

Chem 113B – Organic Chemistry Lab II

San José State University

Fall 2021 course information:

Instructor Information:

John Kim, PhD [He/Him/His]

[\[John.Kim@sjsu.edu\]](mailto:John.Kim@sjsu.edu)

Office: SCI 140

Office Hours: Mo 1:45 to 2:45; or via appointment*

*Appointments can be made for online zoom office hours as well

Course information: Section 01-02

Lab: Mo We 10:30 – 1:20 in SCI 139

Seminar: We 1:30 – 2:20 asynchronous. Lectures will be posted on canvas

Course website:

San Jose State University Canvas (access via SJSU One)

Course prerequisite:

Chem 113A (with a grade of "C" or better; "C-" not accepted).

Pre/Co-requisite is Chem 112B

Introduction:

Course Description:

Chemistry 113B is the continuation of Chem 113A, including more advanced work. [\[https://catalog.sjsu.edu/\]](https://catalog.sjsu.edu/)

Course Goals:

The goal of the course is to achieve greater familiarity with advanced techniques in the synthesis, isolation, purification and characterization of organic compounds. The use of modern spectroscopic techniques for structural determination is also emphasized

Course materials and tools:

1) Silverstein, R.M., et al., D.J. **Spectrometric Identification of Organic Compounds**, 7th edition, 2005 (ISBN 0-471-39362-2) or 8th edition, 2014 (ISBN 978-0-470-61637-6).

2) Pavia, D.L., Lampman, G.M., Kriz, G.S., Vyvyan, J.R. Introduction to Spectroscopy, 4th edition, 2009 (ISBN 0495114782) or 5th edition, 2014 (ISBN 128546012X).

Note - you will need the "full" edition, not the shortened SJSU version

3) The ACS Style Guide, found at <https://pubs.acs.org/isbn/9780841239999>

4) Scientific laboratory notebook with duplicate numbered pages

If you still have your notebook from Chem 113A and it has at least 50 pages left, you may use it
New notebooks will be provided by the instructor.

5) Non-programable scientific calculator

6) Pencils and rulers

7) Online course classroom (via SJSU One)

8) Access to a laptop or computer. See resources below for information on renting a laptop from SJSU

Course learning objectives:

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

1. Operate safely in the laboratory and dispose of waste properly.
2. Maintain a proper laboratory notebook.
3. Demonstrate mastery of advanced laboratory techniques for manipulation of organic compounds including synthesis and purification.
4. Obtain and process data from NMR experiments.
5. Characterize organic compounds by spectroscopic methods including:
 - a. 1D and 2D NMR (1 H and 13C nuclei).
 - b. mass spectrometry (exact mass and fragmentation patterns).
6. Rationalize regio- and stereoselectivity.
7. Develop and analyze a testable hypothesis.
8. Locate scientific data and sources from journals as needed.
9. Write original formal laboratory reports in ACS journal style, including use of Chemdraw structures.

Program Learning Outcomes (PLOs):

Chemistry 112A satisfies the following Program Learning Outcomes for the Chemistry Department:

PLO 1.1 - Students will be able to identify, formulate, and solve a range of chemistry problems (fundamental to complex) through application of mathematical, scientific, and chemical principles.

PLO 2.2 Students will be able to acquire, record, and critically evaluate data through use of instrumentation and software, appropriate record keeping practices, figure preparation, and scrutiny of experimental results.

PLO 2.3 Students will be able to recognize and assess laboratory hazards, practice risk minimization, and conduct safe laboratory practices.

Tentative Course Calendar:

A tentative schedule for the semester appears at the end of this document. **The date for the Final Exam is firm**, but the exact dates of the lab topics may change based on the pace of the class, which varies considerably from year to year.

Lab equipment:

You will be assigned an individual locker of equipment for your use during this course. You will be checked into your locker during the first lab period by the instructor, and sign an acknowledgement that you have all of your equipment. **You are responsible for keeping track of all of the contents of your drawer.** If you lose or break any item, you will be assessed a replacement fee at the end of the semester, so be careful with your equipment. It is possible to complete this course with a relatively small bill for expendable items: it is also possible to end up with a bill in excess of \$100. At the end of each lab period, make sure you have collected all your locker items before leaving.

