

Syllabus – Organic Chemistry B

The purpose of this syllabus is to describe the course, resources, and policies. It is meant to help all students understand the expectations and requirements for the course, and it should be used as a reference for questions about policies. When updates to the syllabus are made during the term, a new version will be posted electronically, and all students will be notified.

Course Information

Course: Chemistry 224 – Organic Chemistry B (3 credits: Lecture & Discussion)

Prerequisites: Completion of Chemistry 223 or equivalent with a grade of C- or better. A student missing a prerequisite may be withdrawn at any time.

Time Zone: This syllabus lists dates/times using Chicago local time (U.S. Central Time Zone)

In-Person Learning: All graded assignments scheduled during class time are available in class only.

Lectures: M/W/F 10:25 am – 11:15 am Flanner Auditorium

Discussions: You must attend the section for which you registered:

- M 8:15 am – 9:05 am FH 007
- M 9:20 am – 10:10 am FH 007

Course Coordinator: Dr. James Devery (jdevery@luc.edu)

Chemistry 224 is a multi-section lecture & discussion course with common content and common outcomes across all sections. This course includes a Common Final Exam during the Common Final Exam Period as scheduled by the University. This Exam will be cumulative for both semesters of Organic Chemistry. The Course Coordinator is responsible for consultation and coordination with instructors regarding policies, exam writing, and grading. Your Section Instructor is responsible for communicating with you regarding all course content and policies and is the first and primary person you should contact with questions about all aspects of the course. As needed, all Section Instructors will consult with the Course Coordinator throughout the semester.

Section Instructor: Dr. Carole Szpunar

Instructor Contact Information

Office: FH 200B

Email: cszpuna@luc.edu

Office Hours Schedule: T/R: 10:30 am – 12:30 pm

(additionally, W 9:15 – 10 am and F before 9:30 am, IF lecturer is available, IF lecturer is prepared for class, AND IF student schedule conflicts with regular office hours)

Required Course Materials

- Organic Chemistry, Klein, 3rd ed., Wiley, 2017, or 4th ed., Wiley 2021 – either edition acceptable, any format acceptable: hardbound, softbound, unbound – printed, 3-hole punched, or electronic version
- Student Study Guide and Solutions Manual, Klein, 3rd ed. Wiley, 2017, or 4th ed., Wiley 2021 matched appropriately to accompany text version
- Loyola Sakai course management site: sakai.luc.edu/portal/ and tools integrated into the site.

Recommended Course Materials:

- Molecular modeling kit, Darling, Duluth, or equivalent
- WileyPlus online homework/practice tool: **Course ID: TBA**
- Organic Chemistry as a Second Language, 5th ed., Second-Semester Topics, Klein (Oct 2019), Wiley (ISBN 978-1-119-49391-4, 1-119-49391-9) *or* equivalent previous editions.
- Barron's Orgo Cards: Organic Chemistry Review, Wang, Razani, Lee, Wu, and Berkowitz (ISBN 0-7641-7503-3) *or* Organic Chemistry Study Cards, R Van De Graaff, K Van De Graaff, and Prince, Morton Publishing, 2003 (ISBN 0-89582-577-5) *or* any type of flash cards, including self-made

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Course Content & Learning Outcomes

Prerequisite knowledge from Chemistry 223 is necessary for in-depth study of topics in Chemistry 224. Topics will include: nomenclature, structures, properties, reactions, mechanisms, spectroscopy, and syntheses of arenes, carbonyls, carboxyls, amines, carbohydrates, lipids, and amino acids. If successful, the student will be able to:

1. identify the various classes of organic compounds, their methods of preparation, and typical reactions.
2. name and draw specific organic compounds.
3. visualize and interpret multiple representations of organic molecules depicting connectivity, configuration, and conformations.
4. postulate logical reaction mechanisms for organic reactions.
5. discriminate among relative stabilities of reactive intermediates.
6. plan and write out single and multi-step syntheses using known reagents and conditions.
7. identify and compare general physical properties of organic compounds.
8. analyze, interpret, and predict spectral data (MS, IR, NMR) used in identifying organic compounds.
9. describe and analyze how organic chemistry affects the way we live and die.

Course Objective: To guide, encourage, and foster the learning and understanding of Organic Chemistry – nomenclature, structures, properties, mechanisms, syntheses, and spectroscopy – by the individual student, helping him/her to connect, extrapolate, integrate, and apply the many different aspects learned, using critical thinking.

