

## **Chem 8-L, First quarter of Organic Chemistry Lab Syllabus Summer session 1**

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**Office hours for Dr. Silverman y de la Vega: MW 2:15-3:15 pm, location Thimann 313**

**Office hours for TAs: TBD**

### **Overview:**

Organic chemistry lab is a key component to understanding O-chem overall. And, it will make you into a way better chef. This lab class will teach you important and transferable lab skills that find a use in upper division labs of all science and engineering disciplines, as well as every industry lab role you can think of.

### **Pep talk:**

Chem 8L has a reputation for being a pretty fun class, even for those who don't like chem. Some people say they finally feel like a scientist in 8L. However, don't let this lull you into a false sense of security, summer session moves fast, fall behind at your own risk. If things start getting hard to keep under control, please contact me and we can work together to help you get back on track for your goals.

### **Lab time rules, attire, safety and attendance:**

You must attend every lab section, and you must show up wearing appropriate attire that provides protection to your feet and legs. It is recommended that you wear comfy cloths that wont get caught in equipment or chemical spills. That means long pants or long skirt that go/es to your ankle are required, (but pants are way better as they dont billow at all). Socks and shoes, with covered toe and covered top are required. NO SANDALS, NO CROCS, NO SHORTS. You will be sent home to change if you show up in improper attire. If this makes you more than 30 minutes late you cannot do the lab. No exceptions.

If you are more than 2 minutes late to your lab section you cannot take the prelab quiz. If you are more than 15 minutes late (other than for attire reasons) then you cannot do the lab.

Makeup labs are not available in the summer due to timing.

All safety rules must be followed at all times! This includes the following:

Keep your lab goggles on until EVERYONE IN THE LAB IS DONE WITH CHEMICALS. Organic chemicals are often extremely painful in your eyes. Better to not learn the hard way.

Wear your lab coat at all times in the lab, put it on when you enter the room, take it off only when you are leaving. Some chemicals stain, some will eat holes in your clothes. The lab coat is a layer of protection from some of this, but your lab coat is not an impenetrable suit of armor. Use your good judgment with spills/etc/

Broken glass happens, we all break glassware from time to time. Please notify your TA and they will clean it up.

Chemical spills happen, just let your TA know immediately and they will clean it up.

No food, no drinks! They are messy and we don't want nasty chemicals going into your tasty beverage

Keep your work station clean, and more importantly, keep shared stations clean. If the TA catches you not cleaning up your mess at the balance or reagent bottle you will lose points.

Don't double dip into shared reagent bottles! Make sure that whatever goes into a stock reagent container is not contaminating said container.

**NO GLASS IN THE TRASHCANS!!!** Glass goes in a special broken glass box. This is because the underpaid janitorial staff clean the trashcans, and they are for sure not paid enough to deal with dangerous broken glass, nor are they expecting it, and they deserve to have a safe work environment.

Failure to comply with the above safety rules, or any other flagrant disregard for others, can result in consequences ranging from verbal warnings to point deductions to being sent home. These are at my and the TAs discretion.

### **Lab reports/prelabs:**

You may only refer to your **PREWRITTEN** lab notebook in lab. No textbook, printed PDFs, computers etc. Your prelab will be checked by the TA at the beginning of each lab, and must be checked before you begin your experiment setup.

There will be a very short and easy prelab quiz before each lab, if you made your prelab yourself this should be very easy. If you show up more than 2 minutes late you cannot take the quiz.

Notebooks must be the kind that creates a duplicate as you write (can use old notebook as long as it still has fresh pages). Everything in your notebook must be written in pen.

