

# Chemistry 113A Organic Chemistry Laboratory (Sec 5) Spring 2021

## Contact Information

<b>Instructor:</b>	Laura Kaptizky, PhD
<b>Office Location:</b>	(All office hours will be held by Zoom in Spring 21)
<b>Telephone:</b>	510-457-1574
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<b>Office Hours:</b>	TuesThurs 11:00am to Noon All Office hours will be held via ZOOM; there will not be any "in-person" office hours.
<b>Class Days/Times:</b>	Friday, 9:00am to 2:40pm
<b>Prerequisites:</b>	CHEM 112A ( <u>completed</u> with a grade of "C" or better; "C-" not accepted); Chem 112A may not be taken concurrently with Chem 113A.

## Faculty Web Page and MYSJSU Messaging

**This section of Chem 113A will involve all online sessions. Most content will be given by Zoom, Canvas or other platforms used by your instructor. If you do not currently have access to Zoom or Canvas, visit [sjsu.edu](http://sjsu.edu) and search for instructions to access both of these platforms. Information from this class will be sent to the email listed on your mySJSU profile – be sure that this is an email address you check regularly.**

## Course Description

Chem 113A introduces many of the basic techniques for synthesis, isolation, purification and identification of organic compounds. The emphasis is on practical skills in the laboratory and in analysis of data. Sufficient theoretical background will be developed to allow the student to understand the design of experiments and to modify established procedures. The course will also provide practice in the formal writing of experimental procedures and findings. See the Calendar at the end of this document for important dates.

## Required Texts/Readings

### GREENSHEET AND CALENDAR

This Greensheet and Calendar will be posted on Canvas for this section, and also on the Chemistry Department website (<http://www.sjsu.edu/chemistry/>).

**REQUIRED TEXTBOOK (IF YOU ARE A CHEMISTRY MAJOR or MINOR, READ THE COMMENT ABOUT THE PAVIA TEXTBOOK)**

Pavia, D. L., Lampman, G. M., Kriz, G. S., Vyvyan, J. R. *Introduction to Spectroscopy*, 5<sup>th</sup> ed., **Cengage**. (read the next 2 sections carefully before you purchase Pavia)

**The SJSU Bookstore sells a custom truncated version of Pavia intended for non-ChemBiochem majors. It is missing several important chapters that will be needed for Chem 113B/114, so if you plan to take these courses, the custom version is NOT appropriate for you**

**CHEMISTRY MAJORS or MINORS WHO PLAN TO TAKE CHEM 113B and/or 114 IN THE FUTURE SHOULD OBTAIN THE FULL EDITION OF PAVIA - the SJSU Bookstore does not carry this edition, but it can be obtained from Amazon or other book sellers. The shortened edition mentioned above does not have important chapters you need for later courses. DO NOT obtain the electronic (eBook) version for this class – you may use a paper copy during quizzes and exams, but may not use an electronic version.**

Make sure you have the 5<sup>th</sup> edition; older editions will contain significant differences.

*As a result of COVID-19 safety protocols, most aspects of this course will involve material provided to you using Canvas and Zoom, and you will be required to submit reports and assignments electronically. Therefore, you are required to have a device (such as a computer, pad, smartphone) that allows you to access the web and use these platforms. You must also have access to an internet service that provides a reliable connection. In addition, you are also required to have a phone camera or computer camera that can transmit a video while you take a quiz or exam. Details will be provided by your instructor.*

### **Other Recommended Readings**

- McMurry, John, *Organic Chemistry* (any recent edition), or an organic chemistry textbook from a one-year Ochem lecture course.
- *The ACS Style Guide: Effective Communication of Scientific Information*  
3rd ed.; Coghill, A. M., Garson, L. R., Eds.; American Chemical Society: Washington DC, 2006

### **Other equipment / material requirements**

- Scientific laboratory notebook with duplicate numbered pages
- Basic calculator (one that cannot connect to the internet, bring to every quiz/exam)
- Pencils, rulers

### **Library Liaison**

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

## **Course Prerequisites and Learning Objectives**

**Catalog Description** *Fundamental techniques for the isolation, characterization and synthesis of organic compounds. Prerequisite: CHEM 112A (with a grade of "C" or better; "C-" not accepted). Misc/Lab: Lab 6 hours.*

You must have completed Chem 112A with a grade of "C" or better to enroll in Chem 113A. **If you are repeating Chem 112A, you may not take Chem 113A until you complete 112A with a grade of "C" or better – 112A and 113A may not be taken at the same time!** If you took an 112A-equivalent course at another institution, the instructor will ask for verification of your grade and information on the lab course you took.