When you check in, you will be given a coded check out pad from the storeroom. Note that certain equipment items checked out must be returned the same day to avoid a late fee. Remember, the code on your pad is assigned to you only, don't lose it, or someone else can check out items which will be charged to you.

At the end of the semester, you must clean out your locker, replace all broken equipment or glassware, and have the instructor sign the check-out form. If this process is not completed fully, you may be charged a fee to clean and refurbish your locker. If you drop the class or do not complete CHEM 113B, you must checkout by the last lab meeting to avoid this fee (see the schedule). No checkouts will occur after this date.

Course programs and important websites:

ChemDraw

This program will be used to draw all of your structures and mechanisms for your reports. Use the link below and sign up using your SJSU email to gain access to the program.

PerkinElmer Informatics | Site Subscription

(<https://informatics.perkinelmer.com/sitesubscription/Register.aspx?FlexeraAccountId=3371SL>)

Processing NMR and MS data: MNova:

MNova will be used to process and analyze all spectral data obtained in this course. Use the google drive link below to gain access to the program. **Must use your SJSU Email credentials to gain access.**

https://drive.google.com/drive/folders/1M_ShhFRYnah-KjbZ948OO4MQWWnG2WfQ?usp=sharing

Course format:

Laboratory time and attendance

This course is primarily based on practical experience, thus attendance for all scheduled lab and lecture sections is mandatory. **Two unexcused absences are sufficient for us to fail you in the full course.** This includes both wet labs and labs that take place in the computer lab. In addition to time spent in the lab, you are expected to take additional time outside of class to prepare for each lab, learn topics such as techniques, to practice spectroscopy problems and work on your reports.

Each lab experiment has graded work that can include a prelab, notebook, lab report and post-lab quiz. The specific values for each are posted in the gradebook on Canvas and on the lab protocol (also found on Canvas). The grand total of lab-related work will contribute to 50% of your final grade (250 pts). Spectroscopy homework will contribute 30% of your final grade (150 pts). The final exam is worth 100 pts (20%). See the course schedule (below) and Canvas for due dates, but lab reports will be due at the beginning of the lab period unless otherwise noted.

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

Spectroscopy seminars and homework

The seminar lectures will describe general background and applications of several spectroscopic techniques that we will use in CHEM 113B. In general, we have limited time to cover problem solving during these sessions. The sessions will be completely asynchronous and will include practice problems and video lectures. These materials can be found on Canvas. You will also be expected to work problems on your own to prepare for the quizzes and final. Additional practice problems can be found in Pavia and any introductory organic text.

Spectroscopy homework will be assigned weekly and will be posted on Canvas. You will have until Friday at 11:59 each week to complete these assignments and upload them to Canvas as .pdf files. These homeworks are open book and notes/Canvas so use any of those materials to your advantage. You are also encouraged to work together. While your work must be your own, feel free to collaborate.

Final Exam

Faculty members are required to have a culminating activity for their courses, which can include a final examination, a final research paper or project, a final creative work or performance, a final portfolio of work, or other appropriate assignment.

In CHEM 113B, we will have a comprehensive final exam based on material from the lab experiments and the spectroscopy seminars. The final will be written in a similar style as the lab and spectroscopy seminar. The lab quiz portion will take place through Canvas Quizzes while the spectroscopy portion will be similar to the spectroscopy homework. Both portions are open book/notes and you are encouraged to collaborate on the spectroscopy portions.

Final Exam is on Wednesday December 8th from 9:45Am to Noon.

All homework and exams are open book (Silverstein and Pavia) and open notes.

