

**San José State University**  
**Science/Chemistry Department**  
**Chem.9, Organic Chemistry Lab Fall 2022**

### Course and Contact Information

<b>Instructor:</b>	Rose Wang
<b>Office Location:</b>	Science Building 140
<b>Office Telephone:</b>	Email is preferred
<b>Email:</b>	<a href="mailto:xiao.wang@sjsu.edu">xiao.wang@sjsu.edu</a> and <a href="mailto:wang932@yahoo.com">wang932@yahoo.com</a>
<b>Office Hours:</b>	♦ Tue. 1:20 – 2:20 pm (in DH 503)  ♦ Fri. 12:20 – 1:00 pm (in Sci. 154) Also ask questions during the lab time.
<b>Class Days/Time:</b>	♦ Thur. 2:30 to 5:20 pm, section 1 ♦ Fri. 9:30 am – 12:20 pm, section 2 ♦ Fri. 1:00 – 3:50pm, section 3
<b>Classroom:</b>	Sci. 154
<b>Prerequisites:</b>	<b>Chem. 1B with passing grade and Chem. 8 passed or take it at the same time as Chem. 9</b>

### Course Format

**This is an in-person course.**

➤ **Before the lab:**

- Go over the reading materials in **textbook** and **SJSU lab manual** (see lab instruction in Canvas for each lab or see the last schedule page).
- Go over my lab lecture PPT videos if you have time.
- **I will provide lab manual on Canvas, but you have to make textbook ready at end of August!**
- See instruction for each lab on Canvas, and watch several Youtube videos that suggested in the instruction. If the Youtube videos are removed from online, it is fine since it is out of our control. You could find a similar video to watch.)
- **Finish the prelabs and turn the prelab to me in-person at beginning of the lab.**

➤ **During the lab:**

- We will discuss one or two pop quiz questions.
- I will let students ask questions about the PPT videos that you already go over it and we will go over partial materials in my PPT to emphasize major points and experiment procedures. If later when

your classes are getting busier, not many students watch my lecture PPT, I will go over PPT in detail during the lab lecture time.

- **Do experiment and collect the data. Before you leave the lab, let me sign your data page and quiz page.**
- **After the lab:**
  - Finish the lab report (a lab report will be due one week after the lab)
  - Visit my office hours if you have questions.

## Canvas

Course materials such as syllabus, SJSU lab manual, PPT videos, assignment instructions, etc. can be found on our course Canvas. You are responsible for regularly checking with the lab instructions, lab manual, your performance (scores), etc. in Canvas!

## Course Description

This course is intended to acquaint the student with the most commonly used procedures for preparation, purification and analysis of organic compounds. Although results - yield, purity, accuracy of data, etc. - shall be considered as part of the report grade as appropriate, the primary emphasis is on understanding the theory and application of these techniques.

## Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

- Understand and apply basic techniques used in the organic laboratory for preparation, purification and identification of organic compounds.
- Learn the major techniques used in organic chemistry laboratory include melting point determination, extraction, chromatography, infrared spectroscopy, distillation and chemical characterization tests.
- Synthesize at least one organic compound.
- Calculate reaction yield for relevant lab experiments.
- Develop the ability to analyze the given procedures of an experiment and suggest or recommend improvements.
- Conduct the practices of laboratory investigations safely by following the safety rules learned.
- Develop a better understanding the organic chemistry behind everyday observations such as the action of soap, or application of color dyes on variety of fabrics.

## Required Texts/Readings

- **Textbook: Hart, Craine, Hart and Vinod, *Organic Chemistry Lab Manual - A Short Course*** (Suggested to use **either 12<sup>th</sup> Edition or 13<sup>th</sup> edition.**) You can buy a used book for 12<sup>th</sup> ed. or share the books within students. Also you could buy online textbook in different websites. One of the websites is:  
<http://www.chegg.com/textbooks/lab-manual-for-organic-chemistry-a-short-course-13th-edition-9781111425845-1111425841>

Some students buy electronic text in different websites to save the money. For some experiments, the lab procedures are in this text.

You must have this textbook! Due to copyright rule, you have to buy or rent HCHV textbook since **a lot of principles and lab procedures are in HCHV text!**

- **Chem. 9 Lab Manual.** I will provide this manual through Canvas! **You need to print out each lab since blank prelab and lab reports and some lab procedures are in this SJSU Lab Manual!** For each experiment,

you need to read **BOTH textbook and SJSU lab manual.** Please see the last page schedule and lab instructions in each module for the reading information.

- **Lab coats** are required and lab stockroom will provide them. Please store them in your drawers.