The scheduled time for Section 5 is Friday 9:00am to 2:40pm. The Calendar and Table of Activities at the end of this Greensheet will tell you what will occur on each lab meeting. Each lab meeting will be divided into a morning session "A" and an afternoon session "B".

Chem 113A will include six Experiments (A to F). You will prepare reports for each of these Experiments – four in written format and two in video format. These reports must be submitted electronically to Canvas assignments. In some cases, you will have to include documents which are scanned or photographed. Information on preparing and submitting Lab Reports is found in Canvas Files.

See the Calendar for due dates of each report. At the start of the period when a report is due, you will also take a lab quiz on Canvas which is based on the experiment (6 quizzes total). A midterm and Final Exam are also scheduled.

## Course Goals and Learning Objectives - Chem 113A

- Students will be able to demonstrate their knowledge of departmental safety rules through their laboratory practice, including the ability to dispose of waste properly (Note this applies even though you will not be working in the lab)
- Students are expected to apply basic stoichiometric algorithms (such as calculating limiting reagents, theoretical yield and mole ratios) in the context of organic chemistry.
- Students will be expected to demonstrate a command of the rules for assigning significant figures in their work, specifically in calculations and laboratory measurements and calculations.
- Understand and be able to use the basic operations of an organic chemistry laboratory including gravity & vacuum filtration, liquid-liquid extraction, distillation, reflux, recrystallization, drying of solids and solutions, and the theories behind these techniques.
- Know the significance of pKa values in experimental steps.
- Identify and assess the purity of organic compounds using analytical techniques including melting point, thin layer chromatography (TLC), IR (*v.i.*<sup>1</sup>), NMR (*v.i.*), and gas chromatography (GC).
- Deduce organic structures using spectroscopic methods: especially infrared (IR) and

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<sup>1</sup> *Latin* vide infra (see [below](#))

nuclear magnetic resonance (NMR) spectroscopy.

- determine molecular formulas from structures, molecular mass (using the Rule of 13), and other sources of information.

- be able to deduce hydrogen deficiency index (HDI) from a molecular formula and use this in structure determination.

For NMR spectroscopy, students will be able to:

- understand the fundamental theory of 1-dimensional proton NMR analysis
- understand the concepts of equivalent and non-equivalent hydrogens.
- understand the effect of structure on chemical shift and coupling constants.
- demonstrate awareness of the regions of the NMR spectrum where various key protons are found.
- calculate chemical shifts for substituted alkanes and aromatics using tables.
- demonstrate how to utilize integrals for structure analysis
- construct splitting diagrams (“trees”) and be able to measure coupling constants from an NMR spectrum, or predict coupling constants and trees from a structure.
- recognize and know how to test for exchangeable hydrogens in a molecule.
- identify the peaks that correspond to the solvent and to the internal reference (TMS).
- deduce unknown structures and fully assign an NMR spectrum to the structure.

For IR Spectroscopy, students will be able to:

- explain the basic principles of IR spectroscopy.
  - identify and explain factors that influence the strength and frequency of an IR peak.
  - assign key peaks in an IR spectrum.
  - determine which peaks are most diagnostic in making an assignment of structure using IR.
  - record an IR spectrum.
  - deduce unknown structures and fully assign an IR spectrum to the structure.
- Students will be able to follow a detailed experimental procedure, and construct a flow diagram to illustrate it.

