

**CHEM 8B: Organic Chemistry II, Winter 2025**  
**UCSC Department of Chemistry & Biochemistry**

🌹 Have you ever wondered *why roses are red and violets are blue*? 🍷 Why are plastics such a danger to our planet? 🍲 What happens to your food as it digests? **Organic chemistry has the answers!**

Trillions upon trillions of super small molecules are responsible for the colors that we see, the containers we eat and drink from, and the food we eat. Most of these life-sustaining molecules are organic (have a carbon backbone). Continue your ochem journey to learn the behind-the-scenes magic that make life possible!

**Instructor:** Caitlin Binder, Ph.D.

**Email:** [cambinde@ucsc.edu](mailto:cambinde@ucsc.edu)

**Lectures:** TuTh 8:00 – 9:35am, Classroom Unit 2

**Office Hours:** On campus - Tuesdays 1-2pm and Thursdays 11:30am-12:30pm, PSB 335  
 Wednesdays **1-2 pm** - Zoom link in Canvas intro module

**Teaching Assistants** – discussion & office hours schedule on Canvas

<b>Discussion:</b> TAs lead weekly problem-solving sessions to give everyone an opportunity to play with the material, including make and learn from mistakes. We strive to create an open, welcoming environment where all questions are welcome. <b>Go to discussion to do well on the HW sets and weekly Canvas quiz for attendance!</b> <b>Discussions Cancelled (holidays): Mon 1/20 and 2/17</b>	Alex Engstrom	amengstr@ucsc.edu
	Lia Lozano Salazar	llozanos@ucsc.edu
	Josiah Sanchez	jsanc274@ucsc.edu
	Ka Chan	klchan@ucsc.edu

**Required Materials & Resources**

- **E-Text in Canvas Module:** Karty, J. *Organic Chemistry*, 3<sup>rd</sup> edition (2022) Norton.
  - **Inclusive Access** – enrolled students get access to e-text automatically with a charge to your student account (approx. \$55). You have the option to *opt-out* of the IA program and purchase the textbook separately, but you *absolutely need the textbook to pass the class!*
- **Canvas**
  - Resources for success: Karty e-text, lecture note templates, chapter homework (HW) sets
  - Bring **class note templates** to every class & HW set to discussion
  - Class recordings posted on **YuJa** and **Canvas**: “TuTh Lecture Videos & Notes”
  - **Assignments:** Homework Sets and Weekly Discussion Quizzes
  - **GradeScope** – access thru Canvas, upload hand-written assignments
- **iClicker Cloud** (\$15.99 for 6 months access, iClicker.com) - in-class polling & attendance (**8% of course grade**)
  - Start with ‘2 week free trial’ and register (pay) before trial ends
- **Optional but Highly Recommended:**
  - 3-ring binder for organizing notes & HW
  - Colorful pencils or erasable pens for taking notes; tablets & stylus is great if available to you
  - **FREE Mobile Apps:** [ModelAR](#), [Mechanisms](#), Chirality-2 ([mac](#))([android](#)), Chairs ([mac](#))([android](#))

**LSS / MSI Learning Assistants:**

- Small group tutoring starts Jan 16, more info will be on Canvas

**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.

**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](mailto:drc@ucsc.edu).

**DRC students with extra time accommodations also enrolled in 8L/M:** prevent time conflict for exams. *I can arrange your exam to start early so you won't be late for lab, but this requires advance notice, ideally 2+ weeks.*

