



# USC University of Southern California

**Chem 322bL: Organic Chemistry (4.0 Units)**  
**Spring 2021-DRAFT**

**Class Meetings:** This class is offered **online**. Additional asynchronous course content will be posted on the course Blackboard site. Synchronous class meetings will be held via Zoom on Tuesdays and Thursdays from 2:00-3:20pm **OR** 5-6:20pm. You may attend either session, regardless of which section you are registered in.

**Instructor:** Prof. Rebecca Broyer

**Office Hours:** TBA weekly on Blackboard

**Contact Info:** [rbroyer@usc.edu](mailto:rbroyer@usc.edu) (preferred contact method)

**Teaching Fellow:** Renata Rezende Miranda

**Contact Info:** [rezendem@usc.edu](mailto:rezendem@usc.edu)

**Lab Instructor:** Dr. Jennifer Moore

**Office Hours:** See laboratory Blackboard site for times / meeting information

**Contact Info:** [moorej1@usc.edu](mailto:moorej1@usc.edu)

**Course Coordinator:** Dr. Xiaojun Zhang.

**Electronic Office Hours:** email for appointment

**Contact Info:** [xiaojunz@usc.edu](mailto:xiaojunz@usc.edu)

**Teaching assistant contact information and office hours times/location can be found on the course Blackboard site.**

## Course Objectives:

This course will complete your fluency in the language of molecular structure and reactivity, culminating with a description of the molecular make-up of the cell. To get there, you will learn how to apply concepts of chemical bonding, structure, and reactivity that you have learned to new functional groups and mechanisms by reasoning with analogy and first principles. You will solidify your understanding by practicing problem solving strategies that you learn from instructors, peers, and yourself.

At the end of this experience, successful students will achieve a definitive command of essential concepts of molecular structure and bonding. These include:

- The intrinsic electrophilicity of the carbonyl group, carbonyl addition reactions, and the structure of carbonyl derivatives.
- Enolization, aldol and Claisen reactions of enolates, and the rudiments of polyketide synthesis.
- The electronic structure and reactivity of aromatic compounds.
- The richly complex nature of amines and imines.
- The structure and behavior of simple carbohydrates.
- The molecular nature of proteins.

## Prerequisite(s):

Chem 322A or Chem 325A or equivalent course

## Required Materials

"Organic Chemistry" P.Y. Bruice, 8<sup>th</sup> edition

"Study Guide and Solutions Manual," P.Y. Bruice

"Organic Chemistry as a Second Language: Second Semester Topics" D. Klein, 4<sup>th</sup> edition

"Spring 2021 Chemistry 322bL Laboratory Manual"

A separate laboratory syllabus will be issued

## Optional Materials

"Making the Connections 2," Anne B. Padias, 2<sup>nd</sup> edition (for lab)

## Description and Assessment of Assignments

Assignments in the course include quizzes, homework, reaction analysis assessments, video quizzes, in-class work and a final project

## Grading Breakdown

Your course grade will be scaled to 1000 points. Your grade will be determined according to the following distribution:

Assignment	% of Grade
Video Quizzes + Surveys	5%
Homework	4%
Reaction Analysis Assignments	48%
Group Assignments (3)	6%
In class work	2%
Laboratory	20%
Final Project	15%
<b>TOTAL</b>	<b>100%</b>

To receive a passing grade, satisfactory work must be done in both lab and the lecture portions of the course. You are encouraged to check your grades on Blackboard.

**Gradescope:** You must scan and upload your assessments to gradescope. <http://www.gradescope.com>. You will be sent an invitation from the instructor of the course.

### Grading Scale

Course final grades will be determined using the following scale:

Grade	Points	%
A	930-1000	93-100
A-	900-929	90-92.9
B+	870-899	87-89.9
B	830-869	83-86.9
B-	800-829	80-82.9
C+	770-799	77-79.9
C	730-769	73-76.9
C-	700-729	70-72.9
D+	670-699	67-69.9
D	630-669	63-66.9
D-	600-629	60-62.9
F	Below 600	Below 60%

(A) An 'A' student not only understands the course material well but also can apply it creatively to new situations. The cutoff for an 'A-' will be no higher than **90%**.

