

**Organic Chemistry I - 2952
CHEM 2451 Section 2
Autumn Quarter, 2020**



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Lecture: TR 8:00 – 9:30 a.m. (Online via Zoom)

Recitation: W 8:00 – 8:50 a.m. (Online via Zoom)

Office Hours: by appointment (email via Zoom)

Required Text: *Organic Chemistry, Sixth Edition*, by Marc Loudon and *Study Guide and Solutions Manual to Accompany Organic Chemistry, 6th Edition*, by Marc Loudon and Joseph G. Stowell

Recommended Model Kit: Molymod #62053 Organic Chemistry Molecular Model Set by Indigo Instruments or similar kits (typically available on Amazon).

Course Goals:

Specific course goals have been developed in line with the mission and learning outcomes of the chemistry department and the University of Denver (see current university catalog)

Students at the end of this course will:

- 1) Understand and apply current chemical theories in the following areas:
 - a. Terminologies in organic chemistry (nomenclature, concepts, and fundamental transformations).
 - b. Fundamental concepts in structures, properties, reactivities, and mechanisms of organic compounds and reactions.
 - c. Molecular models and modeling software to view organic structures.
- 2) Communicate organic chemistry principles.
 - a. In exams, quizzes, and assignments.
- 3) Develop critical thinking skills by:
 - a. Applying knowledge to new findings in chemical science.
 - b. Posing questions and answering questions on multiple cognitive levels.
- 4) Develop awareness and applications of organic chemistry.

Getting the most out of this class:

- Review your general chemistry notes the first week of class and take the class reading seriously - preferably, read the whole chapter before class.
- Conduct searches after each class to find applications of the chemistry covered in class.
- Solve as many problems as possible instead of memorizing the concept or information. This means that consistent work is required and better than cramming for an exam at the last minute. A good rule of thumb is to ***spend at least 9+ hours a week outside of class*** on organic chemistry problems and concepts. Study with a pencil in hand: draw structures, practice reactions and mechanism.
- Seek help early; organic chemistry has numerous concepts and can be confusing at times but seeking help sooner than later can help and accelerate your understanding and it can be the difference between an 'A' and a 'C' final grade.

Lectures: Our lectures will generally follow the progression of the textbook with several supplemental materials to aid understanding and assessment of concepts. Our standard will be that of the American Chemical Society (ACS) and we will review ACS problems during lecture.

Lectures will be synchronous and video lectures will be uploaded to Canvas each week.

Problems You should solve as many problems as possible in the Loudon text. The exams will focus on several types of problems: structures, reactions, mechanisms, syntheses and concept-based questions. The **exam questions are mostly applied problems**. I expect you to know the concepts in the material first and then apply your knowledge to solve problems including practical and applied problems. **I expect you to be consistent at solving problems - practice, practice, and practice.** The recommended question types can be found in your text, and additional problems will be presented during recitation. **The key is to solve ten problems for every concept covered in class.** Remember solving problems is key to your success in organic chemistry.

Worksheets (WS): Worksheets are designed to help you practice standardized questions and exercises from different textbooks. It is essential that you complete the worksheets to measure your understanding of class material and apply your knowledge to solve challenging problems. You learn organic chemistry through practice and worksheets is a good way to practice – take them seriously. **Note: late submissions will not be graded, and a zero score will be earned.** Also, no worksheet score will be dropped. Worksheets are worth 50 points of your final grade.

Sapling Online Homework (SOH): Apart from the weekly worksheets, Sapling homework will be another opportunity to work on problems. Sapling provides unique online homework questions with drawing tools to assist you in practicing and learning organic chemistry. And we will use Sapling this quarter for the course. As soon as you

register and get access to Sapling Learning, learn how to use all the drawing tools, and how to navigate the site. Information about registration will be posted in Canvas. SOH is worth 50 points of your final grade. No homework will be dropped.

Exams: There will be two midterm, worth 100 points each, and a final exam also worth 100 points. If your final exam score is higher than either of the midterms score, the lowest score will be replaced with your final exam score. Note, every exam is equally important. Note: no practice exams before the midterms or final

Final Grade: Your final grade will be determined out of the 400 available points on exams, SOH, and worksheets. **There will be no makeup exams. If you miss an exam for any reason, that exam will be dropped, and the final will count for 200 points of your total grade.** The final exam is not optional.

