

Chemistry 112A Organic Chemistry, Section 2 (Stepp) Fall 2021

Contact Information

Instructor:	Stephanie Stepp, PhD
Office Location:	Science Building 140 and virtually on Zoom
Telephone:	Email is preferred
Email:	stephanie.stepp@sjsu.edu
Office Hours:	MW 11am-noon (in person or Zoom), F 4-5pm (Zoom only)
Class Days/Time:	Lecture MW 12:30pm - 1:45pm
Classroom:	This course will be given in a FULLY ONLINE format using ZOOM, Canvas, and other formats (includes office hours)
Prerequisites:	CHEM 1B (with a grade of "C" or better; "C-" not accepted). <u>Chem 1B may not be taken concurrently with Chem 112A.</u>

COMMUNICATION DURING THE COVID-19 PANDEMIC

Due to restrictions imposed as a result of the COVID-19 pandemic, all aspects of this section of Chem 112A will be given online. All content will be given by Zoom, Canvas and any other platform I may specify. If you do not have access to Zoom or Canvas, visit sjsu.edu and search for instructions to access both of these platforms.

Course Description

Chemistry 112A is intended for students who are interested in a profession in science, engineering, forensics, and related fields. This one-year course sequence (along with Chemistry 112B) will introduce you to the concepts that will lead to a comprehensive understanding of organic chemistry. This course will stress an understanding of these concepts as well as their applications to solve problems. While some memorization of the course material will be required, you will also be expected to apply the underlying principles in the context of problem solving. An emphasis will be placed on a thorough *conceptual* and *mechanistic* understanding of organic reactions. Note that all exams are cumulative for prior material, thus in lecture and exams it is important to recall information that was covered earlier. The final exam will be comprehensive for all material covered this semester. The Course and Program Learning Objectives below give a comprehensive list of topics covered in Chem 112A.

Course Goals and Learning Objectives

- Appreciation for the nature and scope of organic chemistry.

- Application of key concepts from general chemistry including electronegativity, bonding (ionic and covalent), hybridization of atomic orbitals, and molecular orbital theory to organic systems.
- Draw valence bond and Lewis dot structures for organic species, including formal charges.
- Draw skeletal structures for organic compounds, show stereochemistry clearly
- Apply acid-base concepts to organic systems; predict ordering of acid or base strength.
- Name alkanes, alkenes, polyenes, alkynes, alkyl halides, aromatic compounds and their various derivatives using systematic (IUPAC) nomenclature.
- Learn common names for some key chemicals.
- Use bond dissociation energies (BDE's) to calculate reaction energetics.
- Determine oxidation states of organic chemicals.
- Draw reaction mechanisms for polar and radical processes.
- Recognize stereochemistry and be able to apply the Cahn-Ingold-Prelog system to designation of stereochemistry (E/Z or R/S).
- Apply stereochemistry to determination of reaction mechanism.
- Understand the fundamentals of reaction kinetics and be able to apply to the determination of reaction mechanism.
- Learn many of the reactions of alkanes, alkenes, polyenes, alkynes, aromatic compounds, and closely related species. Be able to both predict products and, in many cases, provide probable reaction mechanisms.
- Employ the reactions learned in designing multistep organic synthesis.
- Learn and be able to apply the material presented in Chapters 1-11 and 14-16 in the text (McMurry, 9th edition) as well as additional topics introduced in lecture.

Program Learning Outcome (PLO)

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

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

Required* Texts and Accessories

*McMurry, John. *Organic Chemistry*, 9th ed., Cengage - The SJSU Bookstore carries the custom SJSU edition. You are welcome to obtain the hardcover 9th edition of McMurry from another bookseller, Earlier editions of McMurry are not recommended, since there have been significant changes.

Lectures, exams and most other content will be provided using Zoom, Canvas, and other platforms. You will need a computer, laptop, tablet, or other device which will allow you to access course lectures and content. For exams, the following will apply:

-exams can only be taken if Respondius Lockdown Browser and/or Monitor are installed on your device

-live webcam monitoring will be used during exams; you will need a camera available, such as a camera on a phone or on your device

I will provide additional details before the first exam.

Optional but highly recommended: A set of molecular models for organic chemistry (a kit by Maruzen is sold by the SJSU Bookstore; other versions may be available from other sources).

Library Liaison

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

Course Requirements and Assignments

Catalog Description Chemistry of the carbon compounds, both aliphatic and aromatic, emphasizing underlying concepts. Prerequisite: CHEM 1B (with a grade of "C" or better; "C-" not accepted).

