

CHEM 8B: Organic Chemistry II, Summer 2019
UCSC Department of Chemistry & Biochemistry

Instructor: Caitlin Binder, Ph.D.

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Office Hours: TuWTh 9:20-9:50am in Thimann Lecture 3 (before class)

Afternoon office hours vary by week – announced in lecture and on Canvas. There are also Q&A sessions in place of lecture on most Fridays and the day before exams. Feel free to email with meeting requests and I'll do my best to accommodate you.

Teaching Assistants (email addresses @ucsc.edu)

Gabriella Amberchan (gamberch), Jerin Tasnim (jtasnim), & Ariel Kuhn (ajkuhn)

LSS Small Group Tutor: Hina Daware

Email: mayumart@ucsc.edu

Free small group tutoring, sign up at sserc.ucsc.edu/slug-success

Discussion Sections: Consistent attendance to discussions is vital to your success in organic chemistry. Plan on preparing for discussion by attempting, if not completing HW assignments beforehand, and bring questions. Any questions are welcome, not just on newer material. 10% of the course grade is assigned to discussion activities (see next page).

Required Materials

- Read the **STUDY EXPECTATIONS & LEARNING ADVICE** on course website
- Bring the lecture note templates to every class (available for free on 8B website)
- Check CHEM 8A Canvas site for **announcements** (canvas.ucsc.edu)
- J. McMurry, *Organic Chemistry*, 8th Edition, Cengage 2012
- *Study Guide & Student Sol'ns Manual - McMurry Org. Chem., 8th Edition* Cengage 2012
- *Optional but Highly Recommended:* Molecular Model Kit for Organic Chemistry; 3-ring binder for notes; bound notebook for HW and reading questions; colorful pencils or erasable pens for taking notes

Summer Session Students with Disabilities: The Disability Resources Center reduces barriers to inclusion and full participation for students with disabilities by providing support to individually determine reasonable academic accommodations. If you have questions or concerns about exam accommodations or any other disability-related matter, please contact the DRC office, located in Hahn 125 or at 831-459-2089 or drc@ucsc.edu. DRC students with extra time accommodations also enrolled in 8LM prevent time conflict for exams. *I can arrange your exam to start early but only if you let me know in the beginning of the term.* Students cannot come to lab late for any reason; plan ahead!

Learning Resources

Course Website (<http://acrochem.sites.ucsc.edu/chem-108b/>) - This is where you will find the updated syllabus, reading questions, lecture handouts, practice exams, etc.

Course Reserves – the text book and solutions manual can be checked out from the S&E library for two-hour periods. Be considerate of other students' needs for the book too!

Lecture audio and projections are posted via UCSC webcast (webcast.ucsc.edu). Login credentials will be posted on the course website. **This should not be used as a regular substitute for lecture**, but rather used as a review or to catch up due to an unavoidable absence. Please direct any technical questions to webcast@ucsc.edu.

Course Description

CHEM 8B is the second quarter of organic chemistry and builds on the structural and reactivity conventions of organic compounds learned in CHEM 8A. The ability to distinguish between nucleophiles and electrophiles allows students to understand a broader scope of synthetic organic reactions, including those of aromatic compounds, alcohols, amines, and carbonyl compounds. Learning the chemistry of these functional groups lays the foundation for understanding the reactivity of more complex biomolecules such as carbohydrates, proteins, and lipids.

Course/Classroom Protocol

Students are expected to treat their instructor, TA, and fellow students respectfully!

Attendance at all class sessions is necessary for successful completion of this course. It is 100% your responsibility to be present for lecture material and in-class announcements.

As a courtesy, please step outside if you need to use your cell phone during class. Do not use phones during class. This includes taking pictures (webcasts posted for future reference) – write by hand instead. Students can take notes with a tablet but please check with me first. It is important that these devices are used only for course-related material. You will no longer be allowed to use your electronic device in class if you take advantage of your privilege. You will be asked to leave class if you cannot follow these rules.

Assignments and Grading Policy

Textbook reading assignments are given in the lecture schedule and should be skimmed for about 30 minutes before that day's lecture. **Reading questions** are available online to guide your reading. Students find these incredibly useful for using prep time wisely.

Homework is the most crucial way to gain an understanding of organic chemistry. You absolutely need to complete your homework in a timely manner if you expect to pass CHEM 8B! The homework sets that correspond to each lecture are given at the end of the syllabus. These are not turned in for credit but are the focal point of discussion sections.

Discussion Activities (100 points - quizzes, worksheets, games) assess your knowledge in a low-pressure environment before exams. **You must participate in your enrolled discussion section for credit** but are welcome to attend additional sections for more help. You can miss two discussion sections without penalty.

Midterm Exams (60%) are comprehensive assessments that review in detail recently covered topics. Each exam builds on material found on previous exams. Exam questions will be similar, if not identical, to the homework and in-class examples.

The Final Exam (30%) is cumulative with a somewhat greater focus on chapters not covered on the first two exams. Please pay attention to in-class announcements about exams. ***There will be no make-ups!*** The accelerated nature of the summer session makes it impossible to accommodate students who miss an exam, no exceptions.