**CHEM 8B CLASS SCHEDULE, Winter '25 – updated 1-16-25**

Week	Date	Chapter * Karty, 3 <sup>rd</sup> ed.	Lecture Topic & Assignment Due Dates HW Sets posted in Canvas	HW Set Due *Canvas
1	Jan 7	Ch 1-11	Course Intro: Learning Advice, Assignments, Policies CHEM 8A FUNDamentals – <b>HW due 1/15</b>	Intro Assignments, Week 1 Module due Fri 1/10
	Jan 9	12.1-6, 12.11-12	Alkene Reactions, C=C double bonds, Carbocation Mechanisms – <b>Ch 12 HW due 1/15</b>	
2	Jan 14	13.1, 13.3-5	Alkene Reactions with Cyclic Mechanisms	8A Review & Ch 12 HW due Wed 1/15
	Jan 16	13.5-6, 13.8-9 14.1	Alkene Reactions - <b>Ch 13 HW due 1/22</b> Intro to conjugated pi systems	
3	Jan 21	14.1-7, 14.9	Resonance, Conjugation & Aromaticity 🔥 <b>HW due 1/29</b>	Ch 13 HW due Wed 1/22
	Jan 23	15.1-3	Mass Spectrometry (SKIP fragmentation) <b>HW due 1/29</b>	
↓ Schedule Shifted from original syllabus ↓				
4	Jan 28	16.1-4, 16.6-7	🌈 IR Spectroscopy, <b>Ch 16 HW due 2/12</b>	Ch 14-15 HW due Wed 1/29
	Jan 30	12-17	Midterm Exam Review	
5	Feb 4	12-15 and 8A topics (Ch 1-11)	<b>MIDTERM EXAM; in-person exam, 8-9:35am AND take-home exam, due Wed Feb 5, 11:59pm</b>	Midterm Exam take-home due 11:59pm, Wed 2/5
	Feb 6	16.1-4, 16.6-7	🌈 IR Spectroscopy, <b>Ch 16 HW due 2/12</b>	
6	Feb 11	17.1-3, 17.12	<sup>13</sup> C NMR 🌀 Nuclear Magnetic Resonance Spectroscopy	Ch 16 due Wed 2/12
	Feb 13	17.5-6, 17.8-9, 17.14	<sup>1</sup> H NMR 🌀 Nuclear Magnetic Resonance Spectroscopy, <b>Ch 17 HW due 2/19</b>	
7	Feb 18	18.1-18.12	Aldehydes and Ketones (C=O) with Strong Nucleophiles, <b>Ch 18 HW due 2/26</b>	Ch 17 HW due Wed 2/19
	Feb 20	19.1-5, 19.8, 19.15	Aldehydes and Ketones (C=O) with Weak Nucleophiles, <b>Ch 19 HW due 3/5</b>	
8	Feb 25	20.1-3, 20.5-6	Redox Reactions, <b>Ch 20 HW due 3/5</b>	Ch 18 HW due Wed 2/26 *partner option
	Feb 27	22.1-4	Acyl Substitution Reactions, Carboxylic Acid Derivatives and Strong Nucleophiles, <b>Ch 22 HW due 3/12</b>	
9	March 4	22.6, 22.8	Acyl Substitution Reactions, Carboxylic Acid Derivatives and Strong Nucleophiles, <b>Ch 22 HW due 3/12</b>	Ch 19-20 HW due Wed 3/5 *partner option
	March 6	23.1-4, 23.10	Acyl Substitution Reactions: Carb Acid Derivatives with Weak Nucleophiles; Acid Halide Synthesis, and Decarboxylation – <b>Ch 23 HW due 3/12</b>	
10	Mar 11	24.1-4	Electrophilic Aromatic Substitution, <b>Ch 24 not turned in for credit</b>	Ch 22-23 HW due Wed 3/12 *partner option
	Mar 13	17-20, 22-25	Final Exam Review	
11	Mar 20	<b>FINAL EXAM (Ch 12-20, 22-24), Thurs 3/20 @ 9 – 11 am, Clrm Unit 2</b> must submit final exam – both on campus and take-home – to pass the class		Take-home due <b>Fri 3/21 11:59pm</b>

\* See Canvas 'textbook' module for 8A / 8B topics and text sections NOT covered in this course.

