

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA

Organic Chemistry, CHM 314 - Course Syllabus – Winter 2018



CHM 314 Homepage

Lectures: TuTh 9:15–10:30 am Room 24D-1224 Secn 01, CRN 11615
TuTh 2:30–3:45 pm Room 15-1823 Secn 02, CRN 11616
TuTh 4:00–5:15 pm Room 15-1823 Secn 03, CRN 11617

Instructor: **Dr. Laurie S. Starkey** Room 4/1-428 Phone: (909) 869-3670
e-mail: lsstarkey@cpp.edu (don't get lost: include "CHM 314" in Subject!)
Homepage: <http://www.cpp.edu/~lsstarkey>

Office Hours: Bldg. 4, Room 1-428 – on ground floor (not basement), across the hall from the General Chemistry stockroom, **Tuesdays/Thursdays:** 10:45-11:45 am & 1:15-2:15 pm (or by appointment)

What will you learn in this course?

Organic chemistry is a fascinating subject! As humans, we interact with carbon-containing (organic) compounds all day every day...did you know that nearly everything you eat, taste and smell is an organic molecule? Other examples of organic compounds and materials include the vitamins and pharmaceuticals that keep us healthy, the personal care products that keep us looking good and feeling clean, the clothes we wear, the fuels that cook our food and make our cars go, everything we use that is made from plastic or with plastic components, the sporting equipment that improves performance and keeps us safe, and so much more! As you progress through this course, I hope you will come to appreciate how organic chemistry is important to your major, career field, and quality of life. Together in this course, we will explore many types of organic compounds. We will learn how to draw them and name them and determine their 3-D structures. Ultimately, you will learn how to predict an organic molecule's function and reactivity, based on its structure.

How will you learn about Organic Chemistry?

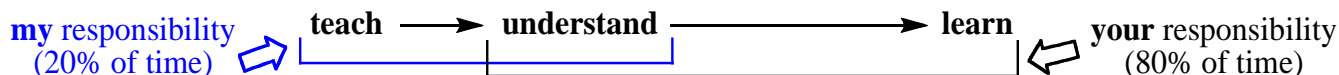
I have designed this course around your learning, and I will do everything I can to help you succeed! If you share in the commitment to doing well in this class, then you have to commit to the first four items on the following "To Do List." If you want to earn an A or B in the course, the last two can further help you achieve your goal, especially the OLC. I offer a small amount of extra credit as incentive for these last two items because students have reported that they were very helpful and I want to encourage you to try them. However, I recognize that Sapling incurs an extra cost and that some students would be miserable in a study group, so these are not mandatory and you are free to opt out.



How to earn an A

Work Required to Pass CHM 314:

- **Class Lectures** – I will provide handouts of partial/skeleton notes for each chapter and we will work through these during lecture. I will provide many opportunities during lecture for problem-solving and self-assessment (such as working through examples and using "clicker" questions), so come ready to be engaged every day!



- **Read the Book & Work on Textbook Problems** – Here is where you should be spending the majority of your time outside of class, ideally 1-2 hours *every day*! This is a relatively fast-paced class so working on it a little bit every day means you won't fall behind – trying to "cram" study and memorize material is NOT a successful strategy for organic chemistry! Working textbook problems is the only way you can get practical experience and be prepared for exams. *A minimum of 10% of each exam will be derived directly from the textbook problems.* Try the in-chapter problems as you read the chapter and then continue to work on the end-of-chapter problems (answers at the back of the book or in Solutions Manual). Working on problems means *doing* the problem – write down your answer and then check to see if it's right, and then try more problems. It will be helpful to have a molecular model kit to help solve certain problems, so I recommend purchasing a kit for yourself or together with your study group.