Put the following in your notebook as prelab:

Experiment number, title, date, TA name, your and your lab partners name. Title every page with it's contents (intro, prelab questions, etc)

Purpose, one sentence plus scheme, the scheme can be word flow diagram, line angles, pictures, or any combination of the above as long as it makes sense

Reagent table, you must have this part including chemical name, molar mass, mols used (can be mmols or mols, up to you), mass or vol needed, molar equivalents (if used), relevant physical data (bp/mp, density, hazards). Hazards are listed in the PDFs and physical properties can be found on wikipedia, engineeringtoolbox.com, and sigmaaldrich.com

Full procedure, as noted above, you **CANNOT REFER TO PRINTED PDFs OR DEVICES** so your procedure must have every step written in enough detail that you can complete the experiment. You can include diagrams, for some people these are very helpful, other people do not need them as much. Use your knowledge of how you process information to make your procedure easy to follow for yourself. Try to be concise and clear. Flow charts can be very helpful.

Waste and cleanup notes, this is important as if you botch the cleanup points can and will be deducted from your lab grade for messy areas, drawers, misplaced waste, etc.

All prelab questions are to be legible, if your handwriting is bad, please type them.

Hand these to your TA as you walk into the lab for their initials. You cannot do the experiment without a complete prelab.

Any redoing of prelabs during or after your section will not be tolerated.

Reports:

Reports are due at one week following the lab, to be turned in at the beginning of the section. There will be 3 full reports that include an abstract, (these are listed as Full reports in the schedule over how to write them in lab lecture) and the others will be just the prelab, quiz, data you collected, analysis and

answers to the questions listed in the PDF for said experiment. Reports should be typed with the exception of notebook pages, figures, structures, mechanisms, and calculations, which can be handwritten if you prefer.

Copy/pasting is not allowed and will incur consequences if we catch you. This includes copying from online sources such as chatGPT, lab PDF handouts, etc.

Label everything clearly for full credit. If the TA has to wonder what the heck you drew/wrote they will deduct points.

Your stapled report should include the intro/prelab, (your TA will add your quiz to your report), results, calculations, and as noted above, an abstract for certain reports.

Attache the lab notebook copy pages (keep the top version that you wrote on and turn in the copy page underneath). Do not rewrite data. Make sure the TA signs your notebook before you leave lab. They will check your area for cleanliness then as well.

Lab technique points are included in your report grade, this will include cleanliness, and good lab partnership behavior points. You start with all technique points and they will be deducted for bad partnership (unequal contributions), messy areas, etc. This includes your drawer and area, these are your responsibility to keep clean. Shared areas are also your responsibility.

### **Lab Practical Exam**

Your final lab section will be a lab practical, which makes up 30% of your grade. Each student will perform this experiment individually in a maximum of 1 hr, 45 min, with no talking to either TA or other students. Your time slot will be assigned one week before the exam as either the first or second half of your regular 4-hour lab time. No makeups, no showing up to the wrong time slot. Prepare your prelab for this experiment as for any other lab. This lab report is due at the end of your time slot.

### **Point breakdown / grading**

1000 pts total

(20 points, 2%) Safety Orientation, Writing, & Error Analysis Activities (lab 0)

(30 points, 3%) Lecture Quizzes – must be present for credit, no exceptions

(650 points, 65%) Lab reports

Full reports, 150 points each, part reports, 100 pts each... (50 pts, 5% per abstract)

Pre-Lab Quiz, Neatness, & Organization, 10-20% of each report.

Lab Technique, 5-10% of each report

(300 points, 30%) Lab Practical

Remember, in the summer no makeup labs are available. No late lab reports without prior permission from the TA or myself. Miss more than 2 reports, or sections and you cannot pass the class.

### **Materials:**

Canvas, all course info and material will be posted in the Canvas page. Link to this is coming soon, as soon as UCSC gets around to adding me as an instructor to it. Emails to the university regarding this have been sent repeatedly. I will notify the class as soon as it is sorted out.

Lab Notebook with duplicate pages (the kind that makes a copy as you write)

Shared goggles and lab coats are available in the lab

Optional textbook: Mohrig, J. R.; et. al. "Techniques in Organic Chemistry, 4th Edition" Freeman, 2015 (other editions acceptable, use lecture titles for reading assignments)

Emails/teacher-student communication: Make sure to check canvas updates for material and content schedule changes. Email me whenever you have a question about the material/course and I will try to answer it promptly if it is a quick question. I may ask that we discuss the answer in my office hours. If you cannot make my regularly scheduled ones I can try to accommodate a different time, or we can discuss after the lecture. I am happy to take all kinds of questions about academia, working in industry, study strategy for this class, other classes etc.

