

**University of California, Santa Cruz**  
**Department of Chemistry & Biochemistry**

**CHEM 108A: Organic Chemistry**  
**Summer 2014**

**Instructor:** Dr. Caitlin Binder                      **Email:** [cambinde@ucsc.edu](mailto:cambinde@ucsc.edu)

**Office Location:** Physical Sciences Building (PSB) 454

**Office hours:** Mondays, Tuesdays, and Wednesdays 2:30-4:00 p.m.

\*Office hours also scheduled during lecture times the day before each exam (see schedule).

**Teaching Assistant:** Jessica Ochoa              **Office Location:** PSB 341

**Office Hours:** Thursdays and Fridays 11 a.m. – 12 p.m.

**Lecture:** M-F 9 a.m. – 11 a.m. in PSB 114. See attached Lecture Schedule.

**Discussions:** Consistent attendance to discussion sections is vital to your success in organic chemistry. Plan on preparing for discussion by attempting, if not completing the most recent HW assignment beforehand.

TR 4 – 5:10 p.m. in Thimann Labs 101  
MW 1:15 – 2:25 p.m. in N. Sci Annex 102

### **Required Materials**

- J. McMurry, Organic Chemistry, 8<sup>th</sup> Edition, Cengage 2012
- Study Guide and Student Solution's Manual for McMurry Organic Chemistry, 8<sup>th</sup> Edition Cengage 2012
- *Optional but Highly Recommended:* Molecular Model Kit for Organic Chemistry

### **Summer Session Students with Disabilities**

If you qualify for classroom accommodations because of a disability, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to me as soon as possible, preferably within the first week of the Summer Session. Contact DRC by phone at [831-459-2089](tel:831-459-2089) or by email at [drc@ucsc.edu](mailto:drc@ucsc.edu) for more information.

### **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](http://www.ue.ucsc.edu/academic_integrity).

### **Learning Resources**

eCommons (<http://its.ucsc.edu/ecommons/>) This is where you will find lecture handouts to print for lecture and other course materials. Check eCommons often for updated material - at minimum check on Saturdays for the next week's materials.

[Khan Academy Video Tutorials](#) can be great additions to your study routine. Peruse these in your precious free time for topics that are difficult for you.

## Course Description

We encounter organic (carbon-based) compounds on a daily basis and the general public has to take the media's word for whether these chemicals are "good" or "bad." Through learning even just the basics of organic chemistry, you will gain a deeper understanding of the world around you – from pesticides and household cleaners to energy drinks and sunscreen. CHEM 108A explores the fundamentals of organic nomenclature, structure in two and three dimensions, reactions and, reaction mechanisms.

## 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.

***The use of electronic devices is not permitted in the classroom while lecture or discussion is in session, unless prior permission is obtained from the instructor in writing.*** *This includes using a computer, ipad, tablet, smartphone, etc.* If permitted by the instructor, 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. Calls, texting, and any other use of electronic devices during lecture are prohibited. 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 are to be completed before that day's lecture. Comprehension questions pertaining to reading assignments will be posted on eCommons to guide your preparation.

Homework, though not turned in for credit, is your most pivotal assignment to aid in your understanding of organic chemistry. You absolutely need to complete your homework in a timely manner if you expect to pass CHEM 108A! The homework sets that correspond to each lecture are given at the end of the syllabus.

*There are no quizzes in summer organic chemistry.*

**Midterm Exams (60%)** are two-hour 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 (40%)** is three-hours and 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.

A typical distribution of letter grades is as follows:

A: 100-90%; B: 89-75%; C: 74-55%.

Usually, an overall score of at least 55% is required to pass. Consider this distribution of letter grades as a rough guide only. Do not rely on the curve. Instead just do your best!

## Study Tips and Requirements

What “they” say about ochem is true - it is difficult and there is an incredible amount of material to learn in a short amount of time. If done right, however, this class can be fun! An easy way to make this a more pleasurable experience is to establish good study habits early and stick to them. The learning process is fluid and changes often need be made based on other commitments. Many of these changes can be anticipated by staying organized so that you can compensate for lost time.

*In brief, follow these points and you can expect to excel in organic chemistry:*

- *DO NOT FALL BEHIND!*
- *Maintain a positive attitude*
- *Do the reading assignment and review previous class notes before each lecture*
- *Take thorough lecture notes and participate*
- *Review your notes and start HW assignments soon after lecture*
- *Attend office hours regularly*
- *Actively prepare for and participate in discussion sections*
- *Re-do HW problems without “cheating” to study for tests ON YOUR OWN*
- *Keep an organized, working record of concepts/problems that are difficult for YOU*

*Before lecture:*

First, check the Reading Comprehension Questions. This is the bare minimum material you need to know before coming to lecture. Check the syllabus for the reading assignment and take *between 20-45 minutes to skim the assigned text sections*, paying special attention to bold-faced words, **figures**, equations, and example problems. It is easier to conduct a lively class discussion when both the students and instructor are prepared. I do not expect you will understand everything that you read at first, but you will derive far more benefit from lecture and will be far more able to participate in class discussions by reading ahead of time.