Course Norms:

- Lectures – Attention and Participation: *Important. Essential. Required. (Note well!)*
- ***** Homework (HW)** - per chapter, per topic, not assigned; student is feel free to work any, all, and as many problems to apply/master concepts – **recommended for student success.**
- Feel free to use your models at any time, even during a test or quiz. Many of us find a 3-dimensional (3D) representation helpful.
- Prepare for lectures by scanning the Klein-text headers and illustrations for the new material to be presented.
- Feel free to print out the Power-Point lecture highlights (via Sakai – Resources) before each lecture, to use for notetaking in lecture, to be ready to listen in lecture, to better acquire new concepts to be learned / applied.
- After lecture, read the corresponding text for enrichment. However, please note that whatever is covered in lecture rules! Use the text as a resource. We make adjustments, we fine-tune in lecture and in discussion.
- Subsequently, do HW problems to assimilate the concepts, as many as needed to acquire the concepts – the key to success! Use the Klein study guide to help explain the HW-problem responses. Note that the study-guide answers may not be all encompassing, nor unique, nor complete.
- Feel free to ask questions during discussion on homework problems or as yet-unassimilated lecture material, anything chemistry. Come prepared to do so!
- Explanations to HW problems or lecture concepts deemed particularly significant will be shared with all students, as appropriate, to the extent possible.
- **Cell Phones: NONE.** Please be courteous and respectful of others. Silent mode before, during, and after lecture and discussion. Not allowed in sight or within hearing during exams, subject to confiscation. No phone conversations and no texting in lecture hall or in discussion class – before, during, after class – AT ANY TIME! If you must converse or text, please take it outside!!! Thank you.
- **Photography: NONE.** No photography of posted quiz or exam keys. No photography of discussion or lecture blackboard or whiteboard content.
- **Recording: NONE. No recording of lectures or discussions.** Exceptions are listed in the Student Accommodations section in this document below.

Study Strategies and Suggestions:

Students should approach the study of Organic Chemistry in a manner similar to tackling a new foreign language. Persistent, continuing study will provide a basis to understanding future material – *building constantly, incessantly, and relentlessly* on the structural and mechanistic information presented previously and, hopefully, acquired by the student. Over two semesters, this course will cover: bonding, functional groups, properties of aliphatic and aromatic compounds, nomenclature, structures, stereochemistry, reaction mechanisms, syntheses, multi-step syntheses, and spectroscopic techniques. Because this course is

cumulative and builds heavily on prior material, the best plan is to study Organic Chemistry regularly, every day, similarly to practicing the piano, similarly to learning a language. "Organic Chemistry has its own language – Organese," according to Szpunar.

For study purposes, small student-formed study groups and **collaboration with others on HW problems is strongly encouraged**, especially in a timely fashion BEFORE an exam or quiz, to better understand and integrate the new material and in preparation for any assessment. "What one person sees, another person may see differently." Different perspectives, approaching and tackling a problem in different ways, from various angles, are often quite helpful to all involved in this sanctioned collaboration.

Experience has illustrated that positive outcomes (for exam and course grades) – the secret to any student's success – are directly proportional to working and understanding the relevant problems on a regular basis, *i.e.*, applying the concepts learned to specific, non-generic situations and thinking creatively. Typically, normally, usually, Organic Chemistry is not efficiently self-taught!!!

Experience has demonstrated that overnight cramming will probably NOT produce success! The student should scan the text chapter / segment expected to be covered BEFORE each lecture to improve lecture comprehension. After each lecture, careful detailed reading of the chapter/segment/topic and focused working of the homework problems are appropriate, necessary, essential, and expected.

Attending lecture, participating in discussion, reading the text, infusing self-comprehension with practice through homework problems, and joining and contributing to a study group are strongly encouraged.

In anticipation of an acceptable / passing grade of C, the minimal time per week devoted to Organic Chemistry is estimated at 4 hr for lecture and discussion, 4-10 hr for reading, and 4-10 hr for homework.

