

San José State University
Chemistry Department, College of Science
Chem 08, Organic Chemistry, Fall 2019

Course and Contact Information

Instructor:	Laura Kapitzky, PhD
Office Location:	SCI 140
Telephone:	408-924-4997
Email:	laura.kapitzky@sjsu.edu
Office Hours:	10:30 – 11:30 Tuesdays and Thursdays
Class Days/Time:	Lecture TTh 9:00 - 10:15AM
Classroom:	MD 101
Prerequisites:	CHEM 001B (with a grade of "C" or better; "C-" not accepted). Notes: CHEM 008 is not a satisfactory prerequisite for CHEM 112B. No credit toward Chemistry major or minor.
Instructor:	Laura Kapitzky, PhD

Course Format

This is a technology-intensive course. Your course textbook will be an electronic textbook available through TopHat.com (details provided below), and your homework problems will be completed on line through the Top Hat system. In-class activities will require the use of the Top Hat app, downloadable to laptops, tablets, and smartphones. You will need to bring a tablet, smart phone, or laptop with you to class to participate in in-class activities, and you will need one of the above-mentioned devices to complete your reading and homework assignments.

This course will be taught using an active learning approach. This provides the opportunity for more student involvement during class meetings in the form of individual and group work, with a focus on collaboration and discussion. A general strategy for students to be prepared for this class is as follows:

Before Class

Complete the assigned reading and make a note of anything confusing. If desired, print out lecture notes posted on Top Hat so you can fill them in during class.

During Class

Listen, take notes, work with partner to answer in-class questions. Mark anything that doesn't make sense as we go through the material. Class participation is graded in the form of answering clicker questions (questions posed to the class during lecture time) and completion of occasional paper-based activities.

After Class

Before the end of the day, look over your notes. Mark anything that you did not understand and need to review or ask questions about. Look over your notes again the next day before beginning your next reading assignment – this last step only takes a minute and can help you see the bigger picture of the material covered in class.

Canvas and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on [Canvas Learning Management System course login website](#) at <http://sjsu.instructure.com>. You are responsible for regularly checking with the messaging system through [MySJSU](#) on [Spartan App Portal](#) <http://one.sjsu.edu> and the messaging service on Canvas to learn of any updates. I will frequently post announcements to our course website on Canvas – be sure to adjust your Canvas notification settings appropriately.

Course Description

Introduction to the chemistry of carbon compounds for allied health majors and others requiring only 3 units of organic chemistry lecture. Prerequisite: CHEM 001B (with a grade of "C" or better; "C-" not accepted). Notes: CHEM 008 is not a satisfactory prerequisite for CHEM 112B. No credit toward Chemistry major or minor.

Chemistry 8 is designed to introduce you to organic chemistry in a one-semester course format. The intent of this course is to familiarize you with the basic concepts and properties of molecules based on carbon. As you will see, organic chemistry impacts many areas of your daily life. There will be a subtle emphasis on organic chemistry that is relevant to biological systems.

Course Goals and Course Learning Outcomes (CLO)

CHEM 8	<ul style="list-style-type: none">• 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 structure for organic species, including formal charges.• Draw skeletal structures for organic compounds.• Apply acid-base concepts to organic systems; predict ordering of acid or base strength.• Name alkanes, alkenes, polyenes, alkynes, alkyl halides, aromatic compounds, carbonyl compounds, amines and their various derivatives using systematic (IUPAC) nomenclature.• Learn common names for some key chemicals.• Draw reaction mechanisms for some key reactions.• Recognize stereochemistry and be able to apply the Cahn-Ingold-Prelog system to designation of stereochemistry (E/Z or R/S).• Learn many of the reactions of alkanes, alkenes, polyenes, alkynes, aromatic, carbonyl, and amine compounds, and closely related species. Be able to predict reactions involving these functional groups.
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| <ul style="list-style-type: none">• Be able to solve problems employing spectroscopic methods including mass spectrometry, infrared and NMR spectroscopy• Understand the basic chemical and structural features of biomolecules, including lipids, carbohydrates, amino acids and proteins, and nucleic acids. |
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Required Texts/Readings

Textbook

Top Hat

We will be using the Top Hat (www.tophat.com) electronic textbook and classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.

You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website: <https://app.tophat.com/e/616791>. Note: our Course Join Code is 616791.