Lab Experiments

Prelabs

A major requirement for success in CHEM 113B is advanced preparation. This means you should read the experimental background and procedures carefully before the lab period. You will then be ready to complete the lab in the time allotted. To prepare for the lab, you must write the reagent table and protocol for the experiment in your notebook. Some protocols may also require you to answer some prelab questions. You must turn in a pdf of a legible scanned or photographed copy of your prelab to Canvas at least 1 hour before lab starts. Detailed expectations will be discussed in class and the rubric will be posted on Canvas. One prelab and protocol per group (for group work)

Notebooks

The prelab write-up and all notes and observations from the experiment must be kept in a bound notebook with pre-numbered duplicate pages. All entries must be made in pen - never erase or use 'white out'. Sometimes 'mistakes' turn out to be critical pieces of information. Instead, correct entries by drawing a line through them. Record all of your notes and observations directly in your notebook as they occur. Don't use scraps of paper or cell phone pictures. The purpose of a lab notebook is to be a record of your lab activities, in such clarity and detail that you or someone else could repeat your experiment successfully based on your notebook. Be organized and legible. You will also upload your notebook pages for the lab on the day your lab report is due. Examples of appropriate a good lab notebook can be found on canvas

Lab Report

The formal lab reports must be in the style of a Journal of Organic Chemistry article. Further guidelines and the rubric will be provided on Canvas. Make sure to address all prompts provided in the lab protocol. Any structures in your report should be made in Chemdraw. The written portion of your report must be uploaded on Canvas as a pdf file. You will not that each lab report also has a draft assignment of the "new" part for each lab report. You must turn in a draft and I will edit it and get the comments back to you. This is not optional, you will get points for turning in a draft.

Post-Lab Quiz

A short quiz will be given for most experiments on the due date for the lab report. The quiz will interrogate concepts that should have been learned through performing the experiment and analyzing the results in the lab report. Post-lab quizzes will be done through Canvas and will go live the day the lab is due. Once the quiz is open, you will have 15 minutes to complete it. Quizzes cannot be made up after the quiz time.

Spectroscopy lectures and homework:

Outside of lecture and discussion, there are many other resources we will provide to help you practice organic chemistry. At the end of this document, there is a list of recommended book problems for you to use as practice. They will be a good place to start to practice organic chemistry. I will also post extra problems that are tied to each chapter. These extra problems will give you a feel for my writing style and the format you can expect for the exams.

Plagiarism

Plagiarism on lab reports will not be tolerated and will result in a score of 0 points for the report. Additionally, any use of Chegg or other similar sources on exams, quizzes, or reports will be considered cheating/plagiarism and will result in a score of 0 for assignment (which will not be dropped). Further infractions will lead to failure of the course and disciplinary action

Grading information:

Assignment	Points	Weight	Description
Lab Experiments (total)	5 x 50 = 250 pts	50%	The points for each experiment include the Prelab, Notebook, Lab report, and the post-lab quiz.
Spectroscopy Homework	10 x 15 = 150 pts	30%	There will be a total of 14 spectroscopy homework assignments throughout the semester. The lowest 4 will be dropped towards your final grade.
Final	150 points	20%	The final must be taken to obtain a letter grade at the end of the semester. This exam is cumulative. See grading policy for more information and schedule to find the dates.
Total	500 points	100%	

Grading policy

You are required to complete all wet experiments in the class in order to receive a grade in the class. The Final exam will be comprehensive for all material covered in Chem 113B, and will count for 150 points. The Final exam is required for everyone.

Late or missing assignments:

There will be **NO** make-up quizzes or final exams unless there are excusable circumstances. If there is a serious emergency that was beyond your control, please email or talk to me directly about your circumstances and we devise a method of working around the missing assignment.

Lab reports submitted after the due date on Canvas are considered late and subject to 5% point reduction (and subsequent 5% point reductions for each further day late). No late reports will be accepted after the Final Exam. For any other accommodations, please refer to academic policies

Grading scale (subject to change):

Grades will be assigned on a "+/-" system. The course grades will be assigned according the following ranges:

A+ = 100-97%	A = 96-93%	A- = 92-90%
B+ = 89-87%	B = 86-83%	B- = 82-80%
C+ = 79-77%	C = 76-73%	C- = 72-70%
D+ = 69-67%	D = 66-63%	D- = 62-60%
F = <59% Unsatisfactory		

The grades will not be "curved." You will **NOT** be competing against the class average, instead you will be competing against yourself. In order to estimate your current grade in this course and progress towards your course grade, keep track of your scores as the semester progresses.