## Assignments & Grade Breakdown

- **Textbook reading assignments**, Karty, *Organic Chemistry 3<sup>rd</sup> edition* in the schedule - *skim* for 20-30 mins the day before lecture. Peruse the figures on upcoming concepts to increase comprehension during lecture.
  - **Class Notes Templates by Chapter** - There's a lot to write in ochem class!
    - Caitlin posts templates online for students to bring to class with headings, structures, and problems to give you a less-writing, more-learning experience :)
    - Print or download from Canvas, or copy by hand, and fill in during lectures - not turned in, but pivotal for learning and success and knowing what material you're responsible for on assessments
  - **(7%) Introductory Assignments** – due Friday 1/10
    1. **GradeScope Test Assignment** - practice the software that you'll use for worksheets & exams
    2. **Academic Integrity Quiz**
    3. **Cool Chemistry Apps** – download, play, & post – nevermind!
    4. Pre-Class **Survey** and Collaborative **Playlist**
  - **(8%) Lecture iClicker Polls:** We will use the **iClicker Student app** to stay connected during TuTh lectures (requires subscription, \$15.99 for 6 months). **Pay thru iClicker.com for \$15.99. Pay thru the app for \$16.99 .:**
    - Join with your phone, tablet, or laptop (mobile app preferred to clicker remotes).
    - **Geolocation:** must be in Classroom Unit 2 for credit; enable your device's location services
    - iClicker **instructions & troubleshooting** page on **Canvas iClicker Module**.
    - No credit is assigned to the first two lectures to give us time to practice and settle.
    - **For full credit each day, week 2 and beyond...**
      - Attendance: 'Join' class TuTh between 8 – **9:35am**
      - Participation: Respond to at least 50% of the questions - OK if you miss 1 question per class
        - Points are based on participation, not correctness – OK to make mistakes
    - Two excused days - you can miss 2 lectures without penalty; scores dropped on Canvas
    - **In financial need?** Caitlin gets a limited number of discount codes – [iClicker Discount Request Form](#)
  - **(10%) Discussion Section & Quizzes**
    - Practice, help with, and exposure to the material – bring your questions!
    - **Quiz** opens on Canvas 5 minutes before section start time and closes 5 mins after
    - One of the questions will be specific to something TA shares during section, our way of taking attendance. There will also be some sort of sign-in sheet, though credit is given for the Canvas quiz.
    - **[no week 1 discussion quiz]**
  - **(50%) Chapter HW Sets / Worksheets** - systematic practice with the concepts and reactions
    - Download from Canvas, complete by hand, and upload to GradeScope.
      - *Optional, for the last 3 HW sets:* work with a partner and submit together (add Group Members)
    - TAs will go over the **chapter HW set** in Discussion sections
      - The answer key is posted 24 hours *after* the due date
      - HW may NOT be accepted for credit after key is posted
    - Correct your HW with answer key to create valuable, comprehensive study guides!
    - Worksheets graded on **correctness** = incentive to go to Discussion & office hours.
    - Lowest worksheet score is auto-dropped on Canvas
- (25%) EXAMS** are comprehensive assessments of material covered in lecture and HW. Q&A session is held during class time using the practice exam on Canvas as a guide, and all questions are welcome!
- Exam questions are similar to **HW** and topic/examples covered in lectures/discussions.
  - *Practice exams* are provided as a self-assessment tool. Keep in mind that no exam can cover all the material (or it would be super long!) – meaning, *do NOT just rely on the practice exam to study*.
  - **Midterm Exam (15%)** and **Final Exam (10%)** are in two parts each; **MUST** complete BOTH parts
    - **In-person** – individual, timed assessment; turn in physical copy in lecture hall
    - **Take-home** – open note/book assessment; Complete individually or with ONE partner
      - **MUST use Partner Exam Sign-up / Request Form**
    - **Students cannot pass the course without taking the Final Exam**

A typical **distribution of letter grades** at the end of the quarter is as follows. This course is typically not curved because exam averages are above 70%... **A: 100-90%; B: 89-75%; C: 74-60%.**

- **Plus (+) and minus (-) grades** are used in borderline cases, based on final exam scores.
  - Ex 1. Student with an overall score of 89% with an A on the final = A-
  - Ex 2. Student with an overall score of 89% with gets a B or lower on the final = B+

## Caitlin's Advice on How to Succeed in Organic Chemistry

### **STAY FOCUSED = BASIC HUMAN BRAIN FUNCTION!**

**EAT REGULARLY, DRINK WATER, SLEEP, MOVE YOUR BODY, BREATHE DEEPLY, TAKE BREAKS OFTEN  
YOUR BRAIN REQUIRES REST TO LEARN ☺**

### ***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 weekday** 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.

**Spacing (opposite of cramming) is a valuable learning strategy. 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 Karty text is well organized and colorful, but there is a *special strategy for learning from a textbook* without losing interest or getting overwhelmed. Follow the steps below to use each reading assignment 2-3+ times for lasting comprehension. **AVOID** reading assigned text sections page-to-page in one sitting.