(B) A 'B' student has a good, solid understanding of the material but has trouble applying that knowledge to new situations. The cutoff for a 'B-' will be no higher than **80%**

(C) A 'C' student has major gaps in understanding. The cutoff for a 'C-' will be no higher than **70%**

(D or F) Still larger gaps lead to a 'D' or 'F' in the course. The cutoff for a 'D-' will be no higher than **60%**

### Course Notes

Lecture notes will be available Blackboard.

### Office Hours

You are strongly encouraged to see any TA during their office hours, not just your own. Office hours (via Zoom) for all TAs will be posted on the class website.

### Supplemental Instruction (SI)

The University has a Supplemental Instruction Program (<https://dornsife.usc.edu/chem322a/>) that we encourage you to use. The SI instructors hold weekly sessions going over the course material and problems. They also prepare mock exams, which you can use to test yourself before the midterms and finals. The SI leaders attend all of the lectures and are familiar with the lecture material.

### Assignment Submission Policy

Quizzes, Homework assignment and exams must be submitted by the stated deadlines. Late assignments will not be accepted.

## Grading Timeline

Graded work will be available for review on Blackboard/Gradescope within 48 hours of the due date with the exception of the final project, which will take more time. You can view your grades at any time on the Blackboard site.

## Additional Policies

### Live Zoom Sessions

The class will meet twice a week (TTh 2:00-3:20pm **OR** 5-6:20pm) for synchronous work. You are expected to attend and participate in the class and group breakout sessions. Time will be spent solving problems and asking any questions you have about the material.

### Quizzes

**Concept Quizzes and Surveys:** Prior to live Zoom sessions you will be asked to watch a few short videos and complete a related quiz (or quizzes) on Blackboard. These videos and their quizzes will help you assess your understanding of the material. Most videos are followed by a short quiz. These quizzes are graded on accuracy, with multiple attempts allowed. Your highest quiz score (before the deadline) is recorded. Your three lowest scores are dropped. You will not earn points for submitting answers after the deadline. Please carefully note all due dates and times (found in Blackboard). There are no make-ups and no late submissions. Occasionally surveys will be posted to the Blackboard site. These surveys will be graded on participation only – there are no right or wrong answers. Points will be awarded (as stated at the beginning of each survey) for completion of each question.

### Homework

At the end of each module you will be required to turn in electronic copies of your problem sets. Only by working problems will you be able to test your knowledge of the material and your skill in applying it. If you have difficulties with some of the problems, it usually means that your knowledge or ability to apply this knowledge is insufficient. In this case, restudy the material in your notes and your text. If that does not help, seek assistance from your instructor or TAs. These will be graded on completion and count for 4% of your course grade. Problem Sets will be due on Sundays at 11:59pm PST, and submissions will be via Blackboard.

It is recommended that students spend a total of 9 hours per week outside of class on Chem 322b-related work. Recommended end-of-chapter problems and additional practice problems will be posted on the course website. These items will not be graded, but students are expected to do them. Answers can be checked with posted answer keys, in the solutions manual, and in TA and instructor office hours.

Homework assignment and exams must be submitted by the stated deadlines. Late assignments will not be accepted.

### In Class Work

Students will complete work assigned during class time, such as small group assignments, open-notes quizzes, and polls that count towards their in-class work grade. Credit will be given for thoughtful completion. In-class work may be assigned at any point during the class; students who miss the assignment due to arriving late or leaving early will not earn points. There will be three in class group assignments throughout the semester. These assignments will be graded on accuracy. There will be no make ups for these assignments, failure to participate will count as a zero toward your final grade. Poll everywhere will be used for in class clicker questions. In class poll questions are graded on participation alone. You will earn full credit for participation if you answer 85% of the questions presented throughout the semester. For students answering less than 85%

of the questions, participation scores will be adjusted accordingly. This is to account for unexpected absences or technical difficulties. There are no make ups for any reason.

## Reaction Analysis Assignments

There will be three open book reaction analysis assignments (see below). These will test your understanding of the material covered in the class to that point. These assignments will be graded on accuracy. These must be your own individual effort—no consultation with others or the internet is allowed. You are allowed to use your notes and/or textbook. These assessments will be uploaded to Gradescope. **None of your scores can be dropped.** No make-ups will be given. In some circumstances, a missed assessment due to severe illness, religious observance, or some (essential) USC activities may be excused. We must know ahead of time and will need documentation (see **Absences** section below). In this case, the balance of the lecture score will be scaled to compensate for the missing grade. **An unexcused missed assessment will be counted as a zero. Students must complete at least two of the three reaction analysis assignments.** If you cannot complete at least two of the assessments, you will receive a score of zero for the second missed reaction analysis assessment.