Any modifications from the grade ranges above will be in your favor, but you should not expect significant variance from the ranges given above. In assigning course grades, only one set of criteria are applied equally to all students in the class - everyone has the same opportunity as everyone else to earn their grade.

Note that "incomplete" grades will only be considered if you have an unexpected situation or emergency that prevents you from finishing the semester. **It is required that you have completed all wet labs with a passing grade until that point.** A typical situation is a medical emergency that prevents you from taking the final exam - to be considered you must provide documentation and a means to verify the emergency. Poor performance in the class or inability to keep up with the material is not an acceptable reason for an incomplete or to drop the class.

Late work policy

Quiz and exam keys will be posted on canvas when the graded material is returned to you.

No make up exams or quizzes will be given (see late or missing assignments above). If at any point in the semester you need to miss an exam or quiz, please make sure to contact me as soon as possible so that we can discuss how we may be able to take action.

Absence due to personal or work-related issues is not a reason to miss an exam or quiz. The dates are already posted for these dates. Please make sure you make accommodations to be present for these assignments.

The final exam key and markings will not be posted. But you may view your final exam in the following semester during office hours. Please feel free to contact me to view your final exam in the following semester.

COVID-19 protocol

All students registered for a College of Science (CoS) class with an in-person component must view the [CoS COVID-19 Training slides](#) and the [SJSU Phased Adapt Plan website](#) and electronically sign the CoS Acknowledgement form located in the associated Canvas **course prior to the second class meeting** for CoS classes. Failure to comply with the safety requirements outlined in the CoS COVID-19 Training slides, the SJSU Phased Adapt Plan, and outlined by instructors and TAs for in-person classes will be grounds for dismissal from class or laboratory and building or field site. Please review this material as needed throughout the semester, as updates will be implemented as changes occur (and posted to the same links).

Course Expectations:

What we expect of you	What you can expect of me
<p>Be attuned and willing to learn</p> <p>Organic chemistry takes time to learn and requires practice to perfect. The practice problems, quizzes and exams are here to help provide feedback on how we can all improve. If you every have questions, please ask so that we can help you with your learning.</p>	<p>Passion & Enthusiasm</p> <p>I am here because I want you to learn about how organic chemistry can impact your life. I will always bring lots of energy to the classroom and be prepared for each class and office hours. My goal is help you understand and use organic chemistry outside the classroom.</p>
<p>Inclusive</p> <p>You will be working with your peers in class and discussion. We expect you to maintain a good attitude and be honest and ethical towards me and your classmates. Please read SJSU's Principles of Community.</p>	<p>Inclusive</p> <p>I will do my best to create an atmosphere that fosters active learning, creativity, critical thinking, and honest collaboration. During lecture and office hours, I will do our best to help everyone feel as a part of the class.</p>
<p>Be open about questions</p> <p>I believe in the statement that "there is no such thing as a stupid question." If you are confused, please ask question at any point.</p>	<p>Timely feedback</p> <p>To make every effort to return graded assignments within a few days of the submission date and to post solutions as soon as is reasonably possible after the submission date. I will also respond to emails within 24 hours.</p>
<p>Integrity</p> <p>An honest, fair, responsible, respectful, trustworthy, and courageous effort on all academic work and collaboration. Please read SJSU's Policy on Academic Integrity.</p>	<p>Integrity</p> <p>I will assign an honest, and fair grade on all academic work and grading.</p>
<p>Safety</p> <p>Be aware of your surroundings and exercise safe laboratory skills including respecting your peer's space, keeping drawers clean and chemical free, wearing proper personal protective equipment and proper disposal of chemicals.</p>	<p>Safety</p> <p>I will exercise safe laboratory skills and provide advice, when needed, to adjust experiments to follow proper safety protocols. I will also be the point of contact for all emergencies and will do my best to manage risks to minimize any accidents.</p>

Laboratory Safety:

Safety training and quiz

Before working in the lab, all students must complete the following:

- 1) Attend the safety lecture (first lab meeting).
- 2) Read the [Safety rules for Teaching Laboratories](https://www.sjsu.edu/chemistry/Forms/Safety%20Sheet%20for%20Teaching%20Laboratories_02262020.pdf) on the Chemistry website.
- 3) Pass the safety quiz on laboratory safety with a grade of 80% or higher.