- **Homework** – Every 1-2 weeks a “graded” homework assignment will be given. All students who turn it in will receive +1 point extra credit, so I describe these assignments as “free red ink” because you will get critical feedback on your work without your mistakes hurting your grade.
- **Stay Organized** – Start studying now. If you wait until a few days before each exam, it'll be too late. Try flashcards! Review your notes often, ideally before each class. Actively work through your notes, ask questions, retry problems and mechanisms worked on in class.
- **Communicate** – Please check your @cpp.edu email regularly so you won't miss important course announcements (did you know you can forward it to another email account?). Also, visit the CHM 314 homepage (URL above – not in Blackboard) for clicker questions, handouts, links to animations/videos, homework answer keys, and to see sample exams from previous quarters. Come to office hours to ask questions about the lecture, your notes, homework, the book, your exam, etc. If you are struggling – ask for help! Reach out to me and/or your study group, come to office hours, find a tutor at the LRC...don't go it alone and don't wait until it's too late.

Reaching your Maximum Potential:

- **Organic Learning Community (OLC)** – Research shows that students who work with other students can achieve more and earn higher grades. To encourage student-to-student teaching and learning, I will offer +2 points extra credit on the final exam to students who join a study group that meets weekly for at least one hour (OLC details are provided below), and another +2 points to students who keep a reflective journal throughout the quarter (even without joining OLC).
- **Online Homework (Sapling)** – I will provide a problem set for each chapter in Sapling and students who complete the assignments (with 65% or higher score) before each midterm will earn +1-2 points extra credit on the exam. Each online homework assignment is a combination of multiple-choice and drawing problems. Multiple attempts are allowed with no penalty, and it offers the benefit of providing instant feedback.

How will I help you learn?

I recognize that Organic Chemistry sometimes has a scary reputation as a “weed-out” course, but I promise that you are capable of meeting, and even mastering, the challenge ahead. We are about to embark on a journey together, and I am fully committed to your success! As I guide your learning, I will wear many hats: organized lecturer, demanding coach, enthusiastic cheerleader, wise elder, patient tutor, career counselor and well-prepared Sherpa. I invite you to visit office hours where we can discuss lecture notes, textbook problems, homework assignments, midterm results, strategies for studying, and even extracurricular activities. I serve as Advisor to three student clubs: chemistry, pre-dental and pre-optometry, and most students who visit my office find that our discussions usually extend beyond Organic Chemistry! I am constantly exploring new methods and tools to make my teaching more effective and to improve student learning, and I welcome your feedback about what works and what doesn't. In addition to recommending relevant textbook problems, I will provide additional assignments and activities that will help you learn the material while developing essential problem-solving skills.

What textbook and materials are needed?

Students must complete one year of General Chemistry before beginning Organic. CHM 317L is NOT co-requisite. The textbook is required; all other items are recommended. The textbook and solutions manual are also on reserve at the CPP Library. (Req = Required and Rec = Recommended)

Req: L. G. Wade, "Organic Chemistry," Prentice Hall, ideally 8th or 9th edition

Req: Wade & Simek, "Solutions Manual" for above text

Rec: iClicker – available at Bronco Bookstore; must bring to class for participation credit

Rec: Sapling Learning online homework system <https://www.saplinglearning.com>

Rec: Molecular model sets available through SMACS club (Tu 12-1 in 8-241) & Bronco Bookstore.

How will your learning be measured?

Course grades are based on two written midterm exams, plus a comprehensive written final exam. Completion of online homework, using an iClicker in class, joining an OLC, keeping a journal, and

periodic submitted homework assignments will earn extra credit points on the exams. *Each exam is cumulative but will emphasize the immediately preceding chapters. Exams must be taken as scheduled and NO make-up exams will be given.* If one midterm is missed, your course grade will be based upon the remaining exam scores. If both midterms are missed, you are not eligible to take the final (grade of WU will be issued). Please note that in this course, no notes or model kits are allowed during exams.

Chapters 1, 2	Exam I	100 pts (25%)	Thursday, January 25 (50 min. during class time)
Chapters 3, 5	Exam II	100 pts (25%)	Thursday, February 15 (50 min. during class time)
Chapters 1-6	Final Exam	200 pts (50%)	Tue. 3/13 <i>or</i> Thu. 3/15 (see schedule for times)

How will grades be assigned?