Exam I	100 points
Exam II	100 points
Final	100 points
Worksheets	50 points
Sapling Homework	50 points
	400 points

Grade	Range	Grade	Range
A	100 – 94 %	C-	<74 – 70%
A-	<94 – 90%	D+	<70 – 67%
B+	<90 – 87%	D	<67 – 64%
B	<87 – 84%	D-	<64 – 61%
B-	<84 – 80%	F	<60 – 0%
C+	<80 – 77%		
C	<77 – 74%		

Note: Final grades and percentage ranges are subject to change by the instructor

Lecture and Testing Accommodations:

I will make every effort to accommodate students diagnosed with a learning disability. Contact Disability Services Program (DSP) to make arrangements and for any questions you may have about signing up. Also visit the University Disability Services' website at <http://www.du.edu/disability/dsp/index.html>.

Academic Integrity:

While I advocate collaborative learning and teamwork, I also firmly believe that each student should maintain the highest ethical standards. As such, I support and will strictly enforce the Honor Code of the University of Denver. www.du.edu/honorcode.

Honor Code Statement.

All members of the University of Denver are expected to uphold the values of *Integrity*, *Respect*, and *Responsibility*. These values embody the standards of conduct for students, staff, faculty, and administrators as members of the University community. These values are defined as:

Integrity: acting in an honest and ethical manner;
Respect: honoring differences in people, ideas, and opinions;
Responsibility: accepting ownership for one's own conduct.

Pioneer Pledge.

As a University of Denver Pioneer, I pledge...

- to act with INTEGRITY and pursue academic excellence;
- to RESPECT differences in people, ideas, and opinions and;
- to accept my RESPONSIBILITY as a local and global citizen;

Because I take pride in the University of Denver, I will uphold the *Honor Code* and encourage others to follow my example.

Topics to be covered: Tentative Course Schedule – Subject to Change

	Date'16	Topic	Reading	Due
Wk1	9/15	Chemical Bonding and Structure	Ch1 & 8	
		Lewis dot structure, Octet Rule, Chemical bonding, formal charge, molecular geometry, polar covalent bond		
		Bond Theories Valence bond theory, Hybridization, molecular orbital theory, Resonance		
Wk2	9/22	Molecular Representation of Organic Molecules	Ch2 & 3	
		Advanced Drawing of Organic Molecules, Lone pairs, Resonance, functional groups		
	Fri	Acid and Bases Bronsted-Lowry definition: strength, pKa Lewis definition: Adducts, coordinate covalent bond		<i>hw1&ws1</i>
Wk3	9/29	Functional Groups Intro to Infrared spectroscopy	Ch2 & 12	
		Alkane Chemistry		
	Fri	Alkane Chemistry		<i>hw2&ws2</i>
	10/02	Exam 1		
Wk4	10/06	Stereochemistry and cycloalkanes	Ch 6 & 7	
		Stereochemistry and cycloalkanes		
		Alkyl Halides	Ch 9	<i>hw3&ws3</i>
Wk5	10/13	Chemical Reactivity and Reaction Mechanism		
		Alkenes: Nomenclature	Ch 4 & 5	
		Alkenes		<i>hw4&ws4</i>
Wk6	10/20	Electrophilic Addition Reactions	Ch9	
		Electrophilic Addition Reactions		
	10/23	Electrophilic Addition Reactions		<i>hw5&ws5</i>
		Exam 2		
Wk7	10/27	Nucleophilic Substitution	Ch9	
				<i>hw6&ws6</i>
Wk8	11/03		Ch9	
		Elimination Reactions		<i>hw7&ws7</i>
Wk9	11/10		Ch9	
				<i>hw8&ws8</i>
Wk10	11/17		Ch9	
		Final Review		<i>hw9&ws9</i>
	12/02			

Canvas and Class Notes: Both worksheet assignments and PowerPoint notes will be uploaded in Canvas. For the Sapling homework, login to Sapling Learning to complete the assigned homework each week. Also, zoom links and recorded lectures will be posted in Canvas.