**Academic integrity:**

Everyone knows what cheating is, and it does a disservice to students who don't cheat. It also won't help you on the MCAT. Don't do it. No devices in tests. No copying. Working together to solve problems outside of class is encouraged but remember no duplicate work, and *everything in your lab notebook must be written by you.*

You will be mostly working with a partner, but turning in separate reports. Here is a simple way to determine how to do this. if you know how to do a problem / calculation / prelab setup, do it yourself. If you don't know how to do it, use the available resources, including your TA and myself to figure out how to do it yourself, then do it yourself.

You must do roughly half of every experiment, so that your lab partner is not doing most of the work. Failure to do your share will result in a warning, and if it occurs again, you will be asked to leave the lab section and will not receive full credit for said lab.

**DRC (disability resource center):**

The UCSC DRC is a great resource. DRC accommodations are available for a variety of neurodiverse and other people. A common accommodation is extra time on tests. Many other resources are available and please don't hesitate to reach out to me or the DRC directly with any questions, the earlier I can begin accommodations for you the better. DRC contact info: 831-459-2089 and [drc@ucsc.edu](mailto:drc@ucsc.edu)

**Title 9:**

Title 9 ( Title IX) prohibits things like sexual harassment and other forms of gender discrimination.

According to the campus Title IX website (<https://titleix.ucsc.edu/>) :

“Title IX is a comprehensive federal law that prohibits gender or sex based discrimination in any federally funded education program or activity.

The Title IX Office works to prevent discrimination and harassment. Title IX also receives and responds to reports of misconduct, and will work to remedy and prevent future harm.

Title IX is a neutral office committed to safety, fairness, trauma-informed practices, and due process. If you have questions about Title IX rights and protections, email [titleix@ucsc.edu](mailto:titleix@ucsc.edu).

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UC Santa Cruz employees, with very limited exceptions, are required to report to the Title IX Office if they learn about sexual violence or sexual harassment that involves a student”

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**Schedule:**

| Lab number or lecture | Date | Full or partial report | Due date | Exp name                                   |
|-----------------------|------|------------------------|----------|--------------------------------------------|
| Lec                   | 6/24 | -                      | -        | -                                          |
| 0                     | 6/25 | Partial                | 7/2      | check in / scavenge                        |
| Lec                   | 6/26 | -                      | -        | -                                          |
| 1                     | 6/27 | Full                   | 7/9      | Recrystallization of Acetanilide           |
| Lec                   | 7/1  | -                      | -        | -                                          |
| 2a                    | 7/2  | Full                   | 7/16     | Exp 2 - Citrus Oil (Distillation)          |
| x                     | 7/3  | x                      | x        |                                            |
| x                     | 7/4  | x                      | x        | Happy 4th, no lab!                         |
| Lec                   | 7/8  | -                      | -        | -                                          |
| 2b                    | 7/9  | Full                   | 7/16     | Exp 2 - Citrus Oil (GC Analysis)           |
| Lec                   | 7/10 | -                      | -        | -                                          |
| 3                     | 7/11 | Full                   | 7/18     | Exp 3 - Spinach/TLC                        |
| Lec                   | 7/15 | -                      | -        | -                                          |
| 4                     | 7/16 | Part                   | 7/23     | Exp 4 - IR Exercise                        |
| Lec                   | 7/17 | -                      | -        | -                                          |
| 5                     | 7/18 | Part                   | 7/23     | Exp 5 - Dehydration of Methylcyclohexanols |
| Lec                   | 7/22 | -                      | -        | -                                          |
| 6                     | 7/23 | Part                   | 7/23     | Exp 6 - Synthesis of t-pentyl chloride     |