The student's assigned course grade will be the higher of either: 1) the grade as determined by the total points earned [midterms + final] or 2) the final exam grade. Completion of online homework, using an iClicker, and occasional submitted homework assignments will earn extra points on the exams. This participation will also be used in the event of borderline grades. Grades will be based on your total points earned and how the total relates to the class average. The class average will be used as the break between C and C+ and it will be scaled up to 65 if it falls below that (grades will not be scaled down if the class average is above 65!). An example of the grade breakdown:

A (85–100%) B (70–84%) C (55–69%) D (45–54%) [if Average = 65 = C/C+ cutoff]

What happens if life gets complicated?

There are many excellent resources available at Cal Poly Pomona if you need help: Disability Resource Center (DRC), Counseling Center, Learning Resource Center (LRC), Veteran's Resource Center, Women's Resource Center, Pride Center, Cultural Centers, etc. If for some reason you are unable to complete the course, come see me to discuss withdrawing (W) or possibly taking an Incomplete grade (to receive an I grade, you must be passing the course with a C or better and have a university-recognized excuse). Otherwise, a grade of WU (unauthorized withdrawal) will be issued if the course is not completed (e.g., if the final exam is not taken).

If you are tempted to copy someone else's homework, I suggest you rethink your strategy! Besides jeopardizing your future by cheating (university disciplinary policies will be strictly followed), you are also missing the point of why you are here and taking this class. My homework assignments are designed to help you learn the material, develop problem-solving skills and receive helpful feedback so you can improve and do well on the midterms and final exam. *If you don't do your own work, you will not pass this course!* I accept late homework, so get it done and turn it in when you can. If you are struggling, turn to your study group or maybe a tutor, and I am happy to work with you on your homework during office hours.

About me

I grew up in Connecticut and I was a Biology major when I started college at UConn, because I liked Marine Biology and I enjoyed dissecting things in high school. When I took Organic Chemistry, however, I was surprised at how interesting it was – I thought, “This is chemistry?!” My brain is not good at memorizing things so I loved how there was an explanation for everything in Organic, and that I could work through every problem rather than just having to remember the answer. (By the way, my brain also has an embarrassing and nearly complete inability to remember names – so please don't take offense when I don't know your name!) I was also excited about the many career opportunities available to chemists, so I changed my major to Chemistry and after earning my B.S. degree I went to UCLA to earn my Ph.D. in Organic Chemistry. I focused on Organic Synthesis and planned on a career in pharmaceutical R&D, making new drug candidates. Luckily, my passion for teaching led me instead to the perfect job here at Cal Poly Pomona!

The CHM 314 O-Chem Learning Community (OLC)

There is an extra credit opportunity available, and you must commit to it by class time on Tuesday of Week 2 (January 9th). If you complete the requirements as described below, you



will earn **+2 extra credit points** to be added to your 200-point final exam score. To form an Organic Learning Community (OLC), you will join up with other students for a group of at least 3 people; 4 is better. Your group spends at least one hour outside of class and lab together each week, working on an assignment provided by me, plus other class material such as homework or textbook problems. The meetings can be online or by conference call, using Google Hangouts, Skype, Zoom, or something similar, but they must be real time. Within 24 hours of each meeting, you must submit a paragraph or bullet points (via Blackboard journal) about the meeting: what the group did, what you contributed, what you learned, and what you still have questions about. Short entries are fine as long as they're thoughtful. You need to submit at least 7 of these, and you can't submit if your group didn't meet or you didn't participate. At the end of the quarter, you will submit a one- to two-page reflective entry about your experience with your learning community and in this course. Many people find Organic Chemistry rather overwhelming, and having company can help a lot. Please visit the "Testimonials" page (QR code) to read a representative sampling of student reactions to their OLC experience!

