

Organic Chemistry 224 - Spring 2019

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Lecture M/W/F 10:25 – 11:15 a.m. Cuneo Hall-Room 109 (Sect 009)

Discussion Wed 11:30 – 12:20 p.m. Flanner Hall-Room 7 (Sect 010)
 Wed 1:40 – 2:30 p.m. Flanner Hall-Room 7 (Sect 011)

Office Hours Wed 4:00 – 5:30 p.m. & Fri 12:30 – 2:00 p.m.

Required Text: David Klein, "Organic Chemistry" 3rd Ed. hard copy or eText

Required Online: WileyPLUS for Organic Chemistry (login information can be found under the resources tab in Sakai)

Recommended: Your favorite molecular modeling kit. Here are some options. (\$ not guaranteed)

- Darling \$18.65 in LUC Bookstore with cardboard box; \$15 in stockroom
- Darling \$36.00 in LUC Bookstore with green plastic box
- Prentice Hall Molecular Model Set for Organic \$35.33 (colorful & pretty)
- Prentice-Hall Framework Molecular Models (Brumlik) \$45.80 (tubes to cut)
- HGS Fundamental Organic Set \$17.00

Extra help: *Pushing Electrons* by Daniel Weeks

The Organic Chemistry Answer by Matthew J. Hamiel

Do you have an interest in human health, prescription medicines and drugs? Organic chemistry is utilized by medicinal organic chemists for the design and construction of new molecules that are prescribed by doctors and dispensed by pharmacists to treat diseases. Organic chemistry is also the essential science for inventing new soaps and detergents, dyes, plastics, and resins, and it is also used in creating certain types of new photoreceptors for renewable solar energy.

1. *Course Content & Objectives:* Second semester of a two semester sequence for non-chemistry majors. Mastery of the second semester material requires comprehensive understanding and recall of the first semester material. Organic chemistry of conjugated π systems, aromatics, carbonyl compounds, amines, carboxylic acids and their derivatives, carbohydrates, lipids and proteins. The student should learn how to:

1. identify the various classes of organic compounds, their methods of preparation, and typical reactions.
2. name and draw specific organic compounds.
3. postulate a *logical* reaction mechanism for organic reactions.
4. discriminate among relative stabilities of reaction intermediates.
5. plan and write out multi-step syntheses using known functional group transformations, including syntheses of polyfunctional organic compounds.
6. name, draw and interpret the 2- and 3-dimensional structures of important biopolymers, and techniques for their synthesis and characterization.
7. analyze and interpret data from various instruments used in separating and identifying organic compounds including: IR, NMR, UV-vis and MS.

2. *IDEA Objectives:*

1. Gaining factual knowledge (terminology, classifications, methods, trends)
2. Learning fundamental principles, generalizations, or theories
3. Learning to *apply* course material (to improve thinking, problem solving, and decisions)
4. Learning how to find and use resources for answering questions or solving problems
5. Learning to *analyze* and *critically evaluate* ideas, arguments, and points of view
6. 5 extra credit points will be awarded to the entire class if there is a 95% class response to the end of the semester IDEA survey

3. *Exam Dates (subject to change):*

Friday, February 15, 2019:	Mid-term Exam 1
Friday, March 22, 2019:	Mid-term Exam 2
Wednesday, April 17, 2019:	Mid-term Exam 3
Monday, April 29, 2019:	Final Exam, 9:00-11:00 a.m.

4. *Quiz Dates (subject to change):*

Wednesday, January 23, 2019	Quiz 1
Wednesday, February 6, 2019	Quiz 2
Wednesday, February 27, 2019	Quiz 3
Wednesday, March 13, 2019	Quiz 4
Wednesday, April 3, 2019	Quiz 5
Wednesday, April 24, 2019	Quiz 6

5. *Quizzes, Exams, and Grading:*

A total of six 30-minute quizzes will be given during the discussion section. Each quiz will consist of 5 free response questions for a total of 20 points per quiz. The lowest of your five quiz grades will be dropped. If you miss a quiz, that is the quiz that will be dropped. **No make-up quizzes will be given under any circumstances.**

There are three cumulative 50-minute mid-term exams and one cumulative (**THIS INCLUDES MATERIAL FROM 223**) 2-hour final exam. The three mid-term exams will be administered at the beginning of the class. The lowest of the three mid-term exams will be dropped. If you miss an hourly exam, that is the exam than that will be dropped. **No make-up mid-term exams will be given under any circumstances.** The final exam is cumulative and cannot be dropped.