Safety Rules for the teaching laboratory

- 1) Always wear safety goggles in the lab when anyone is conducting an experiment.
- 2) We will be using some flammable solvents, do not have any flames when you (or someone else in the room) are handling flammable solvents.
- 3) Treat all reagents as potential hazards. Use gloves properly and avoid skin contact. In case of contact, inform the instructor immediately and flush with water for 15 min. Similarly, if you have a spill, never leave it unattended and let the instructor know.
- 4) Glassware breaks. Use caution in any experimental procedure, and exchange any chipped or cracked glassware. Notify the instructor of broken glass so she can assist in clean up. Dispose of all glassware in the broken glass bins, not in the trash cans.
- 5) You are absolutely required to follow any instructions provided by the instructor related to procedures and/or safety. Failure to do so will result in your immediate disenrollment from this class.
- 6) If you are not sure, ask!! In addition, for safety reasons, before you start an experiment, you are expected to fully understand the procedures and hazards involved, and follow the instructor's directions.

Failure to comply with proper safety procedures will lead to disciplinary action

Any student who engages in unauthorized experimentation, or who seriously disregards safety, thereby endangering self or others shall be withdrawn immediately from the class with a grade of "F".

Any student who shows persistent disregard for safety may have his/her grade lowered, and may risk being withdrawn with a final grade of "F"

Emergencies and Building Evacuations

If you hear a continuously sounding alarm, or are told to evacuate the building by an Emergency Coordinator, stop the experiment, walk quickly to the nearest exit (out the door and turn left to exit the Science Building). Take your personal belongings as you may not be allowed to return. Follow the instructions of the Emergency Coordinators. Be quiet so you can hear instructions. Once outside, move away from the building. Do not return to the building unless the Police or the Emergency Coordinator announce that this is permissible.

San Jose State University Academic Policies:

Academic Integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The [University Academic Integrity Policy S07-2](http://www.sjsu.edu/senate/docs/S07-2.pdf) at <http://www.sjsu.edu/senate/docs/S07-2.pdf> requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The [Student Conduct and Ethical Development website](http://www.sjsu.edu/studentconduct/) is available at <http://www.sjsu.edu/studentconduct/>.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person's ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Integrity Policy S07-2 requires approval of instructors.

For Chem 112A, any form of cheating or unfair advantage will be dealt with seriously in this course, and will result in an appropriate penalty. At minimum, an infraction will result in "0" points for that exam and it will count as one of two Hour Exam Scores (meaning the second highest exam score will be dropped); a grade of "F" for the course may also be given. The SJSU "Policy on Academic Dishonesty" as described in detail in the SJSU Catalog will be the guideline for any action taken, and the case will be referred to the SJSU Office of Judicial Affairs. The instructor or the SJSU Office of Judicial Affairs may apply more serious penalties. An infraction may also result in a student's name being placed in a Chemistry Department file and other sanctions.

Religious Accommodation

It is the policy of the university to make reasonable efforts to accommodate students having bona fide religious conflicts with scheduled examinations by providing alternative times or methods to take such examinations. If a student anticipates that a scheduled examination will occur at a time at which his or her religious beliefs prohibit participation in the examination, the student must submit to the instructor a statement describing the nature of the religious conflict and specifying the days and times of conflict.

For final examinations, the statement must be submitted no later than the end of the second week of instruction of the quarter. For all other examinations, the statement must be submitted to the instructor as soon as possible after a particular examination date is scheduled.

If a conflict with the student's religious beliefs does exist, the instructor will attempt to provide an alternative, equitable examination that does not create undue hardship for the instructor or for the other students in the class.

Discrimination and harassment

The CSU, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities.

If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the Office President Title IX office at (408) 924-7289, or use the [Online report form](#).

Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options.

A student who chooses not to report may still contact SJSU's counseling & psychological services (CAPS) for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the TWCA Golden Gate Silicon Valley. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services.