Keeping a Blackboard Journal

Thinking about the way you learn, called "metacognition," can help you study better and improve your grades! To encourage reflective thinking, I am offering an **additional +2 points** on the 200-point final exam for everyone who keeps a journal throughout the term, even if you don't join a study group. I will give you weekly prompts to get you started on your journal entries. *Students who join an OLC will have an opportunity to earn +4 points total because they will be doing weekly journals.*



Bb journal instructions

Sapling Online Homework (see CHM 314 homepage or QR code for registration instructions)

Once you have registered and enrolled, you can log in <http://saplinglearning.com> at any time to complete or review your homework assignments (~1 per chapter). During sign-up or throughout the term, if you have any technical problems or grading issues, send an email to Sapling at support@saplinglearning.com explaining the issue. The Sapling Learning support team is almost always faster and better able to resolve issues than I am! Sapling assignments will be worth up to +2 points extra credit on each exam. (Each assignment with a grade of 65% or higher will be worth 0.5 point, so students can earn 0, +1 or +2 points extra credit.)



Sapling instructions

CHM 314, Dr. Laurie S. Starkey, Winter 2018 Tentative Schedule					
Week	Mon	Tues	Wed	Thurs	Fri
1	1/1 Holiday	1/2 Chapter 1	1/3	1/4 Chapter 1	1/5
2	1/8	1/9 Chapter 1	1/10	1/11 [Educator]	1/12
3	1/15 Holiday	1/16 Chapter 2	1/17 Monday schedule (Wed. canceled)	1/18 Chapter 2	1/19
4	1/22	1/23 Chapter 2	1/24	1/25 Exam I	1/26
5	1/29	1/30 Chapter 3	1/31	2/1 Chapter 3	2/2
6	2/5	2/6 Chapter 5	2/7	2/8 Chapter 5	2/9
7	2/12	2/13 Chapter 5	2/14	2/15 Exam II	2/16
8	2/19	2/20 Chapter 4	2/21	2/22 Chapter 4	2/23
9	2/26	2/27 Chapter 6	2/28	3/1 Chapter 6	3/2
10	3/5	3/6 Chapter 6	3/7	3/8 Chapter 6	3/9
Finals (section)	3/12	3/13 9:10–11:10am (9:15am 24D-1224) 3:50–5:50pm (4pm 15-1823)	3/14	3/15 1:40–3:40pm (2:30pm 15-1823)	3/16

Organic Chemistry, CHM 314 Material Covered (Wade Text):

- Ch1 (1-10) Introduction and Review (Lewis structures, resonance, skip 1-11)
- Ch2 (5-12)* Acid/Base (Proton Transfer) Reactions (*see also Solution Manual Appendix 2)
- Ch1 (11-19), Ch2 (1-4) Structure and Properties of Organic Molecules (skip 2-2B)
- Chapter 3 Structure and Stereochemistry of Alkanes (conformations, nomenclature)
- Chapter 5 Stereochemistry (skip 5-4D)
- Chapter 4 Study of Chemical Reactions (& free-radical halogenation; skip 4-16D)
- Chapter 6 Nucleophilic Substitution Reactions (sections 1-16) (w/an intro to Elimination)

Suggested textbook problems (9th edition – see home page for 7th/8th): **ALL** but you can **skip** those listed below

Ch. 1 ALL but 1, 12, 14, 21, 28, 34-36, 38, 47-49, 56.

Ch. 2 ALL but 1, 2, 8, 9c, 11b, 12, 15-20, 22, 24-28, 39, 43-46, 49-57.

**Note: you should be able to do the following Chapter 2 problems WITHOUT using a pKa table:*

2-10b c f i, 2-11a, 2-13a b d f g i j, 2-14, 2-21, 2-36, 2-47, 2-48.

Ch. 3 ALL but 20, 28, 31, 32, 35, 39e, 45cd, 52 (+ Do Chapter 7: 1-4).

Ch. 4 ALL but 3, 5, 6, 9bc, 10a, 17, 20-23, 33, 38, 49b, 50-58.

Ch. 5 ALL but 8-10, 21h, 30h, 32, 35c, 37, 40, 41.

Ch. 6 ALL but 4, 8, 52, 55, 56, 59. (Also recommended from Chapter 2: 2-23)