



CHM 427 – Intermediate Organic Chemistry | Syllabus | Fall 2024

Instructor: Lorenzo Mosca
Class Meetings: Tu-Th 11:00 am – 12:15 pm
Where: Beaupre 215 – in person

Student Hours: Mondays 11:00 am – 12:00 pm
Wednesdays 1:00 pm – 2:30 pm. Feel free to drop by my office.
If you wish to schedule outside the above time, please notify me with at least 24 hours of advance notice using a method of your choice (in person, email, phone call). Remote office hours are an option (Zoom). You may book using Starfish too.

Where: Beaupre 325D

Contacts: lorenzo@uri.edu, put **CHM 427** in the object.
(401) 874-2364
Office: Beaupre 325D

Textbook(s): The recommended Textbook for this course is the following:

→ **Organic Chemistry** | *Jonathan Clayden, Nick Greeves, and Stuart Warren.*

Second Edition (2012). Oxford University Press.

ISBN: 9780199270293 – Paperback. E-book version also available.

You may find used copies for low prices (e.g. thriftbooks.com, abebooks.com, amazon.com).

Unfortunately, this is the only intermediate organic chemistry book out there that is worth more than its price. Any other textbook of organic chemistry that claims to be intermediate is either too advanced (graduate level), or truly atrocious.

Other materials: Lecture handouts and notes. Your classroom notes and homework. If you have them, molecular models can be useful – but are not required for this class.

Course website: All lecture notes, homework, answers and announcements will be put on Brightspace (<https://brightspace.uri.edu>)

Course description: Intermediate organic chemistry with emphasis on organic reaction mechanism, stereochemistry, spectroscopic characterization, and newer synthetic methods. This course is a doorway to independent thinking in chemistry. With this course, students will be provided with a solid foundation in organic reactivity that will allow them to predict, analyze and write a detailed mechanism for a chemical reaction. We will cover large-breadth topics within the realm of reaction mechanisms, physical organic chemistry, stereochemistry and catalysis. (3 crs.)

Course pre-reqs.: CHM 226 + 228 or CHM 292.

Course requirements (* contributes to grade):

- Attendance is highly recommended (see: *Class Policies*)
- 10 Quizzes *



- 3 Exams *
- 1 Final *
- Class participation (see: *Class Policies*)

Class Calendar | Dates and Reminders

09/03/24	T	Advising Day
09/04/24	W	First Day of Classes e-Campus open add
09/05/24	Th	First Day of CHM 425 Syllabus, Introduction, Overview
09/10/24	T	The Structure of Molecules e-Campus open add closes
09/12/24	Th	Resonance, Delocalization, Conjugation and Aromaticity
09/17/24	T	Acidity and Basicity Concepts e-Campus late add closes Last day for P/F
09/19/24	Th	Nucleophilic Addition to Carbonyls
09/24/24	T	Nucleophilic Substitution to Carbonyls
09/26/24	Th	C–C bonds with Organometallic Reagents Drops after 09/26 → “W”
10/01/24	T	^1H and ^{13}C 1D NMR – Exam 1
10/03/24	Th	Elimination Reactions – Exam 1 Due (10/04)
10/08/24	T	Electrophilic Additions to Double / Triple Bonds
10/10/24	Th	Enols and Enolates
10/15/24	T	Indigenous Day Classes make up day 425/427 does not meet
10/17/24	Th	Electrophilic Aromatic Substitution Late drop form required after 10/18
10/22/24	T	Conjugate Addition and $\text{S}_{\text{N}}\text{Ar}$
10/24/24	Th	More Enolates: Alkylation, Aldol, Claisen
10/29/24	T	Other NMR nuclei – 2D NMR, COSY and ^1H - ^{13}C HSQC/HMBC – Exam 2
10/31/24	Th	No CHM 427 – Exam 2 Due (11/01)
11/05/24	T	Election Day All classes do not meet
11/06/24	W	Pericyclic Reactions Election Day Make Up Day CHM 425/427 meets
11/07/24	Th	Pericyclic Reactions
11/12/24	T	Heterocycles
11/14/24	Th	S, Si, P in organic synthesis
11/19/24	T	Radical Chemistry and Carbenes
11/21/24	Th	Radical Chemistry and Carbenes – EPR
11/26/24	T	Organometallic Chemistry – Exam 3 (Due 12/01)
11/28/24	Th	Thanksgiving Recess (until 12/01)
12/03/24	T	Beyond the molecule
12/05/24	Th	Beyond the molecule
12/10/24	T	Beyond the molecule
12/11/24	W	Last Day of Classes
12/12/24	Th	Reading Day
12/13/24	F	First Day of Finals
12/19/24	Th	CHM 427 FINAL EXAM @11:30am–1:30pm Last Day of Finals
12/20/24	F	Final Make Up Day (snow or cancellations)
12/27/24	F	Final grades due in e-Campus

Note: This schedule may be subject to changes and adjustments depending on our timing with lab work. All lectures will be given in Beupre 215.



