Chem 113B – Organic Chemistry Lab II

San José State University

Spring 2022 course information:

Instructor Information:

John Kim, PhD [He/Him/His]
[John.Kim@sjsu.edu]
Office: SCI 140
Office Hours: TuTh 10:30 – noon; or via appointment*
*Appointments can be made for online zoom office hours as well

Course information:

Lab (Sec 02): Mo We 10:30 – 1:20 in SCI 139
Lab (Sec 04): Mo We 2:30 – 5:20 in SCI 139
Seminar (Sec 01 & 03): We 1:30 – 2:20 in Sci 242

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/]

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., etal., 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

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 seminars will have practice problem homework that will be due the following week. 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 upcoming Monday at 11:59 each week to complete these assignments and upload them to Canvas as .pdf files. These homework assignments 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 in-person 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

Section 02 (MW 10:30): Thursday May 19th at 9:45AM – 12:00PM

Section 04 (MW 2:30): Tuesday May 24th at 12:15PM – 2:30PM

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.

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.

Spectroscopy homework will be graded based on credit/no credit basis. Getting more than 60% on the homework will be counted as credit.

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 100 = 500 pts	50%	The points for each experiment include the Prelab, Notebook, Lab report, and the post-lab quiz.
Spectroscopy Homework	10 x 20 = 200 pts	20%	There will be a total of 14 spectroscopy homework assignments throughout the semester. The lowest 4 will be dropped towards your final grade.
Spectroscopy Quizzes	5 x 20 = 100 pts	10%	There will be a total of 7 spectroscopy quizzes held during seminar. The lowest 2 will be dropped.
Final	200 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. If you give me a 24 hours notification prior to the due date for an extension, arrangements can be made with NO deduction to points. You will need to provide a reason for the extension and a new deadline for the assignment.

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

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
Be attuned and willing to learn 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.	**Passion & Enthusiasm** 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.
Inclusive 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.	**Inclusive** 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.
Be open about questions 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.	**Timely feedback** 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.
Integrity An honest, fair, responsible, respectful, trustworthy, and courageous effort on all academic work and collaboration. Please read SJSU's Policy on Academic Integrity.	**Integrity** I will assign an honest, and fair grade on all academic work and grading.
Safety 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.	**Safety** 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.

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 on the Chemistry website. https://www.sjsu.edu/chemistry/Forms/Safety%20Sheet%20for%20Teaching%20Laboratories_02262020.pdf
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 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 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
0	Jan 26	Introduction, Safety Quiz, Lab expectations ONLINE	Safety Quiz Must pass with an 80%
1	Jan 31	ChemDraw Introduction and assignment ONLINE	ChemDraw Assignment
	Feb 2	MestraNova Introduction and assignment ONLINE	MestraNova Assignment
2	Feb 7	Check-in for ½ of the class Start experiment 1: Unknown solid lab	Pre-lab for experiment 1 Due
	Feb 9	Check-in for ½ of the class Start experiment 1: Unknown solid lab	
3	Feb 14	Experiment 1: Unknown solid lab	
	Feb 16	Experiment 1: Unknown solid lab	
4	Feb 21	Experiment 1: Unknown solid lab	
	Feb 23	Experiment 1: Unknown solid lab	
5	Feb 28	Experiment 2: Synthesis of Aspirin	Experiment 2 pre-lab due
	Mar 2	Experiment 2: Synthesis of Aspirin	
6	Mar 7	Experiment 2: Synthesis of Aspirin	Experiment 1 Lab report Due Experiment 1 Quiz
	Mar 9	Experiment 3: Reactions and Stereochemistry of Menthol and Derivatives	Experiment 3 Pre-lab due Minimum part I
7	Mar 14	Experiment 3: Reactions and Stereochemistry of Menthol and Derivatives	
	Mar 16	Experiment 3: Reactions and Stereochemistry of Menthol and Derivatives	
8	Mar 21	Experiment 3: Reactions and Stereochemistry of Menthol and Derivatives	Experiment 2 lab report Due Experiment 2 Quiz
	Mar 23	Experiment 3: Reactions and Stereochemistry of Menthol and Derivatives	

Week #	Date	Activity	Assignments Due
9	Mar 28 Mar 30	Spring Holiday	
10	Apr 4	Experiment 3: Reactions and Stereochemistry of Menthol and Derivatives	
	Apr 5	Experiment 4: Preparation of an Unknown Ester	
11	Apr 11	Experiment 4: Preparation of an Unknown Ester	
	Apr 13	Experiment 4: Preparation of an Unknown Ester	
12	Apr 18	Experiment 4: Preparation of an Unknown Ester	Experiment 3 lab report Due Experiment 3 Quiz
	Apr 20	Experiment 5: Synthesis of Dimedone and Derivatives	
13	Apr 25	Experiment 5: Synthesis of Dimedone and Derivatives	
	Apr 27	Experiment 5: Synthesis of Dimedone and Derivatives	
14	May 2	Experiment 5: Synthesis of Dimedone and Derivatives	Experiment 4 lab report Due Experiment 4 Quiz
	May 4	Experiment 5: Synthesis of Dimedone and Derivatives	
15	May 9	Experiment 5: Synthesis of Dimedone and Derivatives	
	May 11	Experiment 5: Synthesis of Dimedone and Derivatives	
16	May 16	Lab Checkout	Experiment 5 lab report Due Experiment 5 Quiz