A typical distribution of letter grades is as follows:

A: 100-90%; B: 89-75%; C: 74-60%.

Plus (+) and minus (-) grades are used in borderline cases, based on final exam scores. This course is typically not curved. Just do your best!

Registration Policies

Students are expected to attend their enrolled discussion section. Instructors do not handle enrollment such as section switching or directly give out permission codes. Please contact summer session (summer@ucsc.edu) with your enrollment concerns.

Deadlines

Drop: Monday, August 5

Request for "W": Friday, August 16

Neither Summer Session nor instructors drop students for non-attendance or non-payment. Students must drop themselves. Dropping results in full tuition reversal/refund. Withdraw posts a W for the grade and full tuition is charged (no refund).

For all dates and deadlines, including 'change of grade option' (P/NP) and grades due, here is the summer academic calendar: <https://summer.ucsc.edu/studentlife/index.html>

For questions about dropping, requesting a W grade for a course, or withdrawing from the summer quarter, email summer@ucsc.edu.

Title IX

I sincerely hope that everyone in my class feels safe and respected by instructors and fellow students. The university cherishes the free and open exchange of ideas and enlargement of knowledge. To maintain this freedom and openness requires objectivity, mutual trust, and confidence; it requires the absence of coercion, intimidation, or exploitation. The principal responsibility for maintaining these conditions must rest upon those members of the university community who exercise most authority and leadership: faculty, managers, and supervisors.

The university has therefore instituted a number of measures designed to protect its community from sexual discrimination, sexual harassment, sexual violence, and other related prohibited conduct. [Information about the Title IX Office](#), the [online reporting link](#), applicable campus [resources](#), reporting responsibilities, the [UC Policy on Sexual Violence and Sexual Harassment](#) and the UC Santa Cruz Procedures for Reporting and Responding to Reports of Sexual Violence and Sexual Harassment can be found at titleix.ucsc.edu.

In the unfortunate event that you are feeling unsafe or uncomfortable in the classroom setting or on campus, I hope you will feel comfortable talking to an instructor. You can submit claims online (link below) for *any* questionable incident. The Title IX/Sexual Harassment Office is located at 105 Kerr Hall. In addition to the [online reporting option](#), you can contact the Title IX Office by calling 831-459-2462.

Academic Integrity - *Students will take their own individual exams without additional resources (cheat sheets, etc). Communication between students during exams in any form will not be tolerated.* Students who participate in such forms of academic dishonesty may face academic sanctions. For more information, visit http://www.ue.ucsc.edu/academic_integrity.

What's the big deal?!

Organic Chemistry requires more than just going to class and doing the homework. Make the most out of your experience by living the **science nerd lifestyle** – one where you spend at least **2 hours every day** with the material in some form. Ask yourself why you're taking this class in the first place and use those reasons to stay motivated! **Establish a realistic study routine early and stick to it to stay ahead.** Update a calendar with your full class schedule and other commitments. You may find certain days with less available study time and decide that work should be done ahead of time or pushed to another day.

DO NOT plan on doing all of your HW for the week in 1-2 days or cramming just before exams. Rushing the learning process adds unfair pressure and unnecessary stress! The learning process is fluid and changes often need to be made based on unexpected events. Stay organized to keep yourself from falling behind.

The McMurry text is well organized and colorful, but there is a *special strategy for learning from a textbook* without losing interest or getting overwhelmed. The solutions manual has many errors so please check for my posted clarifications online. Follow the steps below and you'll efficiently use each reading assignment 2-3+ times for lasting comprehension, rather than reading assigned text sections page-to-page in one sitting.

BEFORE LECTURES

- Use the **Reading Questions** online to focus on the assigned text sections
- Begin the in-chapter problems for that lecture's **HW assignment**
- **Review notes and complete the HW** from the previous lecture

Finish the previous lecture's HW assignment before moving on to new material. Find the responses to the Reading Questions (8B website) for the upcoming lecture's text assignment. Spend 20-45 on those sections. Skim the **bold words, figures, mechanisms, and example problems**. Take another 15-30 minutes to begin the assigned **in-chapter HW** problems – even just write the question. These fundamental problems immediately follow the description of the topic and often have similar example problems above. You are not expected to understand everything at first but lecture will be much more engaging with these simple preparations.

****Plan for the next day before bed and eat breakfast before class****

DURING LECTURES

- Take thorough lecture notes using colored pencils or erasable pens
- Ask or make note of questions

Be on time and stay for the duration of every class. You're welcome to bring drinks and snacks as long as you're quiet and clean up after yourself. Keep your focus by making eye contact with the instructor frequently. Smiles and nods are nice ☺ Please feel free to ask questions or correct mistakes in a polite way. It can be difficult at times to write and listen so let me know if things are moving too quickly (just be nice about it please). Communication is key!

AFTER LECTURES

- Review your notes and start/continue **HW assignments the same day of class**
- Check your work with the **solutions manual** only after your best attempt
- Attend **office hours** regularly – instructor & TA have semi-private appts online
- Participate in **discussion sections**, bring your questions
- Keep a record of concepts/problems that are **difficult for you**
- Make an on-going reaction **summary sheet** and/or **mechanism book**

More advice can be found in the "Study Expectations..." document on the 8B website.