- Students will be able to explain the theory behind the operations performed, including being able to explain deviations from the theoretically optimum results (which is the usual case), and suggest improvements to the procedures employed.
- Students will be able to depict and explain detailed chemical mechanisms for all laboratory reactions employed in Chem 113A, and for related reactions.
- Students are expected to keep contemporaneous notes – They will demonstrate the ability to maintain a proper lab notebook.
- Students will be able to construct a lab report that includes an analysis of the data collected, and discussion of the outcomes and answers to open questions associated with the Experiment.

### **Program Learning Outcomes (PLO)**

Chemistry 113A satisfies the following Program Learning Outcomes for the Chemistry Department:

PLO #2 - Demonstrate understanding of core concepts and to effectively solve problems in organic chemistry.

PLO #6 - Answer questions regarding safe practices in the laboratory and chemical safety.

PLO #7 - Demonstrate safe laboratory skills (including proper handling of materials and chemical waste) for particular laboratory experiments.

### **CHEM 113A: “A” & “B” ACTIVITY SESSIONS**

Refer to the Calendar and Table of Activities at the end of this Greensheet.

Each lab meeting is assigned a number and letter “A” or “B”.

In general, the “A” sessions (morning) will involve a lab activity, as well as lab quizzes and the Midterm. The “B” sessions (afternoon) will involve spectroscopy topics, tutorials and problem session. Some of these will be moderated by your instructors, and others may be self-paced.

The Calendar and Table lists the A or B sessions and activity in each session. Most sessions will require you to review material in advance. Also, keep track of report due dates, quizzes and exams. Your instructor will provide details about each session.

### **Tentative Course Calendar:**

A Calendar showing the experiments, report due dates and lab quizzes appears at the end of this Greensheet. In addition, note the following EXAM dates:

<b>Midterm Exam</b>	<b>March 26 (90min during lab session)</b>
<b>Final Exam</b>	<b>May 19 7:15am to 9:30am</b>

The dates on the Calendar are tentative and is subject to modification (however, the Midterm, Final Exam and due date for the last experiment will not change). Any changes will only be announced during a online lab meetings (no notice will be sent by email). It is your responsibility to keep aware of the Calendar, especially due dates of reports, quizzes

and exams. You must be present on all quiz and exam dates - do not plan any travel or other absences on these dates.

All exams and quizzes will be given using Canvas. Some answers may be submitted through Canvas directly - in addition, in some cases your instructor may require that some answers be written on paper, and a scan or photo be submitted for grading. The exams will only be available on the dates and times specified for your section. Your Lab Reports will be uploaded to Canvas. Note that on dates that Reports are due, a short online quiz based on the lab will also be given. Quizzes and Exams on Canvas will use the Respondus Lockdown Browser along with video monitoring.

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), 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 at

<http://www.sjsu.edu/senate/docs/S12-3.pdf>

## **Attendance Policy / Lab Makeup**

NOTE that University policy F69-24, “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 as a criterion for grading.”

Your attendance is **mandatory** for ALL Chemistry 113A lab meetings – for all sessions. The semester Calendar is set to provide adequate time for students to complete all of the experiments. Keeping on time with the Calendar requires both your participation and preparation before each lab meeting – don’t fall behind!

## **Grading Policy**

**GRADING (see below for numerical breakdown and percentages)**

Laboratory Reports: Six reports will be due for Chem 113A. Information on general report format and submission is provided in Canvas Files under Reports. However, each report may require specific details. Your instructor will describe what is needed. Two reports (for Experiments C and F) will be given as video reports.

Reports submitted to Canvas Assignments will be analyzed by turnitin.com and an analysis of your report will be provided to me. If you have issues with accessing Canvas, let your instructor know in advance of the first due date.

**During all Quizzes and Exams, the following are required:**

**You must have Respondus Lockdown Browser and/or Monitor installed on your device**

**-you will be required to have a cell phone or computer camera monitor while you take the exam.**

Lab Quizzes: At the start of the sessions when reports are due (6 total quizzes; see the Calendar), a short Lab Quiz based on the Experiment will be given on Canvas. The written or video report must also be submitted to Canvas "Assignments" before the start of the lab period in which the report is due.