*1: Opens Wednesday Feb 17 5pm, closes Thursday Feb 18 10, 2021 12pm*

*2: Opens Wednesday March 31 5pm, closes Thursday April 1, 2021 12pm*

*3: Opens Wednesday April 28 5pm, closes Thursday April 29, 2021 12pm*

## Gradescope

You must scan and upload your exams to Gradescope. <http://www.gradescope.com>. You will be sent an invitation from the instructor of the course.

## Classroom norms

Listen actively and attentively.

Be courteous. Don't interrupt or engage in private conversations while others are speaking. Ask for clarification if you are confused.

## Laboratory

**Laboratory Orientation:** A lab orientation video will be posted to the laboratory Blackboard site. You must watch the lab orientation in order to maintain your space in the lab and thus to remain in the course.

**Lab Slides & Videos:** Content for the labs will be posted each week to the laboratory Blackboard site.

**Lab Scores:** See Blackboard for lab scores (reports, prelab quizzes, etc.) and informational material.

**Lab Exam:** At the end of the semester there will be a lab final covering material from lab throughout the semester. Questions typically cover the procedure, safety issues, relevant chemical formulas and chemical equations, observations, calculations, and data analysis.

**Laboratory Attendance:** *This is a laboratory course and attendance to all virtual lab periods is mandatory. No make-up labs can be given in this course.* Absences will be excused only for medical reasons or in the case of extreme necessity. For

lab absences, email Dr. Moore ([moorejl@usc.edu](mailto:moorejl@usc.edu)) as soon as possible in order to arrange a make-up lab or a make-up lab exam. You must arrive on time and prepared for lab. If you show up more than 10 minutes late, you will not be admitted to the lab session. Before leaving lab, you must turn in your exit ticket. Satisfactory completion of all labs and lab work is required to pass the class. Additional laboratory policies can be found in the lab syllabus.

**Late work:** Unless otherwise directed by Dr. Moore, all lab reports are due at the beginning of the following week's lab. The lab calendar on the 322b lab page shows due dates for all assignments. ALL assignments must be submitted by April 23. Assignments received more than 9 days late will receive a maximum score of up to 5 points for the pre-lab assignment. The rest of the report will be evaluated as Pass or No Pass. Post-lab assignments will be submitted through the Chem 322b Lab Blackboard page. Please review your TA's feedback promptly. Regrades on laboratory reports must be requested within one week of when the lab report is graded.

## Final Project

At the end of the semester you will be asked to construct a poster. You must research and present an organic molecule that is either a cure or a poison. (You may also propose your own topic of interest with an approval by Prof. Broyer) You must show structure, identify relevant pharmacophores, talk about history, synthesis and isolation methods, mechanism of action, discovery, side effects/antidotes. Your poster should also include a label for each step in the synthesis (substitution, elimination, etc.) A mechanism should also be provided for at least one step of the synthesis. Detailed instructions will be given around Week 8. Your poster will be graded on accuracy, completion, visual presentation, focus, organization, references, and style. This presentation is worth 15% of your overall grade in the course, with 1.5% of this based on completion of peer evaluation. Final drafts are due for peer evaluation by 5pm on Saturday, April 24. Your final product is due no later than 10am on Thursday, May 6.

## Academic Integrity

All work submitted in this course must be your original work. You may not use outside sources for answers to assignments (for example, pre-lab questions, lab reports, quiz questions, homework assignments, etc.). While you may collaborate with others on laboratory work and homework assignments, work must be in your own words and reflect your good-faith efforts. It is never acceptable to use outside "tutors" or others to furnish answers for you (for example, you may not consult Chegg.com, reddit, CourseHero, etc.). Please familiarize yourself with the discussion of plagiarism and other forms of academic dishonesty in SCampus in Part B, Section 11, "Behavior Violating University Standards" [policy.usc.edu/scampus-part-b](http://policy.usc.edu/scampus-part-b). See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](http://policy.usc.edu/scientific-misconduct). The posting of course materials (including Zoom recordings, quiz questions or answers, workbook content, lab reports or quizzes, or any other course-related content) to ANY internet site is strictly prohibited. Seeking outside help during quizzes is a violation of the USC Honor Code. Posting of course material is a violation of US copyright law and the USC Student Conduct Code.