LECTURE SCHEDULE

Dates	Reading (McMurry 8)	Lecture Topic	Lecture No.
M 7/29	16.1-3	Electrophilic Aromatic Substitution (EArS)	1
T 7/30	16.4-5	EArS - Disubstituted Benzenes	2
W 7/31	16.6,9-11 17.1-3	Aromatic Chemistry Alcohols	3
R 8/1	17.4-7	Alcohols	4
F 8/2	-	Q&A Session	-
M 8/5	18.1-3,5-6	Ethers and Epoxides	5
T 8/6	19.1-7	<i>Before Lecture 6, read p. 712-716.</i> Aldehydes & Ketones: Nomenclature, Synthesis, Oxidation, Nucleophilic Additions	6
W 8/7	-	Q&A Session	-
R 8/8	EXAM 1	Cumulative, Focus on Chapters 16-19.7	1-6
F 8/9	19.8-11	<i>Before Lecture 7, read p. 717-720</i> Nucleophilic Addition of Alcohols & Amines to Aldehydes & Ketones	7
M 8/12	20.1-7	Carboxylic Acids & Nitriles	8
T 8/13	21.1-4,6-7	Nomenclature and Reactions of Acid Chlorides, Esters, and Amides	9
W 8/14	22.1-6	Introduction to Enol and Enolate Chemistry	10
R 8/15	23.1-3	Self-Aldol Condensation; Enones	11
F 8/16		Q&A Session	
M 8/19	EXAM 2	Cumulative, Focus on Chapters 21-23	1-11
T 8/20	24.1-8	Amines	12
W 8/21	25.1-5	Carbohydrate Nomenclature	13
R 8/22	25.6	Reactions of Carbohydrates	14
F 8/23		Q&A Session	
M 8/26	26.1-2	Amino Acid Structure & Titration	15
T 8/27	26.3-5,7	Amino Acids Synthesis, Peptide Primary Structure & Synthesis	16
W 8/28	27.1-3	Lipids	17
R 8/29	-	Q&A Session	-
F 8/30	FINAL EXAM	Cumulative	1-17

Last day to **drop**: Monday, August 5; Last day to **withdraw**: Friday, August 16

Homework

Plan to spend at least 2 hours on homework every day. This is the best way to learn what you know and what you don't know!

Read the Study Expectations & Learning Advice online.

Work through the assigned homework problems to get a more complete understanding of the concepts presented in lecture. Homework is not collected so it is entirely up to you to do on your own. **This will be the focal point in discussion sections.** Plan on completing each homework set the same day of the lecture. Do not fall behind on this. Self-grade your homework using the Solutions Manual or the back of the text *after* giving your best attempt at the problem set. Do not rely too heavily on the Solutions Manual.

Problems begin within the chapter and continue at the end with "Additional Problems." **Reaction worksheets are provided on the CHEM 8A/B websites for most chapters (not listed in HW below, check for the reaction worksheet each time we finish a chapter).**

Lecture	Chapter	Assigned Problems - McMurry 8 th Edition <i>(Clarifications to solutions manual for italicized problems online)</i>
1	16	1,3-7
2	16	8-13, 28, 29, 36, 37 (<i>10,12</i>)
3	16* 17	14, 18, 20, 22, 23, 51, 68, 72 (<i>22d, 23b, 68a</i>) 2, 4, 6
4	17*	7-10, 12-15, 30, 34, 35, 41 (<i>7c, 14ac, 41</i>)
5	18*	3, 5, 7, 14, 23, 25a-d, 28, 30acde, 43, 55 (<i>3,28,30de,55</i>)
6	19*	2-5, 7, 40bdef (<i>3c, 4cd, 5, 7</i>)
↑ Problems for Exam 1		
7	19*	10, 11, 13, 14, 16, 17, 40gh, 48, 58 (<i>11, 14, 48</i>)
8	20*	2(skip e), 7, 9a, 10, 11, 13, 26, 33, 35, 48, 57 (<i>33cde,35a, 48</i>)
9	21	2a-f, 3-5(skip 5d), 7, 9, 11-13, 17-21, 34-36, 38, 62 (<i>5a,7,9,11,12,20b,36c,38aeg</i>)
10	22	1, 2, 4-6, 20-22, 24, 25cd, 30, 34, 45abef (<i>5, 45f</i>)
11	23	1, 3-4, 27, 29
↑ Problems for Exam 2		
12	24	2a-e, 4, 6, 8, 9, 11, 17, 19, 36a-e, 40(skip d), 47cd, 50ade (<i>36bc</i>)
13	25	Carbohydrate Worksheet (online)
14	25	16-23, 43, 66
15	26	Practice amino acid titrations (pH 0-14) given pKa values
16	26	3, 5, 9, 32, 38a Amino Acid & Peptide Problems (online)
17	27	1-5, 15, 17, 20-22, 25, 35, 40, 46 (<i>40</i>)
↑ Problems for Final Exam		

* There are also reaction worksheets online for each of these chapters!