Midterm Exam: a midterm exam based on material covered to that point will be given.

Final Exam: a comprehensive Final Exam will involve all topics covered in Chem 113A.

Note that the final 113A grade is based on a *conglomerate* of the individual graded items. Thus, if you have a somewhat low grade on one item, you can make it up with a better grade of another item. The course grades are given on a "+/-" system.

All quizzes and exams are open to the printed version of the Pavia textbook ONLY- electronic versions (eBooks) are not allowed during quizzes and exams. You are **required to bring your OWN copy for the exams**. Sharing of books during tests is not allowed. Using any device which has access to the Web is prohibited during any 113A quiz or exam.

### **Grading Information:**

The grades for this course will be assigned as "plus/minus." The points and percentages of each type of graded items is as follows:

6 laboratory reports (80pts ea)	480 points total <sup>a</sup> (48%)
6 laboratory quizzes (20pts ea)	120 points total <sup>b</sup> (12%)
Midterm	150 points (15%)
Final exam @ pts	<u>250 points (25%)</u>
Total possible for 113A	1000 points possible

**The overall course grade will generally follow the following correlations:**

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		

Late reports beyond a deadline will be assessed a penalty of up to **-2 points per day past the due date (weekend days will count as -2 points each day)** - medical absences with documentation will be considered. The report is considered fully "turned-in" when all required items are submitted. Late reports for Experiments will be accepted only up until graded reports are returned to the class (i.e. late reports will not be accepted once I return the graded reports to the rest of the class).

The report for Experiment F must be received by the due date given by your instructor. **No reports will be accepted after the last posted due date for your section!**

All experiment reports are **mandatory**: if no report is turned in, up to 10 points will be deducted from the total points accumulated for the semester.

In order to estimate your current grade in this course and progress towards your course grade, keep track of scores on Canvas Grades for all graded assignments (quizzes, lab reports, midterm) as the semester progresses. Add the points you obtained and divide by the total points scored up until that time to determine your % of points to that date. Compare the % to the table to estimate your current grade standing.

Bear in mind that the final course grade is based on multiple components so you have different opportunities to make up a low score. Especially towards the second half of the semester, monitor your accumulated points and %, because that will indicate to what extent you will need to obtain points to attain a desired course grade. A word of advice is that you should not rely on the last report and/or the final exam to make up for a low point total!

Scores for individual reports, quizzes and exams will be posted on Canvas Grades, but for security reasons, course grades cannot be posted there. You will see your Chem 113A grade posted on your mySJSU transcript when it is determined. Final course grades are not posted, sent by email, or given over the phone.

Use the 113A Calendar and Table of Activities below to plan your time accordingly. Preparation for the lab will help you immensely to keep on schedule.

“A minimum aggregate GPA of 2.0 SJSU Studies (R, S, & V) shall be required of all students as a graduation requirement.” To see full text, review [University Policy S11-3](#) at

<http://www.sjsu.edu/senate/docs/S11-3.pdf>

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 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course related activities including but not limited to internships, labs, clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

## **LABORATORY SAFETY**

**NOTE: even though you will not work in an actual laboratory, chemical laboratory safety is an important course objective for Chem 113A. Read the following section on safety rules, On the first day of lab, you will be required to take a Chemistry Safety Quiz and pass it with a score of 80% or higher.**

## **COVID-SPECIFIC SAFETY INFORMATION**

As you are aware, the COVID-19 pandemic has led to many restrictions on our daily lives. The rules you have become familiar with extend into working situations and conduct in a laboratory, but there are other lab-specific rules that you will learn and must comply with for your own safety and for everyone else in the lab. Your instructor will go into the full list of rules in detail, but here is a summary:



-Before the first class meeting, you will receive an email instructing you to view the College of Science COVID-19 Safety Video, and to sign the form that acknowledges you have viewed, understand, and agree to comply with all of the COVID-19 safety rules covered. You must do this before the meeting of your first lab date, or you will not be allowed into the 113A lab room.  
**[NOTE: not required for online-only courses]**