Student Accommodations

Loyola University provides reasonable accommodations for students with disabilities. Any student requesting accommodations related to a disability or other condition is required to register with Student Accessibility Center (SAC), located in Sullivan Center, Suite 117. Professors receive the accommodation notification from SAC via Accommodate. Students are encouraged to meet with their professor individually in order to discuss their accommodations. All information will remain confidential. Please note that in this class, software may be used to record class lectures in order to provide equal access to students with disabilities. Students approved for this accommodation use recordings for their personal study only and recordings may not be shared with other people or used in any way against the faculty member, other lecturers, or students whose classroom comments are recorded as part of the class activity. Recordings are deleted at the end of the semester. For more information about registering with SAC or questions about accommodations, please contact SAC at 773-508-3700 or SAC@luc.edu.

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). The Department advises that it is preferable to complete a course with a grade of C or C-, and to demonstrate growth in future coursework, than to withdraw from a course.

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: <https://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.

Academic Integrity

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

<https://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 of Loyola University Chicago are expected to know, to 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, submitting false documents, and deliberately disrupting the performance of other class members.

Any instance of dishonesty (including those detailed on the website provided above or in this syllabus) will be reported to The Chair of The Department of Chemistry & Biochemistry who will decide what the next steps may be. Evidence of cheating in this course will result in, at a minimum, a score of zero (which cannot be dropped from grade calculations) and penalty up to failure of the course. College policies include that instructors will report incidents of academic misconduct to their chairperson as well as to the Assistant Dean for Student Academic Affairs in the CAS Dean's Office. I will report incidents to the Chemistry & Biochemistry Department for further action(s).

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 i.e., "[Athletic Competition & Travel Letter](#)" describing the reason for and date of the absence.

This documentation must be signed by an appropriate faculty or staff member and it must be provided to the professor in the first week of a semester. It is the responsibility of the student to make up any assignments. If the student misses an examination, the instructor is required to allow the student to take the examination at another time.

(<https://www.luc.edu/athleteadvising/attendance.shtml>)

Students who will miss class for an academic competition or conference must provide proper documentation to their instructor as early in the semester as possible.

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.

Other Items

- A link to the official Loyola calendar can be found here: <https://www.luc.edu/academics/schedules/>
- The Withdraw deadline for the semester is on Monday, March 27.
- Loyola is using SmartEvals to provide instructor & course feedback. OIE will send emails near the end of the term.

Class Recording & Content Information

In general lecture, meetings may be recorded. The following is a mandatory statement for all courses in the College of Arts & Sciences (CAS). We will discuss class norms and standards during the first week and continue the discussion as needed throughout the semester.

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 or face-to-face classes may be used solely for internal class purposes by the faculty member and 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.

Additional Content, Copyright & Intellectual Property Statement

By default, students may not share any course content outside the class without the informed written consent of the owner of that content. This includes any additional recordings posted by students, materials provided by the instructor, and publisher-provided materials. For example, lectures, quiz/exam questions, book figures/slides, and videos may not be shared online outside the class. In some cases, copyright/IP violations may overlap with breaches of academic integrity. Remember that obtaining consent to share materials is an active process.

Pass/Fail Conversion Deadlines and Audit Policy

A student may request to convert a course into or out of the "Pass/No-Pass" or "Audit" status only within the first two weeks of the semester. For the Spring 2023 semester, students are able to convert a class to "Pass/No-Pass" or "Audit" through Monday, January 30th. Students must submit a request for Pass/No-Pass or Audit to their Academic Advisor.

Health, Safety, and Well-Being On-Campus

Please be familiar with and adhere to all guidelines posted on the *Health, Safety, and Well-Being Update* site: (<https://www.luc.edu/healthsafetyandwellbeing/>.) This site relays important updates and protocols related to COVID-19 and other matters.

Final Exam

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

Wednesday May 3rd, 7:00pm

Location will be updated on LOCUS when available.

You will have exactly 2 hours to complete the exam. Additional time will not be granted, even if you start late. There will be no make-up final exams given under any circumstance, 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 examinations scheduled for the same date may request to have one of those exams rescheduled. If a student reports having four final examinations scheduled for the same date, students should be directed to e-mail a petition to Adam Patricoski, Assistant Dean for Student Academic Affairs, CAS Dean's Office (apatricoski@luc.edu).

Universal Absence Accommodation Policy

The purpose of a universal absence accommodation policy is to account for emergency circumstances (e.g., serious illness, caring for a family member, car accident) that require you to be absent from class, while maintaining fairness in grading for students who attend and complete all in-class graded assignments. We believe that class attendance and participation are essential for your success in this class, and that your health is important to us and our shared community. Please use good judgement and stay home if necessary/prudent for your circumstances.