*Although class is in person we require internet access, a computer, camera, microphone, speaker, and printer for online components of this course. Scanner is also very useful. This is because this could go online at any time.*

## Course Requirements and Assignments

SJSU classes are designed such that in order to be successful, it is expected that students will spend a minimum of forty-five hours for each unit of credit (normally three hours per unit per week outside the class and lab), including preparing for class, participating in course activities, completing assignments, and so on. More details about student workload can be found in [University Policy S12-3](http://www.sjsu.edu/senate/docs/S12-3) at <http://www.sjsu.edu/senate/docs/S12-3>

NOTE that [University policy F69-24](http://www.sjsu.edu/senate/docs/F69-24) at <http://www.sjsu.edu/senate/docs/F69-24> states that “Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used for grading.”

## Grading Policy

The grading scheme consists of the final grade being a weighted average of prelab, lab quiz, lab data, lab report, midterm and final exam grades in the proportions:

<b>Prelab Reports</b>	<b>14%</b> (140 pts, must turn in at the first 5 minutes of the lab )
<b>Quiz and Lab Data:</b>	<b>4%</b> (40 pts, must turn them in at the end of the lab)
<b>Lab Reports:</b>	<b>32%</b> (320 pts, due one week after the lab)
<b>Discussions:</b>	<b>3%</b> (30pts, 3 discussions On Canvas, each one is 10 pts)
<b>Midterm:</b>	<b>18%</b> (180pts)
<b>Final Exam:</b>	<b>29%</b> (290pts)
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	<b>100% (1000pts)</b>

**A Letter grades will be assigned according to the following percentage scale:**

<b>A<sup>+</sup> ≥ 97.0%</b>	<b>A ≥ 92.0%</b>	<b>A<sup>-</sup> ≥ 90.0%</b>	<b>B<sup>+</sup> ≥ 86.0%</b>	<b>B ≥ 82.0%</b>	<b>B<sup>-</sup> ≥ 80.0%</b>	
<b>C<sup>+</sup> ≥ 75.0%</b>	<b>C ≥ 65.0%</b>	<b>C<sup>-</sup> ≥ 60.0%</b>	<b>D<sup>+</sup> ≥ 56.0%</b>	<b>D ≥ 52.0%</b>	<b>D<sup>-</sup> ≥ 50.0%</b>	<b>F &lt; 50.0%</b>

Precise cut-offs may differ by ± 1.0% of the above listed numbers, and are determined only after all points for have been totaled. Also I reserve the right to raise the grade of any student by 1.0% increase for **consistently** outstanding work (including preparation, lab work, and lab reports, participation, etc.)

- **You must take the final exam to pass the course.**
- **Statistically, if your average exam percent is less than 55%, it is hard for you to get a C. But for some majors, it only needs a D to pass, please check with your adviser to see your minimum pass grade.**
- **If you FAIL THE LABORATORY PORTION of this course, you WILL NOT EARN A PASSING GRADE IN THIS COURSE.**
- **In order to be fair to all students, make-up exams will NOT be given.**
- **A grade of F is also given for cheating or for being disruptive during the lab lectures or labs.**
- **To help students to pass this course, I will check the attendance for each lab.** Note that “All

students have the right, within a reasonable time, to know their academic scores, to review their grade-dependent work, and to be provided with explanations for the determination of their course grades.” See [University Policy F13-1](http://www.sjsu.edu/senate/docs/F13-1) at <http://www.sjsu.edu/senate/docs/F13-1> for more details.

- Incompletes will not be given unless a strong compelling reason with proof is furnished to support the need for an incomplete. Incompletes will not be granted just because the university won't late drop you or because the low grade will disqualify you, put you on probation or increase your car insurance payment! Incompletes do not remove past scores in exams! Incompletes are only given to persons who have completed at least 80% of the course. Incompletes are removed by completing pending tasks. I do not provide special projects to make up incompletes.
- **PLEASE note we DO NOT provide extra credit work at the end of the semester for students who are doing poorly. You need to perform well in your tests, lab reports and quizzes.**
- **PLEASE note that I provide bonus points throughout the tests/quizzes to push your grade up a bit just in case you feel some grading was harsh or uneven. This can amount to as much as an extra 2%. Bonus scores will be distributed during two tests and in pop quizzes and/or in some very good prelab/lab reports to encourage students do better.**

## Classroom Protocol

### ◆ Coming to lab PREPARED AND ON TIME!

Because this is a laboratory class, and one in which we work with hazardous materials, **coming to lab PREPARED AND ON TIME are an essential elements for success and safety in the course. If you come unprepared and/or are tardy a bit such that you missed several minutes discussions, you will get points off for your “quiz and lab data” and lab report parts. If you are late for 10 minutes or more, you are not allowed to do the lab since it is quite dangerous to start a lab because of safety. But you could move to another lab at the SAME WEEK to do make up. Everyone could do make up in another lab ONCE during the semester.** Please pay attention to the lab discussions, since they are very important to the lab safety and your lab tests. Also the discussions will help you to be successful for understanding the experiments.