### **BEFORE LECTURES** – REVIEW AND PREVIEW

- **30-45 min:** Review (re-write) **notes from the previous lecture** and **work on HW** from that chapter
- **20-30 min:** Check the schedule for e-text reading assignment and sections-to-be-skipped from that chapter. Skim the **bold words, figures, mechanisms, and example problems**. As you read, you'll come across fundamental problems that 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.
- **5 min:** Go to the Canvas chapter module - print/download the next day's **class note templates** on Canvas. Read the blank note templates; add color to titles and/or just enjoy this preview.
- **15-30 mins:** Begin the HW problems, even if you don't know what you're doing; just draw something!

### **DURING LECTURES** – ENGAGE AND ABSORB

- Take lecture notes using colored pencils or erasable pens, or tablet if that's available to you
- Make note of questions and feel free ask during lecture pauses

Smiles and nods during class are nice ☺ You're welcome to ask clarifying questions or politely correct my mistakes (missing a methyl group on a structure). It can be difficult at times to write and listen so let me know if things are moving too quickly and I'll do my best. Communication is key!

### **AFTER LECTURES** – PROCESS AND PRACTICE

- Re-write, or at least re-read your notes; use the text to supplement class notes
- Start/continue **HW** while the material is fresh in your mind (don't wait for the due date)
- Attend **office hours** with Caitlin and TAs
- Participate in **discussion sections**, bring your questions
- Keep a record of concepts/problems that are **difficult for you**
- Keep an on-going reaction **summary sheet** and/or **mechanism book**
- *Optional SmartWork:* online **additional practice problems** linked to the Karty text. Caitlin does her best to review HW sets and remove irrelevant problems from SmartWork sets. Please reach out when in question ("are we responsible for this?"). SmartWork is NOT turned in for credit, but SmartWork provides **immediate feedback for improvement** and direct links to **relevant readings**.

## How to Have Great Academic Integrity – Canvas Quiz due Fri 1/10

**We (teaching team) are open to discussing what's considered acceptable collaboration vs. misconduct.**

**Homework** – complete with any and all course materials available to you, especially class notes and Karty text.

- Submit **individual work** that reflects your understanding of the material.
- Zero points will be assigned questionable work (potential cheating), at the instructor's discretion. Contact Caitlin to set up a meeting to discuss the issue and potential partial credit.
- Partner option (last 3 HW sets only, Ch 20-24): submit together on GradeScope
  - One person uploads, then "Add Group Member" – both will get the same feedback & grade.
  - You are responsible for each other's work - leave time to review together before submitting.
- We encourage collaboration in this class, however, there are limitations:
  - **Do not send or post your worksheet and/or solutions** to anyone outside your partnership. This includes posting solutions on sites like **CHEGG or Course Hero – please don't do it as Caitlin checks it periodically. It's trace-able and becomes an academic dishonesty process** 😞
  - The **Academic Integrity Form** on Canvas has more examples of what's OK and NOT OK.
    - You can view the correct answers after taking the quiz and take it again for full credit.
    - Please ask for clarification on solo vs. partner work throughout the quarter.

**Exams: (1)** individual, timed, in-class exam **AND (2)** take-home portion, option to work with 1 partner.

- **In-person exam must be completed individually** and turned in within given class time.
  - Zero points may be assigned if...
    - there's any communication between students during the exam
    - the student uses any outside materials (ex. notes, cheat sheet)
  - If you leave the room with your exam, it cannot be accepted for full credit.
- **Take-home portion is open-note** – use any class materials for support (Karty text, class notes, HW)
  - Communicate with **ONLY YOUR ONE PARTNER** during this exam
  - Duplicate (obviously copied) exams or parts of exams will be assigned zero credit, at the instructor's discretion. Meet with Caitlin to discuss the issue and potential for partial credit.
- *I strongly advise against searching for answers on the web*, not only for the academic misconduct issue but also because you may be led to wrong answers!
- **Please do not send or post your exam or solutions** to anyone at any time. This includes posting on sites like CHEGG or Course Hero. **Please don't do it - Caitlin checks it periodically. It's trace-able and becomes an academic dishonesty process** 😞

Students who participate in such forms of academic dishonesty described above or in the Canvas quiz may face academic sanctions. We'd prefer to avoid this by making our expectations clear. For more information, visit [http://www.ue.ucsc.edu/academic\\_integrity](http://www.ue.ucsc.edu/academic_integrity).

## 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](http://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.