*->You must have completed Chem 1B with a grade of "C" or better; **you may not take Chem 1B concurrently with Chem 112A!** If you are found to not have completed the prerequisite, I may drop you from this course at any time during the semester.*

The scheduled time for this course is MW 12:30pm-1:45pm online via Zoom. I will send you an invitation to the Zoom meeting shortly before each lecture.

Tentative Course Calendar:

A tentative schedule for the semester appears at the end of this document. The dates for the Hour Exams and the Final Exam are firm, but the exact dates of the lecture topics may change based on the pace of the class, which varies considerably from year to year. You must keep up with the lectures to know where we are at any moment!

All lectures, office hours and exams will be given online. Lectures and office hours will be given using Zoom during the lecture times; recordings of lectures will be posted on Canvas typically 24 hours after the lecture. I will send a Zoom invitation to the email on your mySJSU account 1 to 2 hours before each lecture or office hour.

Exams will be given on Canvas and will require the use of Respondus Lockdown Browser and/or monitor. I may require video monitoring during an exam. Additional information will be provided before the first exam.

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](http://www.sjsu.edu/senate/docs/S12-3.pdf) at <http://www.sjsu.edu/senate/docs/S12-3.pdf>.

Course Attendance Policy

The key to doing well in Chem 112A is to keep up with the course material as it is covered. The content in Chem 112A is very "do-able," but to be perfectly honest, most students find to do reasonably well, a significant amount of time is required. If your circumstances, such as a heavy courseload, work, family responsibilities, etc limit your time, I strongly recommend you wait until you have time to devote to this course. The most common complaint about this course is: "I didn't realize it would take so much time."

Dates for all exams are firm - enter these dates on your calendars now. In particular, note the final exam date: **TBD**— do not make any other plans that prevent you from being present on that day and time (e.g. do not purchase tickets to be away on this date).

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.”

Grading Policy

Three exams will be given throughout the semester, each with a score of 125 points. The Final exam will be worth a total of 200 points. As stated all exams will be given using Canvas. A portion of the exams will involve answers you will write out, then submit to me as a photo or scan on Canvas within the time frame of the exam.

You are required to take any five quizzes. If you take all 7 quizzes, the five highest scores will be used in the calculation of your grade. If you do not take one of the quizzes, for any reason, this will be the score which will not be used in the grade calculation. Canvas exams have strict start and end times, so for the maximum time, be present at the starting time.

You are required to take any two Exams. If you take all 3 Exams, the two highest scores will be used in the calculation of your grade. If you do not take one of the exams, for any reason, this will be the score which will not be used in the grade calculation. Canvas exams have strict start and end times, so for the maximum time, be present at the starting time.

The Final exam will be comprehensive for all material covered in Chem 112A, and will count for 200 points. The Final exam is required for everyone.

Late or missing assignments:

There will be **NO** make-up quizzes or exams given.

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.

For any other accommodations, please refer to academic policies

Assignment	Points	Weight	Description
Quizzes	5 x 10 = 50 (10 pts each)	10%	There will be a total of seven quizzes during the semester. Of the seven, the two lowest scores will be dropped. See grading policy for more information and schedule to find the dates.
Exams	250 pts (125 pts each)	50% (25% each)	There will be a total of three exams during the semester. Of the three, the lowest score will be dropped . See grading policy for more information and schedule to find the dates.
Final	200 points	40%	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%	

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		

In order to estimate your current grade in this course and progress towards your course grade, keep track of your hour exam scores 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. Remember that your two highest hour exam scores will be used in your final course grade calculation. Note that the "class average" for a given exam is *not necessarily a "C" grade. Grades are assigned by these grade ranges, not by "curves."* Be aware that I cannot give any indication or guarantee of a course grade before the end of the semester.

For the portions of exams on Canvas that involve multiple choice or true/false questions, I will make the correct answers viewable after the exam is finished. A portion of the exam will be written out and sent to me as a document (due by the end time of the exam). I will post a comprehensive key for these questions. Due to the large size of this class, I cannot return your answer sheets, but if you have specific questions on how a question was graded, you can ask me later. Use this information for a self-assessment of your progress in Chem 112A – ask questions if you need clarification.

At the end of the semester, I will review how the class as a whole performs. 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. It's not fair if I give one student a "break," but not others.

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 most of the course work 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.