## Course evaluation

Students will submit confidential course evaluations, available online during week 13. More information will be provided in lecture.

## Find out when the lab exam is

**Course Schedule: A Weekly Breakdown (Tentative – changes will be announced in lecture or on Blackboard)**

	Topics	Readings	Assignments
--	--------	----------	-------------

<b>Week 1</b> Jan18-24	Course Intro; Chapter 15	See blackboard	Syllabus Quiz, Getting to Know you Survey, Academic Dishonesty Assignment, Video Quiz 1, Homework
<b>Week 2</b> Jan25-31	Chapter 15/Chapter 16	See blackboard	Video Quizzes, Homework
<b>Week 3</b> Feb 1-7	Chapter 16	See blackboard	Video Quizzes, Homework
<b>Week 4</b> Feb 8-14	Chapter 16	See blackboard	Video Quizzes, Homework
<b>Week 5</b> Feb 15-21	<b>Group Assignment</b> Chapter 17	See blackboard	Video Quizzes, Homework <b>Reaction Analysis Assignment</b>
<b>Week 6</b> Feb 22-28	Chapter 17	See blackboard	Video Quizzes, Homework
<b>Week 7</b> March 1 -7	Chapter 17/Chapter 18	See blackboard	Video Quizzes, Homework
<b>Week 8</b> Mar 8-14	Chapter 18	See blackboard	Video Quizzes, Homework <b>March 12-Wellness day</b>
<b>Week 9</b> Mar 15-21	Chapter 18/Chapter 19	See blackboard	Video Quizzes, Homework
<b>Week 10</b> Mar22-28	Chapter 19	See blackboard	Video Quizzes, Homework <b>March 23- Wellness day NO CLASS</b>
<b>Week 11</b> Mar 29 – Apr 4	<b>Group Assignment</b> Chapter 20	See blackboard	Video Quizzes, Homework <b>Reaction Analysis Assignment</b>
<b>Week 12</b> Apr 5-11	Chapter 20/Chapter 21	See blackboard	Video Quizzes, Homework <b>Final Project – Due Nov. 8, 5pm</b> <b>April 7-Wellness day</b>
<b>Week 13</b> Apr12-18	Chapter 21	See blackboard	Video Quizzes, Homework <b>Peer Evaluations – Due Nov. 13, 5pm</b>
<b>Week 14</b> Apr19-26	Chapter 21/Chapter 24	See blackboard	Video Quizzes, Homework <b>April 22 Wellness Day-NO CLASS</b> <b>Lab exam April 21</b> <b>FINAL DRAFT OF POSTER DUE FOR PEER EVALUATION</b>
<b>Week 15</b> Apr 27 – May 2	<b>Group Assignment</b> Special Topics	See blackboard	Video Quizzes, Homework <b>April 30-Wellness day</b> <b>Reaction Analysis Assignment</b>
Final Poster Due Thursday May 6, 10am			

## Statement on Academic Conduct and Support Systems

### Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” [policy.usc.edu/scampus-part-b](https://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [policy.usc.edu/scientific-misconduct](https://policy.usc.edu/scientific-misconduct).

### Support Systems:

*Counseling and Mental Health - (213) 740-9355 – 24/7 on call*  
[studenthealth.usc.edu/counseling](https://studenthealth.usc.edu/counseling)

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

*National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call*  
[suicidepreventionlifeline.org](https://suicidepreventionlifeline.org)

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

*Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call*  
[studenthealth.usc.edu/sexual-assault](https://studenthealth.usc.edu/sexual-assault)

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

*Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298*  
[equity.usc.edu](https://equity.usc.edu), [titleix.usc.edu](https://titleix.usc.edu)

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

*Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298*  
[usc-advocate.symplicity.com/care\\_report](https://usc-advocate.symplicity.com/care_report)

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

*The Office of Disability Services and Programs - (213) 740-0776*  
[dsp.usc.edu](https://dsp.usc.edu)

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

*USC Campus Support and Intervention - (213) 821-4710*

[campussupport.usc.edu](http://campussupport.usc.edu)

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

*Diversity at USC - (213) 740-2101*

[diversity.usc.edu](http://diversity.usc.edu)

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

*USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu), [emergency.usc.edu](http://emergency.usc.edu)

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

*USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call*

[dps.usc.edu](http://dps.usc.edu)

Non-emergency assistance or information.