Final Exam is on:

Section 02 (MW 10:30): Thursday May 19th at 9:45AM – 12:00PM

Section 04 (MW 2:30): Tuesday May 24th at 12:15PM – 2:30PM

* 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
0	Jan 26	Introduction to structure determination Review of IR spectroscopy	Silverstein – Ch 2 Pavia Ch 2	Week 1 Homework
1	Feb 2	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
2	Feb 9	Proton NMR I Spec Quiz #1	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
3	Feb 16	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
4	Feb 23	Proton NMR III Spec Quiz #2	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
5	Mar 2	Proton NMR IV	Pavia – Ch 5.9, 5.13-5.18, 5.20, Ch 7 Silverstein – Ch 3.5, 3.12-3.14, 3.16	Week 6 Homework
6	Mar 9	Mass Spectroscopy I Spec Quiz #3	Pavia - Ch 8.1-8.7 Silverstein - Ch 1.5.	Week 7 Homework
7	Mar 16	Mass Spectroscopy II	Pavia – Ch 8.8 (all) Silverstein – Ch 1.5.4 to 1.6.17	Week 8 Homework
8	Mar 23	Mass Spectroscopy III Spec Quiz #4	Pavia – Ch 8.8 (all) Silverstein – Ch 1.5.4 to 1.6.17	Week 9 Homework
9	Mar 30	Spring Break Holiday		
10	Apr 6	2D NMR I Spec Quiz #5	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 10 Homework
11	Apr 13	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 11 Homework
12	Apr 20	2D NMR III Spec Quiz #6	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 12 Homework
13	Apr 27	Combined Spectroscopy I	Pavia – Ch 8.8 (all) Silverstein – Ch 1.5.4 to 1.6.17	Week 13 Homework
14	May 4	Combined Spectroscopy II Spec Quiz #7	Pavia – Ch 8.8 (all) Silverstein – Ch 1.5.4 to 1.6.17	Week 14 Homework
15	May 11	Combined Spectroscopy III	Pavia – Ch 8.8 (all) Silverstein – Ch 1.5.4 to 1.6.17	

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.

January 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
23 Week 0	24	25	26 **First day of instruction** **Meet Online** Introduction & Safety Seminar #0	27	28	29
30 Week 1	31 **Meet Online** Chemdraw tutorial					

February 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 1		1	2 **Meet Online** MestraNova tutorial Seminar #1	3	4	5
6 Week 2	7 Check into lockers Experiment 1 – Identification of unknown solids	8	9 Check into lockers Experiment 1 – Identification of unknown solids Seminar #2 Spec Quiz 1	10	11	12
13 Week 3	14 Experiment 1 – Identification of unknown solids	15	16 Experiment 1 – Identification of unknown solids Seminar #3	17	18	19
20 Week 4	21 Experiment 1 – Identification of unknown solids	22	23 Experiment 1 – Identification of unknown solids Seminar #4 Spec Quiz 2	24	25	26
27 Week 5	28 Experiment 2 – Synthesis of Aspirin					

March 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 5		1	2 Experiment 2 – Synthesis of Aspirin Seminar #5	3	4	5
6 Week 6	7 Experiment 2 – Synthesis of Aspirin	8	9 Experiment 3 – Menthol and its derivatives Seminar #6 Spec Quiz 3	10	11	12
13 Week 7	14 Experiment 3 – Menthol and its derivatives	15	16 Experiment 3 – Menthol and its derivatives Seminar #7	17	18	19
20 Week 8	21 Experiment 3 – Menthol and its derivatives	22	23 Experiment 3 – Menthol and its derivatives Seminar #8 Spec Quiz 4	24	25	26
27 Week 9	28 Spring Recess No classes	29 Spring Recess No classes	30 Spring Recess No classes	31 Spring Recess No classes Cesar Chavez Day		

April 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Week 9					1 Spring Recess No classes	2
3 Week 10	4 Experiment 3 – Menthol and its derivatives	5	6 Experiment 4 – Unknown Ester Seminar #9 Spec Quiz 5	7	8	9
10 Week 11	11 Experiment 4 – Unknown Ester	12	13 Experiment 4 – Unknown Ester Seminar #10	14	15	16
17 Week 12	18 Experiment 4 – Unknown Ester	19	20 Experiment 5 – Dimedone Seminar #11 Spec Quiz 6	21	22	23
24 Week 13	25 Experiment 5 – Dimedone	26	27 Experiment 5 – Dimedone Seminar #12	28	29	30

May 2022

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1 Week 14	2 Experiment 5 – Dimedone	3	4 Experiment 5 – Dimedone Seminar #13 Spec Quiz 7	5	6	7
8 Week 15	9 Experiment 5 – Dimedone	10	11 Experiment 5 – Dimedone Seminar #14	12	13	14
15 Week 16	16 Last day of Instruction Checkout of lockers	17 Study/Conference Day	18	19 Final Exam Section 02 (MW 10:30): Thursday May 19th at 9:45AM – 12:00PM	20	21
22	23	24 Final Exam Section 04 (MW 2:30): Tuesday May 24th at 12:15PM – 2:30PM	25	26	27	28
29	30	31				