Exam Policies:

- The exams will be given using Canvas within a specified time limit; the time limit applies to all portions of the exam (the questions answered on Canvas, and written out and submitted)*
- Respondus LockdownMonitor and/or Monitor will be required to take the exams*
- Video monitoring of all students may be employed*
- Roll will be taken during exams.*
- IDs may be randomly checked so always have a picture ID (SJSU ID or driver's license)*
- Except for the device you will use to take the exam, other calculators, computers, cellphones, or any other electronic devices that can retrieve information, communicate, record, and/or transmit images of any kind are NOT allowed at your desk during exams. No notes, books or other sources of information are allowed. Anyone found violating these rules will receive, at minimum, an automatic score of "0 points" for the exam and this exam will be counted as one of the 2 hour exam scores (the second highest score will be dropped). A violation on the Final exam will result in zero points for the Final. Additional judicial sanctions will apply. See Academic Integrity section below for more details.*

Other Class Policies:

• Exam Makeup and Regrade Policy:

You are required to take any 2 of the 3 Hour exams given. If any Hour exam is not taken *for any reason*, that exam will be the one exam score that is not used in grade calculation. A makeup will only be considered if you miss a second Hour exam due to an unforeseen emergency and provide a documented and verifiable reason. In all cases, you must contact me as soon as reasonably possible. Before any action will be taken, you will be required to provide a verifiable document describing your emergency with the doctor's name and phone number. Note this only applies if you miss a second hour exam.

Absence due to personal or work related issues is not a reason to miss an exam. See the course attendance policy.

If you have questions on the grading of exam questions that are graded on Canvas, send me an email with the information. Similarly, ask me for questions on grading on the submitted written answers.

The Final Exam is not returned and the key will not be posted, but your exam may be viewed in the Fall semester during my office hours. Or if live office hours are not planned for Fall 2021, ask me for another arrangement.

The following are University policies that are required on greensheets by SJSU, even though some are not relevant for online courses:

•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 (facing Tower Lawn). 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.

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.**

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](#)

In addition to the university policies above, I have additional policies that apply specifically to Chem 112A. Please note the following:

Academic Integrity (read this!)

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.

Academic Integrity for Online Exams:

Campus Policy in Compliance with the American Disabilities Act

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](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) 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.

Advice for Students Taking Chem 112A (FROM other students!):

- keep up with the course, don't ever fall behind
- attend every lecture and take copious notes (listen for hints)
- read the text before and after each lecture

- copy (by hand) your lecture notes soon after the class
- work problems immediately after they are discussed in class (there is no way to catch up if you try to do this just before the exam); do ALL of the problems in the book, problem sets on Canvas, and problems given in class.
- don't memorize answers to specific problems; you need to understand how to determine the answer from principles since questions can be posed in different ways (you need to be able to answer questions that look different from ones in problem sets).
- DO NOT wait until just before the exam to start learning the material!

The common theme to these tips is that they all require you to take responsibility and keep up with Chem 112A in a timely and consistent manner. You will likely hear much griping about how "difficult" O-chem is, but you typically don't hear from the students who follow the advice above and do well in the class. I can't promise success for everyone, but you will very likely do much better if you follow all of these tips listed.

Throughout the semester I will post problem sets and other useful information on the Chem 112A Canvas site (see "Files") - check this site regularly.

MY BEST ADVICE TO YOU:

If you feel at any point in the semester that you are "lost" or not doing as well as you like, come see me or take advantage of the available Resources listed below immediately for assistance. If you wait until right before an exam or until the last few weeks of classes, it will be very difficult to catch up due to the volume of material. Keeping up with the material and working the problems is very important to succeed in Chem 112A. *However, it is also true that spending many hours studying does not necessarily equate to doing well on the exam - what is important that you **understand** the underlying principles and know how to apply them, not just memorize information or know how to answer specific problems from the textbook or sample exams.*

Office Hours and Email Questions:

Office hours are posted on this greensheet, and will be given via Zoom – will send a Zoom invitation shortly before the office hour begins. My office hours are times dedicated to assist you and students in all of my courses. They are usually quiet except immediately before exams, so if you have questions, see me well before an exam when my office is relatively open. They are open for any questions related to the course, including explanation of concepts or problems. I may also schedule additional problem or review sessions when I can fit them in to my schedule – watch for announcements in class.

If you have a private matter to discuss, I will handle this individually. Please also realize that office hours are for all of the courses I teach, not only Chem 112A.

I am also open to email questions at any time, so you do not have to wait until the next office hour. Unless I'm traveling, I try to answer emails 7 days a week, and usually reply within a day (understand that I usually answer these emails on my personal time - I do my best to reply in a timely manner but may not be available every evening or weekend).

My email is roy.okuda@sjsu.edu (put "112A" in the subject line so I know it's not spam)

Some important points regarding email questions:

- If your question is related to a point in the textbook, include the page number or problem number. I don't carry the book with me at all times, so I may need some background to answer your question

-this service is intended for a reasonable number of questions (e.g. 3-4). If you need many questions answered, I will ask you to come to office hours.