Top Hat may require a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing.

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491.

Other technology requirements / equipment / material

As noted above, you will need access to a web-enabled cell phone, tablet, or computer during class to answer in class questions. Our course textbook is an eText and must be accessed by a web-enabled device (phone, tablet, computer).

Course Requirements and Assignments

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. Please review the information contained in the following links:

- [University Syllabus Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) at <http://www.sjsu.edu/senate/docs/S16-9.pdf>.
- Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>

Attendance

Beyond the initial day of class, attendance will not be taken. However, attendance of the lectures is mandatory. If you miss a lecture, you are still responsible for all the material discussed in class, some of which may not be in the text. If you miss class meetings, it will be difficult to catch up due to the volume. If you are not present in class you cannot participate in in-class activities, and participation points missed due to unexcused absences cannot be made up. Also, you are responsible for keeping up with any changes in the course or exam schedule, which otherwise may not be publicized outside of the lecture time. **Long story short, students who attend class regularly learn more and earn better grades. Come to class!**

Participation

Throughout the course we will use Top Hat Classroom to work through practice problems as a class. Many problems will be graded based on both completion and correctness – some will be graded solely on one criterion or the other. You will often have the opportunity to revise your initial answer after discussion with classmates.

Homework

There will be one homework assignment required per chapter covered. The homework will be graded both on completion and correctness. Homework will be completed online through Top Hat.

Quizzes

There will be 3 in class multiple choice quizzes given throughout the semester worth 25 points each. The questions will be similar in style to the homework problems. If you take all 3 quizzes, the two highest scores will be used to calculate your grade and the lowest score will be dropped. If you miss one of the quizzes for any reason, your score will be recorded as a zero and this will be the score that is dropped in calculating your quiz average. The quizzes will be given at the start of the lecture period. All quizzes will be collected at the same time, no extra time is provided if you start late.

Midterms

There will be 3 midterm exams (each approx. 60min) given during our regular class period throughout the semester, each with a maximum score of 100 points. If you take all 3 midterm exams, the two highest scores will be used to calculate your grade and the lowest score will be dropped. If you miss one of the midterm exams for any reason, your score will be recorded as a zero and this will be the score that is dropped in calculating your exam average. The midterm exams will be given at the start of the lecture period. Plan to arrive on time when an exam is scheduled, since all exams will be collected at the same time, no extra time is provided if you start late.

Final Examination

A cumulative final exam will be administered during finals week. The final exam will be entirely multiple choice and will be worth 200 points (30%) towards your final grade in the class. All enrolled students must take the final exam.

An ideal strategy for studying for the final exam includes: keeping up with assigned readings and homework, use your returned midterms to identify weak points in your understanding of material, come to office hours to ask

questions as they come up. **Adopting a “do it now” philosophy will improve your overall performance in the class and minimize the need to cram for the final exam. Using this strategy, taking your final will be like running a victory lap after the hard work of the semester is done.**

Grading Information

Your final letter grade in the class will be based on your weighted average score on all graded assignments. The assignments will be weighted according to the following percentages:

Exams	60%
Homework	20%
Quizzes	10%
Participation	10%

A tentative breakdown of the assignment of letter grades to percentages is as follows:

Grade	Percentage
A plus	96 to 100%
A	93 to 95%
A minus	90 to 92%
B plus	86 to 89 %
B	83 to 85%
B minus	80 to 82%
C plus	76 to 79%
C	73 to 75%
C minus	70 to 72%
D plus	66 to 69%
D	63 to 65%
D minus	60 to 62%
F	Below 60%

Make-up and Missed Work Policy

Participation. There are no make-ups for lost participation points. If you miss questions for any reason, your score will be recorded as zero and you cannot make up the points lost. To accommodate unpredictable life events resulting in occasional absences, the lowest two days' participation grades will be dropped from your grade.

Homework. Homework submitted after the due date and time for the assignment will be docked 25% per day. Homework submitted more than four days late will receive a zero and cannot be made up. Note: it is still worth doing your homework even if you will not receive full (or any) credit for it. Working the problems and receiving feedback on your answers will help you prepare for the coming exam.

Quizzes and Exams. There are no make-up exams or quizzes. If you miss one exam or quiz for any reason, your score will be recorded as zero and you cannot make it up. To accommodate unpredictable life events, the lowest exam score and lowest quiz score will be dropped from your grade.