WileyPLUS	10%	
Quizzes	15%	(Best five out of six quizzes)
Mid-term exams	40%	(Best two out of three mid-term exams)
<u>Final Exam</u>	<u>35%</u>	
TOTAL	100%	

You must bring a form of photo identification, such as your Loyola Student ID or your driver's license, with you to the exam. During exams, you will be required to leave your books, backpacks, notebooks, etc. at the front of the room. When you are finished with your exam, please bring your completed exam to the front, and leave the room quietly without disturbing the other students.

Exams will be graded and returned to you as quickly as possible. All grading questions, points of clarification, and grading errors must be brought to the instructor's attentions during office hours no later than one week after return of the exam.

The grading scale used to determine letter grades are as follows: **A** 100 – 93, **A-** 92 – 87, **B+** 86 – 83, **B** 82 – 77, **B-** 76 – 70, **C+** 69 – 60, **C** 59 – 50, **C-** 49 – 45, **D** 44 – 40, **F** < 40.

6. Final Exam

The University sets the schedule for all final exams. The final will be held on:

9:00 – 11:00 a.m. Monday, April 29th, 2019

in Cuneo Hall-Room 109. You will have exactly 2 hours to complete the exam. Additional time will not be granted, even if you arrive late. There will be no make-up final exams given under any circumstances, and the exam will not be given early, either.

Instructors may not reschedule final exams for a class for another day and/or time during the final exam period. There can be no divergence from the posted schedule of dates for final exams. Individual students who have four (4) final exams scheduled for the same date may request to have one of those exams rescheduled. If a student reports having four (4) final examinations scheduled for the same date, students should be directed to e-mail a petition to Lester Manzano, Assistant Dean for Student Academic Affairs, CAS Dean's Office (lmanzan@luc.edu)

7. Mastery Assignments

Organic chemistry is a new language that is spoken in words and in structures. The best way to learn a language is to work some problems every day. The purpose of Mastery assignments is to help you master essential foundational concepts in the course. Remembering and understanding foundational concepts is a prerequisite to **APPLYING** those concepts and analyzing problems: you need to learn the basics first so that you can use them! There will be WileyPLUS Mastery sets assigned on Monday, Wednesday, and Friday night after each class. Monday's assignment will be due at 11:59 p.m. on Wednesday, Wednesday's assignment will be due on Friday at 11:59 p.m., and Friday's assignment will be due on Sunday at 11:59 p.m.

Mastery assignments require that you attempt each of the questions and get a total percentage correct. Please refer to the question policies below to see the Success Threshold for the assignment and the number of points you will earn for reaching the threshold.

You can attempt each assignment only once, however if you do not get a percentage correct to reach the Success Threshold, you can reset the assignment and try again. Resetting the assignment will generate a new set of questions for you to attempt. Your best attempt at this assignment will be your final recorded score. Resetting the assignment will not change the difficulty level of the questions.

Success Threshold:	75% or more correct to receive 10 points
Intermediate:	50% or more correct to receive 5 points
Unsatisfactory:	less than 50% correct to receive 0 points

Late Score Policy: You have 2 days after the due date to complete any assignment with a 25% late penalty. After that, you can still complete any assignment with a 75% late penalty. You can also redo any assignment after meeting the Success Threshold without losing points towards your grade. Only your best score is counted, so your score can never go down once earned.

8. Course Repeat Rule

Effective with the Fall 2017 semester, students are allowed only **THREE** attempts to pass Chemistry courses with a C- or better grade. The three attempts include withdrawals (W).

After the second attempt, the student must secure approval for a third attempt. Students must come to the

Chemistry Department, fill out a permission to register form or print it from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and personally meet and obtain a signature from either the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form is then taken to your Academic Advisor in Sullivan to secure final permission for the attempt.

9. *Norms of Course Proceedings*

The classroom is to be a safe place to question and explore ideas. Student and teacher voices are important to this work. Collegial disagreement can be a healthy part of this process, but must always include respect for all members of the class.

Course activities will be designed to help students reach the goal of learning chemistry content and developing critical thinking skills. This will more often be driven by the use of data and reasoning to discover concepts and solutions rather than the identification and exchange of chemical facts and algorithms.

Students are expected to read individually on their own time outside of class.