- with so many students in 112A (+ my other courses and responsibilities), I need time to prepare for each exam. Thus, the cutoff for email questions will be 24 hours before each exam. You can try within this window, but I can't promise I can get to late emails.

-Email is only for questions about course material and problems. **I will not reply to emails regarding:**

-exam scores, course grades or personal matters (see me in person)

-questions on the specific topics to be covered in an exam (this information is given in lecture, which you are required to attend)

OTHER RESOURCES:

-COSAC (College of Science Student Advisory Center) has student tutors who are available for walk-in or scheduled assistance with questions - <http://www.science.sjsu.edu/cosac/> NOTE: they get very busy just before our exams!

-Academic Workshops are primarily problem-solving sessions

-Peer Connections Resource Center (<http://peerconnections.sjsu.edu/>)

All SJSU faculty have the ability to refer students who may need assistance in a specific course to Peer Connections, which has additional means of support besides tutoring. If you receive a message from Peer Connections, I recommend you follow up, as they may be able to assist you!

Readings and problems for this course are based on the 9th edition of McMurry and will be announced on Canvas. If you choose to use an earlier edition, you are responsible for any differences from the 9th edition. ***In addition, material not found in McMurry will be included in the lectures.***

CHEMISTRY 112A - ORGANIC CHEMISTRY (Stepp)
Fall 2021

*Tentative Schedule (topics subject to change)**

Changes will be announced *only* in class.

Date	Mondays	Wednesday	Recommended problems McMurray 9th Ed	Due assignments
Week 0 8/19-8/20	no school	no school	August 19th: First Day of Instruction Review Chem 1A Topics	Review general chemistry topics
Week 1 8/23-8/27	Structure and Bonding	Structure and Bonding /Polar Covalent: Acids and Bases	1.1-1.57	
Week 2 8/30-9/3	Polar Covalent: Acids and Bases	Alkanes & Their Stereochemistry	2.1-2.44, 2.49-2.57, 3.1-3.14	Quiz #1- Structures and Resonance 8/29 @11:59pm
Week 3 9/6-9/10	Labor Day no school	Alkanes & Their Stereochemistry	3.15-3.77	
Week 4 9/13-9/17	Cycloalkanes & Their Stereochemistry	Cycloalkanes & Their Stereochemistry	4.1-4.52	Quiz #2 Newman Projections and cyclohexane configurations 9/12 @ 11:59pm
Week 5 9/20-9/24	Stereochemistry	Stereochemistry	5.1-5.77	
Week 6 9/27-10/1	Exam #1	Overview of Organic Reactions/Alkenes: Structure/Reactivity	6.1-6.42	
Week 7 10/4-10/8	Alkenes: Structure/Reactivity	Alkenes: Reactions/Synthesis	7.1-7.63	Quiz #3 R/S configurations and Fischer Projections 10/3 @11:59pm
Week 8 10/11-10/15	Alkenes: Reactions/Synthesis	Alkynes & Organic Synthesis	8.1-8.65, 9.1-9.42	

Week 9 10/18-10/22	Organohalides	Organohalides	10.1-10.43	Quiz #4 Alkene Reactions 10/17 @11:59pm
Week 10 10/25-10/29	Exam #2	Alkyl Halides: Nucleophilic Reactions	11.1-11.13	
Week 11 11/1-11/5	Alkyl Halides: Nucleophilic Reactions	Alkyl Halides: Nucleophilic Reactions	11.14-11.69	
Week 12 11/8-11/12	Conjugated Dienes	Conjugated Dienes	14.1-14.12, 14.16-14.38, 14.45-14.50	Quiz #5 Sn1, Sn2, E1, E2 11/7 @11:59pm
Week 13 11/15-11/19	Benzene & Aromaticity	Benzene & Aromaticity/Chemistry of Benzene	15.1-15.44	
Week 14 11/22-11/26	Exam #3	No School-Thanksgiving		Quiz #6: Conjugated dienes and Aromaticity 11/21 @ 11:59pm
Week 15 11/29-12/3	Chemistry of Benzene	Chemistry of Benzene	16.1-16.74	
Week 16 12/6-12/10	Last Day			Quiz #7: Benzene reactions 12/5 @11:59pm

Final: December 14th 12:15pm-2:30pm

*_It is highly likely the dates of coverage of topics may change, depending on the pace of lectures. Any changes from the schedule will only be announced in class. Plan to attend (virtually) all lectures!

****Unless there is a serious technical problem or calamity, ALL EXAM DATES AND TIMES ARE FIRM. Mark these dates and times on your calendars NOW!**