Counseling & Psychological Services (CAPS)

408.924.5910 | counseling.services@sjsu.edu | <https://www.sjsu.edu/counseling/>

YWCA Golden Gate Silicon Valley

<https://yourywca.org/>

Compliance with the American Disabilities

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. [Presidential Directive 97-03](#) at http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at <http://www.sjsu.edu/aec/> to establish a record of their disability.

Note that accommodations for exams should be made well in advance of the exam date, since both I and the AEC need to make arrangements. Exams taken with AEC accommodations must overlap with the date and exam time when the rest of the class takes that exam.

Other 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/> **Make sure to review these university and resources.**

[General Expectations, Rights and Responsibilities of the Student](#)
[Dropping and Adding](#)
[Consent for Recording of Class and Public Sharing of Instructor Material](#)
[Academic integrity](#)
[Campus Policy in Compliance with the American Disabilities Act](#)
[Student Technology Resources](#)
[SJSU Peer Connections](#)
[SJSU Writing Center](#)
[SJSU Counseling and Psychological Services](#)

SJSU Campus Resources:

Library Help

For questions about eReserves and research tools:

<https://library.sjsu.edu/ask-librarian/ask-librarian>

The King Library Liaison for Chemistry is Yen Tran (yen.tran@sjsu.edu).

Learning Resources/Tutoring

Tutoring

CoSAC <https://www.sjsu.edu/cosac/>

Peer Connections <https://www.sjsu.edu/peerconnections/index.php>

Mental Health Services

Students have access to counselors on campus to help with various situations and are free to all students on campus. Services varies from personal to educational counseling.

<https://www.sjsu.edu/counseling/>

Community Centers

Learn about the different ways SJSU, supports and celebrates the many cultures that make up our diverse community. <https://www.sjsu.edu/diversity/resources/community-resources/community-centers/index.html>

Basic Needs

Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in this course, is encouraged to contact:

sjsucares@sjsu.edu | <https://www.sjsu.edu/sjsucares/> | 408.924.1234

Accessibility

Students requesting accommodations for this course due to a disability must provide a current plan issued by the Accessible Education Center (AEC) which is located in Admin 110 or can be accessed online using the [AEC website](#). Students are required to alert the Faculty member to the needed accommodation (please make arrangements to contact me privately) and to the AEC Liaison in the department in advance so that accommodations may be arranged.

Contact the AEC for further information: <https://www.sjsu.edu/aec/aec-info@sjsu.edu> | 408. 924.6000

Office of Equity, Diversity, and Inclusion:

408.924.8168 | diversityoffice@sjsu.edu | <https://www.sjsu.edu/diversity/office/index.php>
<https://www.sjsu.edu/belong/index.php>
<https://www.sjsu.edu/diversity/resources/community-resources/index.php>
<https://www.sjsu.edu/campus-life/>

Technical Support

For help with accounts, network, and technical issues:

<https://www.sjsu.edu/it/support/service-desk/>

For help connecting to electronic library resources such as eReserves and e-journals:

<https://library.sjsu.edu/campus-access/access-library-campus>

SJSU student computing services

For information on renting a laptop for the semester

[Student Computing Services | Dr. Martin Luther King Jr. Library \(sjsu.edu\)](#)

Laboratory Schedule: (subject to change)*

Week #	Date	Activity	Assignments Due
1	Aug 23	Introduction, Safety Quiz, Lab expectations Locker check-in	Safety Quiz Must pass with an 80%
	Aug 25	Experiment A introduction Prelabs and ChemDraw	
2	Aug 30	Experiment A: Synthesis of Aspirin	
	Sept 1	Experiment A: Synthesis of Aspirin	
3	Sept 6	Labor Day No Class	
	Sept 8	Experiment A: Synthesis of Aspirin	
4	Sept 13	Experiment B: Unknown Solid Lab	Experiment B pre-lab is DUE
	Sept 15	Experiment B: Unknown Solid Lab	Experiment A Lab report is DUE Experiment A Quiz
5	Sept 20	Experiment B: Unknown Solid Lab	
	Sept 22	Experiment B: Unknown Solid Lab	
6	Sept 27	Experiment C: Reactions and Stereochemistry of Menthol and Derivatives	Experiment C pre-lab Minimum of step 1 Due
	Sept 29	Experiment C: Reactions and Stereochemistry of Menthol and Derivatives	
7	Oct 4	Experiment C: Reactions and Stereochemistry of Menthol and Derivatives	Experiment B lab report Due Experiment B Quiz
	Oct 6	Experiment C: Reactions and Stereochemistry of Menthol and Derivatives	
8	Oct 10	Experiment C: Reactions and Stereochemistry of Menthol and Derivatives	Experiment D pre-lab Minimum of Step 1
	Oct 13	Experiment C: Reactions and Stereochemistry of Menthol and Derivatives	