Course Aims

This course aims to teach by focusing on understanding—rather than algorithmic problem solving—a large breadth of topics spanning the organic chemistry already seen in CHM 291/292 and more.

Organic chemistry is logical and interconnected, with an underlying language that is relatively simple to understand when students have consolidated their basic knowledge.

We utilize an orbitalic description of reaction mechanisms, reactivity and stereochemical outcomes, which is the most physically appropriate approach to describe organic reactions for senior undergraduates.

Grading – Your final grade will be computed averaging the following grades:

- ① Quizzes (10, 2 lowest dropped)
- ② Intermediate Exams (3, could be dropped if lowest)
- ③ Elective Final Exam (1, could be dropped if lowest)

The lowest grade between Intermediate and Final Exam will be dropped.

There will be no makeup quizzes or exams. Missed exams or quizzes will receive 0 points. I will grade according to a scale no stricter than the one reported below.

Re-grading policy. You may request a re-evaluation of your work for up to 7 days after the return of your evaluation. Extra credit will not be offered for this course.

93% – 100%	A	4.0	73% – 76.9%	C	2.0
90% – 92.9%	A–	3.7	70% – 72.9%	C–	1.7
87% – 89.9%	B+	3.3	67% – 69.9%	D+	1.3
83% – 86.9%	B	3.0	63% – 66.9%	D	1.0
80% – 82.9%	B–	2.7	60% – 62.9%	D–	0.7
77% – 79.9%	C+	2.3	0% – 59.9%	F	0

Your part – Here are a few points where your full commitment is required:

- Note-taking – Feel free to take plenty of notes, share them with your colleagues, read them/reorganize them before the next class.
- Do your part in the class – this includes obvious things, such as trying not to get distracted, taking part in activities according to what you are comfortable with, asking me to slow down or go over it once again if something is not clear.
- You will be asked to participate in problem solving sessions at the board and your active participation is critical to your success.
- Ask me/your colleagues questions – the *rule of the class* is that there is no such thing as a stupid question.
- Practice, practice, practice! Organic chemistry is all about understanding the physical meaning underlying our “arrow-pushing” formalisms.
- Use the opportunity of more facetime during student hours!
- Be ready to challenge yourselves and to critically review your work.

It is my utmost priority to ensure that your learning takes place in a respectful, safe, and constructive environment. I will not tolerate aggressions and any other actions based upon prejudice and intolerance. As a group of people with biases, we shall learn how to understand and work with our differences. Equity and inclusion are critical components for campus community members to thrive and become responsible



citizens of the World. If you are a target or a witness of a bias incident, you are encouraged to submit a report to the URI Bias Response Team at www.uri.edu/brt. There you will also find people and resources to help you.

Quizzes (10*)

Quizzes are assigned on average every 3 lectures and will be graded (Take-home). Two of the lowest grades will be dropped. Quizzes are rapid-fire questions that summarize the essence of the previous lectures (not cumulative). You should be able to finish them in about 20 minutes of fully dedicated time. You have 36 hours from assignment (through Brightspace) to turn them in physically or electronically (email them as scans or pictures). * Number of Quizzes may vary depending on overlap with exam weeks.

Intermediate Exams (1–3)

Intermediate Exams will be given as “take-home exams”. The exams will be sent to you on Tuesday before CHM 425 and will be due on the following Friday at 12:00 pm (*noon*). Therefore, you will have two lab sessions and student hours to ask for detailed clarifications or to review materials inherent to the exam. You should be able to complete an intermediate examination in about 2 hours of uninterrupted, fully dedicated time (which we know is hard to come by these days). You may discuss the problems with your colleagues, but each exam should be the product of your own work. You may submit your answers as a pdf scan or pictures. If you do submit pictures, make sure they are collated into a single file and that they are at a sufficient resolution / contrast for me to be able to grade all your work. Additionally, feel free to ask questions by email. The lowest score between the 3 intermediate exams could be dropped (unless the final exam is lowest). Cannot be dropped if you elect not to take the Final.

Final Exam (12/19/24 @11:30am–1:30pm)

The final exam for CHM 427 is cumulative and draws from the intermediate exams in similarity and difficulty. The final exam is two hours and can be dropped if it computes as the lowest score (unless one of the intermediate exams is the lowest). You may elect not to take the final exam if you are satisfied with the average of the 3 intermediates (no grades are dropped).

Class Policies

A. Attendance

Attendance for this class is required. You must notify the instructor with sufficient advance if you are unable to attend class. Justifiable absences include illness or injury, religious observances of holy days, grievance, or participation in school-mandated events. It is your sole responsibility to communicate with me prior to the classes. A catch-up laboratory session may be available to complete the experiment and obtain the data you may need for the lab report. **Important!** You **do not need to present a doctor’s note**, or a justification letter. It suffices for you to let me know that you won’t be coming to class. The reason I ask you to notify me in advance is because in a class of low enrollment, we might be faced with a situation where 50% or more of the class might be absent. In such cases, it is better to cancel or restructure the class period.