This is the universal accommodation policy for in-class graded assignments:

- One missed in-class exam due to absence for any reason is already accommodated in the course grading system. Given that only the best two in-class exams are included in this calculation, a missed exam would be the one not included in this calculation, as it would be the lowest score (0%) of the three exams.

You may provide documentation for an absence, but it is not required. These accommodations are automatically available to all students.

Course Grading System

The standards for each letter grade are listed here according to all required course components. Each student will receive a midterm grade via LOCUS at least one week prior to the Withdraw deadline for the semester. Grades are only based on the criteria listed in the syllabus: no substitutions, and no additions.

Grading Scheme

Quizzes	20%
Best Two Unit Exams	50%
Final Exam	30%*
Total score	100%

*the final exam is mandatory to earn a passing grade

Letter Grade Cutoffs*:

A	90.0%	C+	65.0%
A-	85.0%	C	60.0%
B+	80.0%	C-	55.0%
B	75.0%	D	40.0%
B-	70.0%	F	< 40%

Changes to Syllabus

There may be changes to the syllabus during the semester. **You are responsible for all syllabus changes made in class whether or not you attend.**

Course Topics

Chapter 15: NMR
 Chapter 16: Conjugated Systems & Pericyclic Reactions
 Chapter 17: Aromatic Compounds
 Chapter 18: Aromatic Substitution Reactions
 Chapter 19: Aldehydes and Ketones
 Chapter 20: Carboxylic Acids & Derivatives
 Chapter 21: α -Carbon Chemistry
 Chapter 22: Amines
 Chapter 24: Carbohydrates
 Chapter 25: Amino Acids
 Chapter 26: Lipids

Lecture Outline for Klein Text Reference (tentative)

<u>Week</u>	<u>Date</u>	<u>Chapter</u>	<u>Lecture Topic / Assignment / Activity</u>
1	Jan 16 Jan 18+20 Jan 20	14	*** no discussion *** **** Holiday – Martin Luther King Day **** Review – IR Spectroscopy and MS ***Fri - Mon*** TH 1 st Semester Synthesis Review
2	Jan 23 Jan 23+25+27 Jan 27	15	Monday discussion – Synthesis Review due at beginning of lecture NMR Spectroscopy ***Fri - Wed*** TH Spec Pkg (Chapters 14-15)
3	Jan 30 Feb 1 Jan30+Feb1+3	16	Monday discussion Spectroscopy Package due at beginning of lecture Conjugated Systems - Dienes
4	Feb 6 Feb 6+8+10	17	Monday discussion Aromatic Compounds
5	Feb 13 Feb 15 Feb 13+17	18	Monday discussion ***** Wed ***** EXAM I (Chapters 14-17) Aromatic Reactions
6	Feb 20 Feb 20+22+24		Monday discussion
7	Feb 27 Feb27+Mar1+3	19	Monday discussion Aldehydes and Ketones *** Quiz 3 (Chapters 17-18)

8	Mar 6-Mar 11		Spring Break Week	**** MIDTERM BREAK ****
9	Mar 13 Mar 13+15+17	20	Monday discussion Carboxylic Acids and Derivatives	
10	Mar 20 Mar 22 Mar 20+24	21	Monday discussion **** Wed **** EXAM II (Chapters 18-20) Alpha Carbon Enols and Enolates	
11	Mar 27 Mar 29 Mar 31	22	Monday discussion Amines	*** last day to withdraw with a W
12	Apr 3 Apr 5		Monday discussion	Quiz 4 (Chapters 21-22)
	Apr 7 to Apr 10		***** Easter Break, Good Friday to Easter Monday *****	
13	Apr 10 Apr 12+14	23/24	*** no discussion *** Organometallics / Carbohydrates	**** Holiday – Easter Monday
17	Apr 17+19 Apr 21		Monday <i>discussion</i> **** Fri **** EXAM III (Chapters 21-24)	
15	Apr 24 Apr 24+26 Apr 28	25 26	Monday discussion Amino Acids, Peptides, and Proteins Lipids	
16	May 3 Cumulative (two-semester) FINAL EXAM. Wednesday evening, 7-9 pm, location TBD. Check Sakai Overview for updates, as announced in lecture.			