### ◆ Laboratory Safety:

**The department safety rules are on page 2 to 6 of your lab manual (in Canvas Module 1.) Please read it carefully! You must pass the safety quiz with 80% or up to be allowed to do the experiments in the lab!** If you fail the safety quiz with less than 80%, you need to study the materials about the lab safety again, and you have chance to re-take the safety quiz one more time.

We will watch the safety video together in the first meeting. You also could watch it again and watch more safety videos at home to prepare for the safety quiz:

<https://www.youtube.com/watch?v=3ELbwzqyuhs>, <https://www.youtube.com/watch?v=9o77QEeM-68>, <https://www.youtube.com/watch?v=ALBWxGik64A> etc.

Service Center Procedures: When we go to lab room, stock room (O-Chem lab service center) will give you procedure to read.

### ◆ At the beginning of the semester, you have to read some important files and sign several important pages:

1. **Signature sheet in Module 1:** After you go over chem. 9 SOP Files, read the Department Safety Rules, watch the Safety Videos, and read the Syllabus carefully, you need to acknowledge that you understand all responsibilities by initial each item and sign the Signature Sheet. You need to use blue ink to sign, then turn it to me. This sheet is so important that school will retain it for years as evidence our students did all those trainings.
2. **You need to go over SOP (Standard Operating Procedure) files in Module 1, and sign the sheet(s) with wet in the lab room.**
3. Enrollment Sheet in Module 1 for the information that I want.

#### 4. Check-in Sheet from lab service

##### ◆ **Emergencies/evacuations**

If you hear a continuously sounding alarm, or are told to evacuate by Emergency Coordinators (colored badge identities), walk quickly outside of the building. Take your personal belongings with you and turn off the heating electricity as you may not be immediately allowed to return. Follow instructions of Coordinators. Be quiet so you can hear. Once outside, move away from the building. Do not return to the building unless the Police or Coordinators announce that it is permissible. If an alarm should occur during an exam or quiz, please attempt to give your instructor the paper.

##### ◆ **Safe and Respectful Community**

We hope that the laboratory will serve as an environment that will promote learning and the development of new ideas, as well as be a safe and respectful community. Behavior that interferes with the normal academic function in a classroom or lab is unacceptable. Students exhibiting this behavior will be asked to leave the class. Examples of such behavior include

- a) Persistent interruptions or using disrespectful adjectives in response to the comments of others.
- b) The use of obscene or profane language.
- c) Yelling at classmates and/or faculty.
- d) Persistent and disruptive late arrival to or early departure from class without permission.
- e) Physical threats, harassing/bullying behavior, or personal insults (even when stated in a joking manner).
- f) Use of personal electronic devices such as pagers, cell phones, PDAs in class, unless it is part of the instructional activity.

## **University Policies**

Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs' Syllabus Information web page at <http://www.sjsu.edu/gup/syllabusinfo/>

### **Fall 2022 Paragraph for Syllabus on COVID-19 and Monkeypox Safety Training**

Students registered for a College of Science (CoS) class with an in-person component should view the [CoS COVID-19 and Monkeypox Training](#) slides for updated CoS, SJSU, county, state and federal information and guidelines, and more information can be found on the [SJSU Health Advisories](#) website. By working together to follow these safety practices, we can keep our college safer. Failure to follow safety practice(s) outlined in the training, the SJSU Health Advisories website, or instructions from instructors, TAs or CoS Safety Staff may result in dismissal from CoS buildings, facilities or field sites. Updates will be implemented as changes occur (and posted to the same links).

**Based on the President's email recently, we are still masking indoors until further notice.**

### **Resources for Help**

- Your instructor (lab lecture, lab, and office hours)
- Making a small group study. It is often very useful to establish a buddy relationship with one or two students. You can lend each other notes, study together, collect handouts for each other and remind each other for deadlines to turn things.