**\*\*Eat breakfast before coming to class\*\***

*During lecture:*

Be on time and stay for the duration. There will be a short break half-way through lecture so please stay put instead of getting up and disturbing your classmates. Take detailed notes from the board and also write down the stuff I say (having just what's written on the board will not be enough). Please ask questions. Don't be shy! It can be difficult at times to write and listen so feel free to let me know if things are moving too quickly (just be nice about it please). Communication is key!

*After lecture/discussion:*

Put your notes side by side with the text. Re-write, or at least **re-read your notes** while supplementing your class notes with the textbook material on the **same day as lecture**. Re-do problems we did as a class that were challenging or confusing and come to office hours to clear things up. **Begin homework promptly** so you'll have time get help if needed. Start by writing out the questions and use the text and your lecture notes to work through each problem. Your homework is a record of your understanding and will be used to study for exams. Your “future self” will be grateful to you for making your homework neat and easy to follow. Color helps! After self-grading your completed HW, make sure you understand why you got those problems wrong (if any) and how to do it on your own in the future (there's no solutions manual during exams). On the first exam, you will be asked to “provide that statement from the syllabus” for extra credit: “The duck flies at midnight”. Only students who actually read the syllabus will know this so don't tell your friends. Let them read and find it for themselves.

## Study Tips (just a few more...)

*Stay organized.* Be a nerd about this. Seriously.

### *Studying for exams:*

Studying with groups is great, but it has to be in addition to studying alone. Your classmates cannot help you during the exam! Reading your notes and re-doing problems we do as a class is key. **Re-do as many homework problems as you can, as many times as you can. Don't just look at a problem and say, "I know how to do that." Actually write it out again (wasting paper is an unfortunate drawback, but necessary).**

*I do not have any practice exams* to provide you since this is my first quarter teaching 108A at UCSC. Your best bet is to re-work the homework problems but you are welcome to use Dr. Palleros' practice exams (<http://www.chem.ucsc.edu/courses/palleros/Practice108A-2013.html>). There is no guarantee that this covers all of the concepts that will be on your test and the format will likely be different. Please pay attention to my in-class announcements about the exams. **Using a practice exam as your ONLY study tool is potentially detrimental to your exam performance.** Use a practice exam in addition to the tips listed above.

*I will not conduct review sessions* but you are highly encouraged to come to office hours before an exam with specific questions. If you ask "what will be on the exam?", my answer will be "use your lecture notes and homework to prepare for the exam."

## Other Tips for Success and/or Maintaining Sanity

*Patience.* Some things will not make full sense right away, and letting this bother you only slows your progress. Instead, accept it and enjoy the process. Your career is for the long haul, after all. Also keep in mind that no two students are the same. You can expect to learn at a different pace than your classmates. College is actually about figuring out how *you* learn.

*Breathe and Get Out!* When feeling frustrated, take three deep breaths and try to start again fresh. Stress and frustration can also be alleviated with physical activity. Students tend to get caught up with classes, labs, studying, facebooking, partying, eating, etc. and exercise falls by the wayside. If you are feeling particularly overwhelmed or otherwise stuck, try going for a walk, run, or a bike ride. Try a yoga class or pick a sport and go do it! Sometimes when you just want comfort food, you'd be better off getting some exercise or at least some fresh air.

And last but not least, **SLEEP!!!**

## LECTURE SCHEDULE

Dates	Reading (McMurry 8)	Lecture Topic	Lecture No.
M 6/23	1	<i>Structure &amp; Bonding</i> : Hybridization, MO Theory	1
T 6/24	2.1-2.6	<i>Polar Covalent Bonds</i> : Polarity, Formal Charge, Resonance	2
W 6/25	2.7-2.12	<i>Polar Covalent Bonds</i> : Acids & Bases	3
R 6/26	3	<i>Organic Compounds</i> : Functional Groups; Alkane Nomenclature & Stereochemistry (3D Shape)	4*
F 6/27	4	<i>Organic Compounds</i> : Cycloalkane Nomenclature & Stereochemistry	5*
M 6/30	5.1-5.5	<i>Stereochemistry at Tetrahedral Centers</i> : Chirality, Enantiomers, R/S Designation	6*
T 7/1	5.6-5.12	<i>Stereochemistry at Tetrahedral Centers</i> : Stereoisomers	7*
W 7/2	6	<i>Overview of Organic Reactions</i> : Mechanisms	8
R 7/3	7.1-7.6	<i>Alkenes</i> : Structure and Isomers	9
F 7/4	-	<i>No Lecture or Office Hours</i>	-
<b>M 7/7</b>	<b>EXAM 1</b>	<b>Chapters 1-6</b>	-
T 7/8	7.7-7.11, 8.1-8.3	<i>Alkenes</i> : Electrophilic Addition Reactions	10
W 7/9	8.4-8.8	<i>Alkenes</i> : More Reactions	11
R 7/10	8.12-8.13	<i>Alkenes</i> : Reaction Stereochemistry	12
	9	<i>Alkynes</i> : Structure & Reactivity	
F 7/11	-	<i>Office Hours* – No Lecture</i>	-
M 7/14	10	<i>Organohalides</i> (AKA Alkyl Halides)	13
T 7/15	11.1-11.6	<i>Reactions of Alkyl Halides</i> : Substitution	14
W 7/16	-	<i>Office Hours* – No Lecture</i>	-
<b>R 7/17</b>	<b>EXAM 2</b>	<b>Chapters 7-10</b>	-
F 7/18	-	<i>No Lecture or Office Hours</i>	-
M 7/21	11.7-11.12	<i>Reactions of Alkyl Halides</i> : Elimination	15
T 7/22	14.1-14.5	<i>Conjugated Compounds</i>	16
W 7/23	15.1-15.6	<i>Benzene &amp; Aromaticity</i>	17
R 7/24	-	<i>Office Hours* – No Lecture</i>	-
<b>F 7/25</b>	<b>FINAL EXAM</b>	<b>Cumulative (Chapters 1-11 and 14-15)</b>	-