If you miss a second exam or quiz and have a valid, documented excuse for missing that exam on that date, contact me as soon as possible. Your percentage on the final exam will be used to substitute for your missing midterm exam score. You may not be excused from more than one exam. Your documentation for your missed exam must come from an official person like a doctor, police officer, or commanding officer, and specifically account for the day and time of the missed exam.

Extra Credit

There is no extra credit available in this course. Focus your effort on successful completion of the core assignments for the course.

Classroom Protocol

It is expected that you will attend all classes, arriving on time for class and having completed the reading that accompanies the topic of the day. To earn your participation grade you will need to talk with your classmates and answer questions via Top Hat. Neither video nor audio recording of lectures is allowed unless required by the Accessibility office.

Safe and Respectful Community

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

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

University Policies

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](#) at <http://www.sjsu.edu/gup/syllabusinfo/>.

Chem 8, Organic Chemistry, Fall 2019

Course Schedule

The following is a tentative schedule for the course. Dates are subject to change with notice. Notice will be provided in class announcements and on Canvas in the announcements section.

Date		Topic	Reading
8/22	--	Welcome, review of atomic structure	1.1
8/27	Chapter 1	Atomic orbitals, chemical bonding	1.2
8/29	Chapter 1	Intermolecular forces and their effects	1.2 - 1.3
9/3	Chapter 2	Nomenclature: aliphatic hydrocarbons	2.1-2.4
9/5	Chapter 2	Nomenclature: alkenes, alkynes, functional groups	2.5 - 2.8
		Quiz 1: functional groups; Nomenclature: Naming complex molecules	2.9
9/10	Chapter 2		
9/12	Chapter 4	Acids and bases: definitions, equilibrium, acid strength	4.1 - 4.3.3
9/17	Chapter 4	Acids and bases: acid strength, bases, ionization state	4.3.4-6, 4.6 - 4.8
9/19	Chapter 5	Conformations: Acyclic alkanes; multiple bonds and conformation	5.1-5.4
9/24	Midterm 1	Covers Chapters 1, 2, 4	Exam 1
9/26	Chapter 5	Conformations: Cyclic alkanes	5.5 - 5.9
			6.1, 6.3 - 6.4, 6.12 - 6.13
10/1	Chapter 6	Stereochemistry	6.13
10/3	Chapter 6	Stereochemistry	6.5 - 6.8, 6.10 - 6.11
10/8	Chapter 3	Hand back Midterm 1 and review - start Chemical Reactivity	3.1 - 3.2
10/10	Chapter 3	Chemical Reactivity	3.3 - 3.6
10/15	Chapter 3	Quiz 2: Conformations and Stereochemistry; Chemical Reactivity	3.7 - 3.9
10/17	Chapter 7	Substitution Reactions: SN2 Reactions	7.1 - 7.4
10/22	Midterm 2	Covers Chapters 5, 6, 3	Exam 2
10/24	Chapter 7	Substitution Reactions: SN1 Reactions	7.7 - 7.10
10/29	Chapter 8	Elimination Reactions: E1	8.2 - 8.6
10/31	Chapter 8	Elimination Reactions: E2	8.7 - 8.8
11/5	Chapter 9	SN1,SN2,E1,E2	9.3-9.5
11/7	Chapter 11	Alcohols	11.4 - 11.8
11/12	Chapter 14	Quiz 3: Substitution and Elimination; Amines	14.1 - 14.5
11/14	Chapter 13	Aldehydes and ketones: Nucleophilic Addition	13.1 - 13.5.5
	Chapter 15 +		
11/19	16	Carboxylic Acids and Derivatives: Nucleophilic Substitution	15.4, 16.1 - 16.2
11/21	Chapter 17	Biomolecules: Carbohydrates and lipids	17.1 - 17.2
11/26	Midterm 3	Covers 7, 8, 9, 11, 13 - 16	Exam 3
11/28		Thanksgiving Holiday	
12/3	Chapter 17	Biomolecules: Amino acids, peptides, proteins	17.3
12/5	Chapter 17	Biomolecules: Nucleic acids	17.4

Final Examination will be held in MD101 on Monday, December 16 from 7:15am – 9:30am