- Peer Connections – They have small group, individual, and drop-in tutoring for a number of undergraduate courses, consultation with mentors is available on a drop-in or by appointment basis. Visit Peer Connections website at <http://peerconnections.sjsu.edu> for more information.
- ASPIRE – Student Services Center – Services are limited to low income, first generation college students or students with disabilities.
- Counseling Services - Professional psychologists, social workers, and counselors are available to provide consultations on issues of student mental health, campus climate or psychological and academic issues on an individual, couple, or group basis. To schedule an appointment or learn more information, visit Counseling Services website at <http://www.sjsu.edu/counseling>.
- Career Center: <http://www.sjsu.edu/careercenter/>
- Accessible Education Center. If you feel that you are unable to keep up with the class even though you have all the prerequisites; if you are spending ample time studying yet you never have time to finish exams and quizzes and/or if this class, for some reason, is testing your abilities to learn, you might consider paying a visit to the Accessible Education Center, ADM 110. They might be able to test you to determine whether you have a learning disability.

Please see the lab schedule on next page.

## Chem. 9 / Organic Chemistry Lab - Fall 22, Lab Schedule

The schedule is subject to change with fair notice and how the notice will be made available.

Wk	Date	Topic	Exp. # in HCHV	Reading Pages from HCHV text and SJSU lab manual	Prelab Due (before lab)	Quiz/Lab Data Due (right after lab)	Lab Repts Due (in lab)	
0	8/19	Fri. no lab						
1	8/25-26	Safety/Greensheet/SOP /Check-in						
2	9/-1-2	Safety Quiz, <b>Lab 1:</b> Synthesis of Aspirin	<b>exp. 21</b> (p319-326 Macroscale)	Text: Macroscale on vi Intro (viii-x) p 319-326 & p 221	Prelab 1	Q1/Lab data 1		
3	9/8-9	<b>Lab 2:</b> Melting Point	<b>exp. 1</b> (p 1-10)	Text: Page 1-5	Prelab 2	Q2/Lab data 2	Report 1 & Wksht 1	
4	9/15-16	<b>Lab 3:</b> Recrystallization	<b>exp. 2</b> (p 11-13)	Text: part 1 & 2, Page 11-13. Read procedure in SJSU Manual	Prelab 3	Q3/Lab data 3	Report 2	
5	9/22-23	<b>Lab 4:</b> Extractive Separations	<b>exp. 4</b> (p 33-36)	Text: Page 33-36. Read Procedure in SJSU Manual	Prelab 4	Q4/Lab data 4-1	Report 3	
6	9/29-30	1) <b>Lab 4</b> (Continued) 2) <b>Lab 6-1:</b> Set up Fermentation		Find fermentation exp. in lab 6 or at end of lab 5 in SJSU lab manual	none	Lab data 4-2	Wksheet 2	
7	10/6-7	<b>Lab 6-2:</b> Simple Distillation	<b>exp. 3</b> (p23 – 28)	Text: Page 23-28 & Read Procedure in SJSU Manual	Prelab 6	Q5/Lab data 6-1	Report 4	
<b>8</b>	<b>10/13-14</b>	<b>Mid-Term (To cover everything <u>except distillation</u>)</b>						
9	10/20-21	<b>Lab 6-3:</b> (Continued) Fractional Distillation			none	Lab data 6-2	Wksheet 3	
10	10/27-28	<b>Lab 7:</b> Dry lab Infrared Spectroscopy	<b>exp. 25</b> (p369 – 372)	Text: Page 369 - 372 Read SJSU lab manual	Prelab 7	Q6/Lab data 7	Report 6	
11	11/3-4	<b>Lab 8:</b> Thin Layer Chromatography (Analgesics)	<b>exp. 6B</b> (p59 – 64)	Text: Page 59-64 Read Procedure in SJSU Manual	Prelab 8	Q7/Lab data 8	Report 7	
12	11/10-11	<b>Lab 9:</b> Reactions of Aldehydes and Ketones	<b>exp. 15</b> (p231 – 243)	Text: p231, p233 (B1), p236 to 240 (C1& C2), p241 to 243 (all D)	Prelab 9	Q8/Lab data 9	Report 8	
13	11/17-18	<b>Lab 10:</b> Synthesis of Soap	<b>exp. 29</b> (p409 –414)	29B (pp 409-414);	Prelab 10	Q9/Lab data 10	Report 9 Report10	
14	11/24-25	Holiday Break, No Lab						
15	12/1-2	<b>Check-Out</b>					Report10	
<b>16</b>	<b>12/8-9</b>	<b>Final</b>	(Th. 12/8) FINAL: SECTION 2, 7:15 – 9:30 am (Fri. 12/9) FINAL: SECTION 3, 12:15 – 2:30 pm (Fri. 12/9) FINAL: SECTION 1, 2:45 – 5:00 am					