The 3 basic rules you know by now are:

-a face covering is required to enter the Science Building and the 113A labs, and must be worn the entire time you are in the building (do not remove them during breaks in the hallway or bathroom

-keep at least 6 feet away from other people (social distancing)

-wash your hands frequently: in the hallway of the Science Building are waterless soap dispensers; soap for handwashing is available in the Science labs and the bathrooms

***The most obvious rule of all is: if you feel ill, don't come to lab! Keep your instructor informed on your situation, and will try their best to accommodate you.***

***Rules specific for Chem 113A appear below – learn these and be prepared to answer questions on the safety quiz.***

### **Science 135 and Science 139**

The designated rooms for Chem 113A are Science 135 (occupancy up to 3 students) and Science 139 (occupancy up to 4 students). Except for the instructor, the capacity of each room can never exceed the stated number. You will be assigned to one of the rooms, and you may not enter the other room unless this is required by the Experiment. Movement within each room is also controlled to maximize social distancing.

For each section, a maximum of 7 students may be in lab at any one time, divided among Science 135 and 139. Each student will be assigned to a specific seating location in one of the labs, designated by an “X” – this is “your” location and you should spend most of your lab time at or near this location. You will have an aisle to yourself, and a rotary evaporator and melting point device will be present for your use. A balance will be on or near your bench. There will also be a bin with a spray bottle containing alcohol disinfectant. Disposable gloves (free) will be provided at the front of the room.

At the start of each lab day, before placing anything on your bench top, wear gloves and spray the entire surface with the alcohol and use paper towels to spready across all surfaces. Also, wipe the surfaces of equipment (rotary evaporator, balance and melting point device) with paper towel that is wet with alcohol.

*These are some of COVID-19 safety rules. Your instructor will go over additional rules as they relate to the lab rooms.*

## **General Safety Rules (in addition to the COVID-19 Safety Rules)**

Knowing how to work safely in an organic chemistry laboratory is paramount for Chem 113A, and for anyone working in a laboratory setting. For your safety and of your classmates, you will be required to understand and follow safety policies that are described below.

Before beginning any lab work, the following items must be completed:

- 1) Attend the Safety Lecture
- 2) Read and sign the statement on Chemical Safety Rules for Chemistry Labs (go to this site – copy the URL if necessary):

[https://www.sjsu.edu/chemistry/Forms/Safety%20Sheet%20for%20Teaching%20Laboratories\\_02262020.pdf](https://www.sjsu.edu/chemistry/Forms/Safety%20Sheet%20for%20Teaching%20Laboratories_02262020.pdf)

- 3) View the Chemistry Safety film on YouTube and sign the viewing voucher
- 4) Read and learn the additional rules for organic labs below.
- 5) Take the Lab Safety Quiz on Canvas and obtain a score of 80% or better; retake the quiz if score is <80%.

**All of the above conditions are required.**

In addition to the points covered above, the following rules are emphasized in this lab:

1. ***AS SOON AS ONE PERSON BEGINS WORK IN THE LAB, YOU MUST ALWAYS WEAR SAFETY GOGGLES, EVEN IF YOU ARE NOT DOING ANY WORK YOURSELF!!!*** (over your eyes, not on your forehead!) If you see a fellow student not wearing eye protection, you are obligated to remind them to protect their eyes.
2. Be aware that we will be using some flammable solvents, do not have **any** flames when you (or someone else in the room) are handling these
3. Similarly, treat all acids, bases, and reagents as potential hazards. Avoid skin contact with all of these, and treat any contact immediately. If you have a spill, never leave it unattended - let the instructor know.
4. Dispose of all glassware in the special bins, **not in the trash cans!** This includes broken glass, as well as expendable items such as pipettes and melting point capillaries.
5. Some experiments require special safety precautions - **these may be found in the** protocols or given by the instructor. Always enter these into your procedure/flow scheme section in your notebook (this is another reason to read ahead and to be on time at the start of each lab)

6. 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 grade or result in immediate disenrollment from this class (see statement below).