Class sessions will begin and end on time. All students should attend class regularly and participate in class discussions. Absences could affect one's ability to learn chemistry during this session. Anticipated absences should be discussed with the instructor two class days before the absence. Proper documents may be requested to verify the reason for any absence. No make-up exams or quizzes will be granted for any absence during an exam or quiz day, **no matter what the excuse.**

10. *Discussion*

The discussion section will be devoted to working on discussion hand-outs, quizzes, and answering questions regarding homework problems. On non-quiz days, a worksheet with questions relevant to the topics covered in class will be handed out to work on as a class.

11. *Sakai Materials*

Handouts given in class will be mirrored on Sakai. **Copyright/Intellectual Property reminder:** course materials provided by your instructors at Loyola may not be shared outside any course without the instructor's written permission.

12. *Panopto and Recorded Lectures*

In this class software will be used to record live class lectures. As a student in this class, your participation in live class lectures will be recorded. These recordings will be made available **ONLY** to students enrolled in this class, to serve as a resource for those who would like to review content that was presented or to assist those who cannot attend the live lecture. All recordings will become unavailable to students in the class when the Sakai course is unpublished (i.e. shortly after the course ends, per the Sakai administrative schedule: <https://www.luc.edu/itrs/sakai/sakaiadministrativeschedule/>). The use of all video recordings will be in keeping with the University Privacy Statement shown below:

Privacy Statement

Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online and face-to-face classes may be used solely for internal class purposes by the faculty member and the students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so **ONLY** with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

13. *Academic Honesty*

All students in this course are expected to have read and abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, that can be viewed at:

<http://www.luc.edu/cas/advising/academicintegritystatement/>

A basic mission of a university is to search for and to communicate the truth as it is honestly perceived. A genuine learning community cannot exist unless this demanding standard is a fundamental tenet of the intellectual life of the community. Students at Loyola University Chicago are expected to know, respect, and to practice this standard of personal honesty.

Academic dishonesty can take several forms, including, but not limited to cheating, plagiarism, copying another student's work, and submitting false documents.

Any instance of dishonesty (including those detailed on the website provided above) will be reported to The Chair of The Department of Chemistry & Biochemistry who will decide what the next steps may be. You are encouraged to study with other students in and out of class, however, anything submitted for an individual grade during or outside of class must represent your own knowledge and understanding of the material. Evidence of cheating (for homework, quiz, or exam) will result in, at a minimum, a "zero" on the item (this item cannot be dropped) and penalty up to failure of the course, as well as referral to the Dean's Office.

14. *Strategies and Suggestions:*

- The best method of learning organic chemistry is to work the assigned problems and write out the answers. *Then* check your answers versus the Answer Key.
- Study at least 10 hours per week and maintain a steady pace of studying. Organic chemistry continually builds, like a language, so studying some every day is most effective.
- Skim the current chapter before the corresponding lecture, so that you will be aware of the topics to be covered.

15. *Practices for Success*

Supporting claims with evidence, making applications, solving and analyzing problems, and using chemical principles to explain phenomena are critical skills in the field of chemistry. The development of these skills is not without some frustration, but it carries the reward of deepening one's ability to think critically and solve problems in any field. The use of targeted, guiding questions, regularly scheduled work, and strategic study plans can greatly assist the learning of chemistry. With such a focus, hopefully any frustration will quickly turn to appreciation and fascination for the relevance and connectedness of chemistry in your life and within the world around you. Solving and analyzing problems is the most important feature of this work. If, at any time, you need assistance framing such plans for your work in chemistry, please do not hesitate to ask the instructor.

16. *Tutoring*

The tutoring Center at the university offers free tutoring to students. To see the complete tutoring schedule and find additional information, visit the Tutoring Center webpage at www.luc.edu/tutoring

17. *Office Hours*

My office door will be open per the times listed. Please use this time to if you have extra questions regarding this course. If you are unavailable to meet at the listed times, please feel free to email me with any questions. However, if you email me at night (after 6:00 p.m.), on weekends, or during holiday breaks I will respond to your email as soon as possible. I will only reply to emails sent from Loyola email accounts. Please include your class and section number in the email subject line.

18. *Student Accommodations*

If you have any special needs, please let me know in the first week of classes. The University provides services for students with disabilities. Any student who would like to use any of these university services should contact the Student Accessibility Center (SAC), Sullivan Center, (773) 508-3700. Further information is available at: <http://www.luc.edu/sac/>

19. *Harassment (Bias Reporting)*

It is unacceptable and a violation of university policy to harass, discriminate against or abuse any person because of his or her race, color, national origin, gender, sexual orientation, disability, religion, age or any other characteristic protected by applicable law. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail for this university to fulfill its educational and health care mission. For this reason, every incident of harassment, discrimination or abuse undermines the aspirations and attacks the ideals of our community. The university qualifies these incidents as incidents of bias.

