

**Organic Chemistry III – 3268
CHEM 2453 Section 1
Spring Quarter, 2019**



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Lecture: MWF 9:00 – 9:50 a.m. (Sturm 254)

Recitation: T 9:00 – 9:50 a.m. (Sturm 254)

Office Hours: open door and by appointment

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 other similar kit (typically available on Amazon)

Course Objective: This course is a continuation of organic chemistry I & II and is an intensive survey of certain organic compounds: their structures, reactions, mechanisms, syntheses, and applications. The objective of the course is to expose you to more organic functionalities, new reactions and to help you transition to biochemistry. The course will also give you basic information on how macromolecules are synthesized and some common reactions in biological systems – the goal here is to prepare you for upper division chemistry classes. Also, like in any other chemistry class, I hope to pique your interest in scientific research and to introduce you to how scientists create and discover new knowledge. The course begins with a review of Electrophilic Aromatic Substitutions, which is where we stopped in organic chemistry II and then we will move on to a couple of Nobel prize winning carbon-carbon coupling reactions. The major part of our time this quarter will be spent learning about the chemistry of carbonyl compounds, carboxylic and carboxylic acid derivatives, this is because these class of compounds find useful applications in biology, medicine, energy, and engineering. We will conclude our study this quarter surveying selected topics in biological organic chemistry including the

chemistry of carbohydrate and amino acids – one of nature's magnificent building blocks for proteins that give structure and function to living organism.

In order to get the most out of this course, I would recommend you:

- Review your organic chemistry I & II notes the first week of class and take the class reading seriously. Preferable, 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. This means that consistent work is required and will pay off much more than cramming for an exam the last minute. A good rule of thumb is to *spend at least 9 hours a week outside of class* on organic chemistry.

Lectures: The lectures will generally follow the progression of the textbook with a lot of materials added to each chapter. Most lectures will be presented on the board and PowerPoints. ***Attending every class and taking meaningful notes is extremely important for this complex subject.*** Staying up with the reading will help you to understand the lectures better. We will work on problems during lectures and recitations.

Recitation: Tuesday recitations will give us an opportunity to go over challenging problems from the worksheet or selected book problems. We may use some recitation sections for normal lectures. There may also be short quizzes during this period.

Problems You should work as many problems from the Loudon textbook as possible. The exams will focus on problems involving reactions, mechanisms, and synthesis. **My exam questions are mostly applied problems:** you must learn and know the material first and then apply your knowledge to solve practical problems. The only way to prepare for the exams is to study a functional group, its reactions, the reagents involved in its transformation, and how you can apply these techniques to build other functional groups or to make useful compounds. All of these is possible if you practice, practice, and practice. The recommended problems can be found in your text, and additional problems will be presented in class and 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.

Wednesday Worksheets (WS): Worksheets are designed to help you practice standardized questions. It is essential that you complete the WS assignments to evaluate your understanding of the class material and to apply your knowledge to solve challenging problems. Worksheets are due before **5:01 p.m. every Wednesday** as indicated in the schedule. There are 8 worksheets for the quarter. The worksheets are worth 100 points in total. **No credit will be awarded for late submissions.**

Chapter Summary: As part of your grade this quarter, you must turn in a detailed chapter summary of your reading each week. We have 9 chapters to cover this quarter and that means you will be required to submit 9 chapter summaries for a total of 100 points.

Exams: There will be two midterm exams and a final for this quarter; each exam is worth 100 points and the final exam is also worth 100 points. If your final exam score is higher than your midterm score, the lowest midterm score will be dropped and replaced with your final score. There will be no grade curve applied to your midterms or final exam.

Final Grade: Your final grade will be determined out of the 400 available points based on the exams, worksheets, chapter summaries and plus all earned in-class quiz points.

There will be no makeup exams. If you miss an exam for any reason, that exam will be dropped and replaced with your final exam score. The final exam is not optional – you must take the final exam.

Cell Phone and Electronic Device Policy:

While I understand that mobile devices have become integral to our lives, they are disruptive to the learning environment. Therefore, I request that all electronic devices be turned off (not muted) during class (i.e.; please don't text/facebook during class). If an emergency arises, and you need to contact the outside world during our lecture or recitation time, I request that you quietly leave the room and conduct your conversation outside. Additionally, most all of our lectures will require far too much structural drawing for effective notes to be taken on a laptop so please leave these devices off during lecture.

Lecture and Testing Accommodations:

I will make every effort to accommodate students diagnosed with a learning disability. I will do this in complete confidence. I do, however, request that any student requiring these accommodations inform me the first week of class. For further information, please see 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 individual 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'18	Topic	Reading	Due
Wk1	4/01	Chapter 17: Allylic and Benzylic Rxn	Ch17	
		Chapter 17: Continued		
		Chapter 17: <i>Continued</i>		
Wk2	4/8	Chapter 18: Aryl Halide Reaction	Ch18	Chapter Summary
		Chapter 18: Transition Metal Catalysis		WS1
		Chapter 18: <i>Continue</i>		
Wk3	4/15	Chapter 19: Aldehydes and Ketones	Ch19	Chapter Summary
		Chapter 19: <i>Continued</i>		WS2
		Chapter 19: <i>Continued</i>		
Wk4	4/22	Exam 1		Chapter Summary
		Chapter 20: Carboxylic Acid	Ch20	WS3
		Chapter 20: <i>Continued</i>		
Wk5	4/29	Chapter 20: <i>Continued</i>		Chapter Summary
		Chapter 21: Carboxylic Acid Derivatives (CAD)	Ch21	WS4
		Chapter 21: <i>Continued</i>		
Wk6	5/6	Chapter 22: Enolates, enols, α,β -unsaturated compounds	Ch22	Chapter Summary
		Chapter 22: Continued		WS5
		Chapter 22: <i>Continued</i>		
Wk7	5/13	Chapter 23: Amines	Ch23	Chapter Summary
		Exam 2		WS6
		Chapter 23: <i>Continued</i>		
Wk8	5/20	Chapter 23: <i>Continued</i>		Chapter Summary
		Chapter 24: Carbohydrates	Ch24	WS7
		Chapter 24: <i>Continued</i>		
Wk9	5/27	University Holiday		
		Chapter 24: Continued	Ch27	WS8 Chapter Summary
		Chapter 27: Amino Acids (Selected sections)		
Wk10	5/28	Chapter 27: <i>Continued</i>		
	6/3	Chapter 27: Continued		
	6/7	Final Review/Catch up		Chapter Summary
	6/11 (Tuesday)	Final Exam (8:00 – 9:50 am)		

Canvas and Class Notes:

Most lecture information will be presented on the whiteboard and PowerPoint slides which will be upload on canvas. Suggested problems and worksheets will be posted on Canvas.