7. Everyone working in the lab is expected to conduct yourself in a professional manner; no horseplay or unsafe actions are allowed.

8. Gloves are required for many experiments. These are always available from the Stockroom for a cost. You may prefer to purchase a box of disposable gloves to use during the semester.

9. Minimize contact with all liquid and solid chemicals, and DO NOT intentionally breathe in any vapors. Where practical, do experimental work in the hoods.

10. Note in the safety rules, that legs and feet must be covered - no shorts, sandals or open toed footwear allowed. You will not be allowed to work in the lab. I suggest you bring a change of clothes on lab days.

101. If you are not sure, ask!!

Failure to comply with proper procedures and prescribed safety cautions shall subject the student to disciplinary action.

1) 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.

2) 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.

*Special rules of safety and conduct apply when using the Bruker Fourier 300 NMR and the GC and other instruments. These will be provided by the instructor.*

With preparation and organization, it is possible to complete all of your lab work during the scheduled lab period. In general, no lab work will be permitted outside of the scheduled lab times. Usually, the only situation where this may be allowed is in cases of illness and for which you provide verification by your doctor (see makeup policy above). However, if you miss more than a few lab periods during the semester, it may be difficult to complete the course. **In any case, under NO circumstances are you to perform any laboratory work for 113A outside of the scheduled lab time without my written permission.** Any student found performing unauthorized lab work for 113A may be disenrolled from the class.

#### **Additional Safety Policies for Chem 113A:**

Visitors: No visitors are allowed in the lab at any time. Access to Science 135 and 139 are only for enrolled students who are specifically assigned to each room.

Cell Phones, music/video/game players: These may not be used in the lab. Unless you have an emergency, turn off cell phones and make your calls before or after class. **DO NOT make calls when an experiment is in progress!**

Computers: computers may be used during lab experiments, but this is not recommended since chemicals may spill on them and damage your device. During quizzes and exams, use of computers will be restricted using the Lockdown Browser (your instructor will provide information).

While working in the lab, distractions must be kept to a minimum - this includes listening to music and watching videos. Headphones or earbuds may not be used - you must be able to hear instructions or emergency alarms.

### **Notebook Preparation for Experiments (“Prelabs”):**

Some Experiments will require the preparation of a “PreLab” notebook before you can begin the Experiment. The Prelab is an outline of the planned Experiment and is intended to prepare you before you begin experimental work. Your instructor will inform you of which Experiments require a prelab and on how to format your notebook.

### **Equipment (for in-lab sections only)**

A printed copy of current Stockroom policies will be provided to you when you check-in to a locker. These policies will be rigidly enforced so read them immediately - ask the Stockroom staff if you have any questions.

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. ***Your check in day is the only day when missing or broken/chipped items will be replaced at no charge.*** After the first day, you are responsible for maintaining 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 >\$100 bill due to loss or breakage. At the end of each lab period, make sure you have collected all your locker items before leaving and lock your drawer!

When you check in, you will be given a coded check out pad from the storeroom. You may use this pad to check out additional equipment from the storeroom which may be required for a particular experiment. **Note that certain items checked out must be returned the same day to avoid a late fee.** Remember, the code on your pad is assigned ONLY to you, don't lose it, or someone else can check out items which will be charged to your account.

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 or do not complete Chem 113A, you must check out of your locker to avoid a \$50 or more check out fee. All checkouts must be done by the last lab day of your lab meeting (see the Calendar); no checkouts will be done after this date. An exception is if you contact COVID-19 and cannot continue the lab. Contact your instructor as soon as possible.

### **Chemical Safety (CHEM 120S) – All Students**

[CHEM 120S Chemical Safety Seminar](#) is a required course for all chemistry majors and minors. The [Safety Training](#) (not CHEM 120S) is a requirement/prerequisite for CHEM 180/298, if working in a wet/chemical research lab.

### **•Emergencies and Building Evacuations**

If you hear a continuously sounding alarm, or are told to evacuate the building by an Emergency Coordinator, walk quickly to the nearest exit (out the lab door and go to the nearest exit of 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 announces that this is permissible.

