitative Determination of Vitamin C</td>
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<td>Week 3</td>
<td>A. Chemical Curiosity – where is the blue? B. Oxidation States of Vanadium</td>
<td>Calorimetry, Hess’s Law, and Enthalpy of Formation</td>
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<td>Week 4</td>
<td>Gas Laws</td>
<td>Atomic spectra, Photoelectron Spectra, and Molecular Spectra</td>
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<td>Week 5</td>
<td>Electrolysis &amp; Avogadro’s number</td>
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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 (for in-person students only). (from the Yale Book Store or other vendors). Cost – varies by vendor.

A USB/flash drive (for in-person students only). Cost – varies by vendor.

Lectures

Lectures are a different course (Chem 161/163), and the organization and grades are separate.

Grading

There are 500 points available for the course in total.

- **Formal Laboratory Reports (total 250 points).** In total, 7 laboratory reports will be submitted. One lab report grade will be dropped, leaving the 6 highest scoring lab reports.
- **Laboratory Notebook (total 90 points).** For each experiment (9 total) you will submit the pages of your laboratory notebook.
- **Quizzes (total 160 points).** In total, 8 post lab quizzes will be submitted. One will be dropped, leaving the 7 highest scoring post lab quizzes (total 100 points). Additionally, 9 prelab quizzes will be submitted (1 per experiment). None will be dropped (total 60 points).

**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+ 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.