



Ch 3A: Fundamental Techniques of Experimental Chemistry **Ch 3X: Experimental Methods in Solar Energy Conversion**

Spring 2020

Chemistry, California Institute of Technology

Course Instructor

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He, Him, His

Office hours : TBA

Teaching Assistants

Name	E-Mail	Name	E-Mail
Tucker Folsom	tfolsom	Kim Pham	kpham2
Ammar Ibrahim	aibrahim	Laura Quinn	lquinn
Eshaan Patheria	epatheria	Li-En Lin	lllin
		Danika Nimlos	dnimlos

Live-Online recitation hours TBA after class enrollment settles.

Course Description

Introduces the basic principles and techniques of synthesis and analysis and develops the laboratory skills and precision that are fundamental to experimental chemistry.

In this remote learning term, we hope to teach Visible and Infrared Spectroscopy, Electrochemistry, and Inorganic Synthesis and Analysis, through video recorded experiments and downloadable data.

We will also be suggesting safe “at-home” versions of the experiments as extra credit.



Learning Outcomes

By the end of this course, students will be able to:

- Know basic safety practices for general laboratories
 - Identify safety hazards and offer solutions or alternatives to safety problems
 - Enter a laboratory of any department and be safe without constant supervision
- Write in a lab notebook.
 - Write an experimental procedure as an experiment is being performed.
 - Write or record experimental data and observations while the experiment is being performed
- Write a scientific article on an experiment that they performed or watched.
 - Use scientifically professional formats.
 - Cite appropriate references.
- Learn Some Chemistry
 - Be able to explain what they saw or did in a thoughtful and accurate way

Required Text

Principles of Modern Chemistry, 7th edition; Oxtoby, Gillis, Campion (Chem 1A book, paper or pdf)

Course Learning Management System

Moodle (both 3A and 3X)

<https://courses.caltech.edu/course/view.php?id=3788>

<https://courses.caltech.edu/course/view.php?id=3789>

Assessment Rubric

Approximate percentage breakdown. This may change as the TAs and Instructor alter the course to fit within the remote learning platform.

Assignment	Percentage
Safety Case Studies	10%
Notebook	20%
Assignments	15%
Quizzes	15%
Reports	40%
Total	100%



Attendance and Participation

Students must:

Watch all Lecture and Experimental videos.

Attend all online recitations with the TA.

Submit all notebooks, data assignments, quizzes, case studies & reports.

Academic Integrity

Caltech's Honor Code: "No member of the Caltech community shall take unfair advantage of any other member of the Caltech community."

If there is a question as to if a line of actions is in violation of the honor code, you must ask the instructor their opinion.

Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit, and it violates the honor code in a fundamental way. You can find more information at: <http://writing.caltech.edu/resources/plagiarism>.

Collaboration Policy

Students taking Chem 3 are encouraged to discuss the problems and challenges they encounter in this course with other current students. Although collaboration is permitted, all written work: notebooks, and reports must be written on an individual basis. This means all work submitted must be in your own words, **no copying or paraphrasing** from other students, teaching assistants, lab manuals, or internet references. Lastly, do not refer to graded notebooks or reports from previous terms. Lab experiments and report requirements change from term to term and relying on previous material may end up hurting your grades more than helping them. If you feel you need further assistance in completing a written assignment, you should consult with the instructor or teaching assistants in this course.

Two of the primary goals of this course are to obtain optimal data and to help you learn to correctly interpret observations and results. You can acquire this ability more expeditiously if you confront any problems on your own, not by having someone else consistently do the analyses for you. If you have any questions regarding this policy, please see Dr. Mendez. He will be glad to consider and discuss any problems you have "honoring" it.

Course Schedule

We are working on a course schedule. Currently there will be 3 experimental projects each lasting multiple weeks. A schedule will be posted as soon as experiment 1 is finalized.