### **Additional University Policies – All Students (SJSU 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](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

**Make sure to review these university policies and resources.**

The topics include the following:

[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](#)

*The Calendar below is subject to change. However, the midterm or final exam dates will not change.*

## **Chem 113A Organic Laboratory Calendar - Spring 2021 Friday ONLINE SECTIONS**

The Friday section meets only on Fridays from 9:00am to 2:40pm. In general, the first part of each lab meeting will involve activity “A”, and the second part will include activity “B” as described in the Table of Activities. Your instructor will provide additional details.

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	1 MLK Day	1	1	1	1	1
			First Day S21 semester NO 113A LAB	NO 113A LAB	NO 113A LAB	

# February 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5 <b>1</b> <b>(first meeting)</b>	6
7	8	9	10	11	12 <b>2</b>	13
14	15	16	17	18	19 <b>3</b>	20
21	22	23	24	25	26 <b>4*</b>	27 * A report due & quiz
28						

# March 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	22	323	4324	5 <b>5</b>	6
7	8	9	10	11	12 <b>6*</b>	13 * B report due & quiz
14	15	16	17	18	19 <b>7*</b>	20 *C report due and quiz
21	22	23	24	25	26 <b>Midterm</b> <b>(A and B)</b>	27
28	29	30	31			

<i>Spring Break</i>	<i>Spring Break</i>	<i>Spring Break Chavez Day</i>		
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## April 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1 <i>Spring Break</i>	2 <i>Spring Break</i>	3
4	5	6	7	8	9 <b>9</b>	10
11	12	13	14	15	16 <b>10*</b>	17 *D report due & quiz
18	19	20	21	22	23 <b>11</b>	24
25	26	27	28	29	30 <b>12*</b>	*E report due & quiz

## May 2021

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7 <b>13</b>	8
9	10	11	12	13	14 <b>14*</b> <b>Review (A and B)</b>	15 *F report due & quiz
16	17	18	19	20	21	22

		Study Day				
23	24	25	26	27	28	29
30	31 MEMORIAL DAY					

**Check your Greensheet for the date and time of your Final Exam!**

**Chem 113A FRIDAY ONLINE Section  
Table of Activities for “A” and “B” Sessions**

The Friday section meets only on Fridays. Approximately the first half will involve the “A Morning session” and the second half the “B Afternoon session” activity shown in the Table below. Your instructor will provide additional details.

Activity #	A MORNING session	B AFTERNOON session	
1	Introduction, safety information & quiz; check-in	Intro to spectroscopic techniques, background; molecular formulas/IHD/Rule of 13	
2	Exp A: Extraction & Analysis of a Plant Extract	Using molecular weight, elemental analysis	
3	Exp A: continued	IR spectroscopy	
4	<b>Exp A Report Due &amp; Quiz;</b> Exp B: Gas Chromatography – Analysis of an Unknown Alcohol Mixture	H NMR a (chemical shift, integral, coupling constants)	
5	Exp C; Using IR and NMR to identify unknown structures	H NMR b	
6	<b>Exp B: Report Due &amp; Quiz;</b> Exp C: In-class exercise	Using IR and H NMR to assign structures	
7	Exp D: Synthesis and	Practice unknown problems using IR	



	Identification of an Unknown Ester	and NMR	
<b>8</b>	Exp C Report Due & Quiz; Exp D: continued	Unknown problems with IR, NMR and organic reactions	
	<b>MIDTERM – both A and B groups</b>		
<b>9</b>	Exp E: Quinine from Cinchona Bark	H NMR coupling constants and coupling trees	
<b>10</b>	Exp D Report Due & Quiz; Exp E: continued	Analysis of the H NMR of Eugenol and Quinine	
<b>11</b>	Exp E: continued	Unknown problems	
<b>12</b>	Exp E Report Due & Quiz Exp F: Identification of an Unknown Compound	Exp F unknown strategies	
<b>13</b>	Spectroscopy Review	Spectroscopy Problems	
<b>14</b>	Exp F Report Due and Quiz; Tba, review for final	Tba, review for final	