Week #	Date	Activity	Assignments Due
9	Oct 18	Experiment D: Preparation of an Unknown Ester	Experiment D pre-lab
	Oct 20	Experiment D: Preparation of an Unknown Ester	Experiment C pre-lab is DUE Experiment C Quiz
10	Oct 25	Experiment D: Preparation of an Unknown Ester	
	Oct 27	Experiment E: Synthesis of Dimeedone and Derivatives	Experiment E pre-lab Minimum of Step 1 DUE
11	Nov 1	Experiment E: Synthesis of Dimeedone and Derivatives	
	Nov 3	Experiment E: Synthesis of Dimeedone and Derivatives	Experiment D Lab report is DUE Experiment D Quiz
12	Nov 8	Experiment E: Synthesis of Dimeedone and Derivatives	
	Nov 10	Experiment E: Synthesis of Dimeedone and Derivatives	
13	Nov 15	Experiment E: Synthesis of Dimeedone and Derivatives	
	Nov 17	Experiment E: Synthesis of Dimeedone and Derivatives	
14	Nov 22	Experiment E: Synthesis of Dimeedone and Derivatives	
	Nov 24	Thanksgiving holiday	
15	Nov 29	Experiment F: Polymer Synthesis	Experiment E Lab report is DUE Experiment E Quiz
	Dec 1	Experiment F: Polymer Synthesis	
16	Dec 6	Lab Checkout	Experiment F Lab report is DUE Experiment F quiz

Final Exam is on Wednesday Dec 8th from 9:45AM to Noon.

*_It is highly likely the dates of labs may change depending on the pace of class. Any changes from the schedule will be announced in class and on canvas.

Seminar Schedule: (subject to change)*

Week #	Date	Activity	Reading	Assignments
1	Aug 25	Introduction to structure determination Review of IR spectroscopy	Silverstein – Ch 2 Pavia Ch 2	Week 1 Homework
2	Sept 1	Carbon-13 NMR	Pavia: Ch 6, 9.4-9.5; 5.1-5.6, 5.8, 5.10-5.12 Silverstein: Ch 4; Ch 3.1-3.4, 3.8-3.9	Week 2 Homework
3	Sept 8	Proton NMR I	Pavia - Ch 5.1-5.6, 5.8, 5.10- 5.12, 5.19 (review) Silverstein - Ch 3.1-3.4, 3.8-3.9 (review)	Week 3 Homework
4	Sept 15	Proton NMR II	Pavia – Ch 5.9, 5.13-5.18, 5.20, Ch 7 Silverstein – Ch 3.5, 3.12-3.14, 3.16	Week 4 Homework
5	Sept 22	Proton NMR III	Pavia – Ch 5.9, 5.13-5.18, 5.20, Ch 7 Silverstein – Ch 3.5, 3.12-3.14, 3.16	Week 5 Homework
6	Sept 29	2D NMR I	Pavia – Ch 9.7 Silverstein – 5.1-5.4, 5.4.3- 5.4.5, 5.8-5.8.1, 5.10-5.10.1	Week 6 Homework
7	Oct 6	2D NMR II	Pavia – Ch 9.7 Silverstein – 5.1-5.4, 5.4.3- 5.4.5, 5.8-5.8.1, 5.10-5.10.1	Week 7 Homework
8	Oct 13	2D NMR III	Pavia – Ch 9.7 Silverstein – 5.1-5.4, 5.4.3- 5.4.5, 5.8-5.8.1, 5.10-5.10.1	Week 8 Homework
9	Oct 20	2D NMR IV	Pavia – Ch 9.7 Silverstein – 5.1-5.4, 5.4.3- 5.4.5, 5.8-5.8.1, 5.10-5.10.1	Week 9 Homework
10	Oct 27	Mass Spectroscopy I	Pavia - Ch 8.1-8.7 Silverstein - Ch 1.5.	Week 10 Homework
11	Nov 3	Mass Spectroscopy II	Pavia – Ch 8.8 (all) Silverstein – Ch 1.5.4 to 1.6.17	Week 11 Homework
12	Nov 10	Combined Spectroscopy I	Pavia – Ch 8.8 (all) Silverstein – Ch 1.5.4 to 1.6.17	Week 12 Homework
13	Nov 17	Combined Spectroscopy II		Week 13 Homework
14	Nov 24	Thanksgiving holiday		Week 14 Homework
15	Dec 1	Combined Spectroscopy III		