\*Office hours on these days will be during lecture time (9-11am) in PSB 454.

## Homework

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 for that chapter. 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. **COMPLETING EACH HOMEWORK SET ONCE IS NOT ENOUGH TO DO WELL ON THE EXAMS (CAN YOU RECALL IN DETAIL THE PROBLEMS YOU WORKED ON A FEW DAYS AGO?).** PREVIOUS HOMEWORK SETS NEED TO BE REVIEWED OFTEN. BEFORE EACH EXAM, ACTUALLY **RE-DO** AS MANY HW PROBLEMS AS POSSIBLE – DON'T JUST LOOK AT THE HOMEWORK AND SAY "I CAN DO THAT." ACTUALLY DO IT AGAIN. EVENTUALLY, YOU CAN DO THIS WITHOUT REFERRING TO YOUR BOOK, NOTES, SOLUTIONS, OR OLD HW. YOU WILL NOT HAVE ANY OF THESE RESOURCES DURING THE EXAM. RELYING TOO MUCH ON THESE TOOLS WHILE STUDYING WILL GIVE YOU A FALSE SENSE OF CONFIDENCE.

Problem sets are broken down by lecture. Problems begin within the chapter and continue at the end with "Additional Problems." For example, the first assigned problem (1.3) can be found on page 8 of McMurry's 8<sup>th</sup> Edition.

Lecture (Date)	Chapter	Assigned Problems
1 (6/23)	1	3, 6, 8-15, 28, 34, 38, 42, 47, 50, 51
2 (6/24)	2	1-3, 6-8, 10, 26, 28, 31-34
3 (6/25)	2	36-40, 44, 51, 55, 57
4 (6/26)	3	1, 3-5, 7-9, 11, 12, 14, 16-18, 22, 25, 29, 31a-c, 35, 38, 42, 43, 53
5 (6/27)	4	1, 2, 4-7, 9, 11, 12-15, 18, 30, 35-39, 42, 45
6 (6/30)	5*	1-5, 8, 10, 30, 32, 37, 42-46
7 (7/1)	5*	13, 14, 16, 17, 20, 21, 22, 38, 52, 55, 65
8 (7/2)	6	1-10, 12, 13, 17, 19, 20a-c, 22, 23, 26, 27, 29, 30
↑ Problems for Exam 1 ↑		
9 (7/3)	7	1, 2a-c, 4-6, 9, 10, 11, 13, 15, 26d-f, 28, 30, 31a-c, 42
10 (7/8)	7	16-18, 21, 45-49
	8	1-6; Begin Reaction Summary Sheet (use end of chapter rxn summary)
11 (7/9)	8	7-10, 12-17, 26, 27, 43, 44, 46, 52, 53, 56 Continue rxn summary sheet from now on...
12 (7/10)	8	20, 21, 28, 33, 35, 58
	9	1, 3-6, 8-13, 19, 22, 23, 25, 27-29, 31, 34, 37, 38, 44, 45
13 (7/14)	10	1-3, 5-11, 12a, 13, 20, 21, 23, 28, 31, 32, 34, 35, 39
14 (7/15)	11	2-8, 11-13, 27-33, 40, 41, 42, 44, 45
↑ Problems for Exam 2 ↑		
15 (7/21)	11	15-17, 19, 20, 36, 37, 47, 52, 57, 66
16 (7/22)	14	2, 3, 7-9, 22, 24, 26, 29, 32, 34, 35, 48, 49
17 (7/23)	15	1-3, 7, 9, 12, 18, 19, 25, 26, 31-33, 42
↑ Problems for Final Exam ↑		

\* Use the same model for assigning all chiral centers, rather than redrawing structures. This will be explained in lecture.