B. Class participation

This class is built upon a discussion of topics in organic chemistry. You should participate in the discussion. Questions, comments and rebuttals are more than welcome. Make a rule to say something in each class period. Remember the class rule: there is no such thing as a stupid question!

C. COVID-19



As members of the URI community, students and instructors are required to comply with standards of conduct and take precautions to keep themselves and others safe. Visit web.uri.edu/coronavirus/ to keep yourself up to date with the latest guidance about the URI COVID-19 response. **Important!** Do not attend class if you show any symptoms of COVID-19 or related respiratory illness. Instead, you should go get tested. Notify me of your absence before the start of class by email: lorenzo@uri.edu, or phone: (401) 874-2364.

D. Communication with the Instructor

Phone: (401) 874-2364

Email: lorenzo@uri.edu

I expect to get back to you as soon as possible or within 24 hours during weekdays. Emails and messages received after 8:00 pm will be addressed at my earliest convenience or on the next available weekday.

E. Drops and Withdrawals

Missing attendance for the first two class meetings (without notifying me) will result in removal from the class roster. You can drop this class until the third week of classes. You can withdraw (W on transcript) until 09/26/2024.

F. Academic Honesty and Integrity

You are expected to be honest in all academic work. Your name on any written work or exam shall be regarded as an assurance that the work is the result of your own independent thought, study and effort. You have an obligation to know how to quote, paraphrase, summarize, cite and reference the work of others with integrity. The following are examples (non-comprehensive) of academic dishonesty:

- Using material, directly or paraphrasing, from published sources without proper citation
- Claiming disproportionate credit for work not done independently
- Unauthorized possession or access to exams
- Unauthorized communication during exams
- Unauthorized use of another's work or preparing work for another person
- Taking an exam for another person
- Altering or trying to alter grades
- The use of notes/text or electronic devices to gain an unauthorized advantage during exams
- Fabricating or falsifying facts, data, or references
- Facilitating or aiding another's academic dishonesty

All instances of academic dishonesty should be faced as ethical responsibilities and include the use of machine learning engines (= generative "AI").

The university policy on academic honesty is clear. Any incidence of academic dishonesty (see above or URI's Student Handbook), will result in either one or all of the following: a grade of zero, failure of the course, formal notification to the Dean.

G. Electronics and Recording

You may not record any audio and/or video of lectures, student presentations, or student hours *without in-writing permission from all individuals present*. You may choose to take your notes in writing or typing, but your use of electronic devices (laptop, iPad, tablets) should not disrupt the lecture, the instructor, or your colleagues. The use of electronic devices must be limited only to course-specific tasks. Refusal to comply will result in dismissal from the course.

H. Disability Accommodations

Please notify me with your Disability Access and Inclusion (DAI, formerly DSS) accommodation letter as early as possible. I will be happy to discuss and arrange for your approved academic accommodation. If you have not yet established services through DAI, please contact them to



engage in a confidential conversation about the process for requesting reasonable accommodations in the classroom. DAI can be reached here: (401) 874-2098, web.uri.edu/disability, <https://web.uri.edu/disability/request-form/> email: dai@etal.uri.edu.

I. Student Resources

Your success in this class and as a senior student is very important to me. If you struggle with the course materials or requirements do not hesitate to contact me so that we can discuss possible solutions. Additional resources are available to you as a student at URI.

- Academic Enhancement Center (AEC) – offers free face-to-face and web-based services to undergraduate students seeking academic support. Peer tutoring is available for STEM-related courses by appointment online and in person.
- The Writing Center offers peer tutoring focused on supporting undergraduate writers at any stage of a writing assignment.
- The UCS160 course and academic skills consultations offer students strategies and activities aimed at improving their studying and test-taking skills. Complete details about each of these programs, up-to-date schedules, contact information and self-service study resources are all available on the AEC website: uri.edu/aec
- Wellness Resource Center (WRC) – provides a relaxing atmosphere and a safe, comfortable space for you to escape the stresses of life. The WRC is located on the lower level of the Anna Fascitelli Fitness and Wellness Center.
- Campus Recreation offers free membership to their facilities (included in your tuition). Access includes the Fascitelli Fitness and Wellness Center, Mackal indoor courts, cardio and weight rooms, Tootell Aquatic Center, and numerous other facilities and group classes. <https://web.uri.edu/campusrec/facilities/>
- *Well-being Coaching* offers one on one meetings with a certified Well-being Coach, who is trained to identify your strengths and support you with a goal or behavior change. Your coach will guide you holistically and support you through day-to-day struggles. <https://web.uri.edu/campusrec/well-being-coaching/> or wellcoach@etal.uri.edu

J. Changes to the Syllabus

Due to unforeseen circumstances, the contents of the syllabus and the content of the course may be subject to changes. You will be notified of any change in advance.