Course calendar: (subject to change)

All information on the course calendar can be found on the course schedule as well. Refer to the syllabus for more information about all policies on quizzes and exams. Problem sets for all chapters can be found on course schedule.

August 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
15	16	17	18	19 <u>First day of instruction</u>	20	21
22	23 Introduction Safety Locker check-in	24	25 Computer lab for ChemDraw Pre-lab introduction Seminar: IR Spec	26	27	28
29	30 Experiment A: Synthesis of Aspirin	31 Last day to DROP class without a "W" Grade				

September 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 Experiment A: Synthesis of Aspirin Seminar: 13C NMR	2	3	4
5	6 Labor Day Holiday	7	8 Experiment A: Synthesis of Aspirin Seminar: 1H NMR	9	10	11
12	13 Experiment B: Unknown Solid Lab	14	15 Experiment B: Unknown Solid Lab Seminar: 1H NMR	16	17	18
19	20 Experiment B: Unknown Solid Lab	21	22 Experiment B: Unknown Solid Lab Seminar: 1H NMR	23	24	25
26	27 Experiment C: Reactions & Stereochemistry of Menthol and Derivatives	28	29 Experiment C: Reactions & Stereochemistry of Menthol and Derivatives Seminar: 2D NMR	30		

October 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4 Experiment C: Reactions & Stereochemistry of Menthol and Derivatives	5	6 Experiment C: Reactions & Stereochemistry of Menthol and Derivatives Seminar: 2D NMR	7	8	9
10	11 Experiment C: Reactions & Stereochemistry of Menthol and Derivatives	12	13 Experiment C: Reactions & Stereochemistry of Menthol and Derivatives Seminar: 2D NMR	14	15	16
17	18 Experiment D: Preparation of an Unknown Ester	19	20 Experiment D: Preparation of an Unknown Ester Seminar: 2D NMR	21	22	23
24	25 Experiment D: Preparation of an Unknown Ester	26	27 Experiment E: Synthesis of Dimedone and Derivatives Seminar: Mass Spec	28	29	30
31						

November 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 Experiment E: Synthesis of Dimedone and Derivatives	2	3 Experiment E: Synthesis of Dimedone and Derivatives Seminar: Mass Spec	4	5	6
7	8 Experiment E: Synthesis of Dimedone and Derivatives	9	10 Experiment E: Synthesis of Dimedone and Derivatives Seminar: Combined Spec	11 Veteran's Day Holiday	12	13
14	15 Experiment E: Synthesis of Dimedone and Derivatives	16	17 Experiment E: Synthesis of Dimedone and Derivatives Seminar: Combined Spec	18	19	20
21	22 Experiment E: Synthesis of Dimedone and Derivatives	23	24 Non-Instructional Holiday	25 Thanksgiving Holiday	26 Thanksgiving Holiday	27
28	29 Experiment F: Polymer Synthesis	30				

December 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 Experiment F: Polymer Synthesis Seminar: Combined Spec	2	3	4
5	6 Last day of Instruction	7 Study/Conference Day	8 FINAL EXAM 9:45 to Noon	9	10	11
12	13	14	15	16	17	18 Grades viewable on MySJSU