In order to uphold our mission of being Chicago's Jesuit Catholic University—a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice and faith, any incident(s) of bias must be reported and appropriately addressed. Therefore, the Bias Response (BR) Team was created to assist members of the Loyola University Chicago community in bringing incidents of bias to the attention of the university. If you believe you are subject to such bias, you should notify the Bias Response Team at this link: <http://webapps.luc.edu/biasreporting/>

20. *Loyola University Absence Policy for Students in Co-Curricular Activities (including ROTC)*

Students missing classes while representing Loyola University Chicago in an official capacity (e.g. intercollegiate athletics, debate team, model government organization) shall be allowed by the faculty member of record to make up any assignments and to receive notes or other written information distributed in the missed classes.

Students should discuss with faculty the potential consequences of missing lectures and the ways in which they can be remedied. Students must provide their instructors with proper documentation describing the reason for and the date of the absence.

This documentation must be signed by an appropriate faculty member or staff member, and it must be provided as far in advance of the absence as possible. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to give the student the opportunity to take the examination at another time. <https://www.luc.edu/athletheadvising/attendance.shtml>

21. *Accommodations for Religious Reasons*

If you have observances of religious holidays that will cause you to miss class or otherwise effect your performance in the class you must alert the instructor **within 10 calendar days of the first class meeting of the semester** to request special accommodations, which will be handled on a case by case basis.

Organic Chemistry 224 Tentative Lecture Schedule (subject to change)

Week	Dates	Monday	Wednesday	Friday
1	Jan 14, 16, 18	Introduction & Review, IR, MS (Ch.14)	^1H & ^{13}C NMR (Ch.15)	^1H & ^{13}C NMR, Conjugated Pi Systems and Pericyclic Reactions (Ch.15,16)
2	Jan 21, 23, 25	no class - MLK	Conjugated Pi Systems and Pericyclic Reactions (Ch.16)	Conjugated Pi Systems and Pericyclic Reactions (Ch.16)
3	Jan, Feb 28, 30, 1	Aromatic Compounds (Ch.17)	Aromatic Compounds (Ch.17))	Aromatic Compounds/Aromatic Substitution Reactions (Ch.17,18)
4	Feb 4, 6, 8	Aromatic Substitution Reactions (Ch. 18)	Aromatic Substitution Reactions (Ch. 18)	Aromatic Substitution Reactions (Ch. 18)
5	Feb 11, 13, 15	Aldehydes and Ketones (Ch.19)	Aldehydes and Ketones (Ch.19)	EXAM I (covers all material thru class 2/11)
6	Feb 18, 20, 22	Aldehydes and Ketones (Ch.19)	Aldehydes and Ketones (Ch.19)	Carboxylic Acids and Their Derivatives (Ch.20)
7	Feb, Mar 25, 27, 1	Carboxylic Acids and Their Derivatives (Ch.20)	Carboxylic Acids and Their Derivatives (Ch.20)	Carboxylic Acids and Their Derivatives, Alpha Carbon Chemistry (Ch.20,21)
8	March 4-8	no classes - SPRING BREAK		
9	March 11, 13, 15	Alpha Carbon Chemistry (Ch.21)	Alpha Carbon Chemistry (Ch.21)	Amines (Ch.22)
10	March 18, 20, 22	Amines (Ch.22)	Amines (Ch.22)	EXAM II (focus on material since 1 st exam and cumulative topics)
11	March 25, 27, 29	Amines (Ch.22)	Introduction to Organometallic Compounds (Ch.23)	Introduction to Organometallic Compounds (Ch.23)
12	April 1, 3, 5	Carbohydrates (Ch.24)	Carbohydrates (Ch.24)	Carbohydrates (Ch.24)
13	April 8, 10, 12	Amino Acids, Peptides, and Proteins (Ch.25)	Amino Acids, Peptides, and Proteins (Ch.25)	Amino Acids, Peptides, and Proteins, Lipids (Ch.25,26)
14	April 15, 17, 19	Lipids (Ch.26)	Exam III (focus on material since 2 nd exam and cumulative topics)	no class - Easter Break
15	April 22, 24, 26	no class - Easter Break	Synthetic Polymers (Ch.27)	Synthetic Polymers (Ch.27)

Monday April 29th 9:00 a.m. FINAL EXAM Cumulative & Comprehensive

