

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 A student missing a prerequisite may be withdrawn at any time.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: Section 006: MWF 8:20-11:10am

Section 005: MWF 1:10-4 pm

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: Amy M Balija, PhD

Instructor Contact Information

Office: FH 104

Email: abalija@luc.edu

Office Hours Policy: Office Hours (Student Hours) are a time set aside by the instructor for students to ask questions in a smaller setting. Students are encouraged to come to Zoom office hours. No appointment is necessary during the times listed under the Office Hours Schedule.

Office Hours Schedule: TR 6-7:30 pm or by appointment
Zoom: <https://luc.zoom.us/j/83681448176>

Required Course Materials

- Textbook: eText via [WileyPlus](#) and/or hard copy: Organic Chemistry, Klein, David, 4th edition.
- Loyola Sakai course management site: sakai.luc.edu/portal/ and tools integrated into the site.
- Loyola email: messages are sent to the entire class via Sakai, linked to your Loyola email account
- Additional web-based systems will be used for uploading your work and facilitating feedback and evaluation. Registration will be free but required. These may include [Gradescope](#) and other sites.
- Additional software will be used. Downloads will be free but required. These may include applications that convert photos to pdfs (examples: CamScanner, Scannable, GeniusScan), and collaboration materials for group work (example: OneNote).
- Computer + mobile device (phone, tablet) for connectivity to online resources, including using of a camera or connected webcam: use of two devices is the default set-up for proctored tests. Accommodation requests must be discussed with me at least one week before a test.

Recommended Course Materials: Molecular Model Kit, Solutions Manual

Copyright/Intellectual Property reminder: Course materials provided by your instructors at Loyola, including my materials, may not be shared outside any course without the instructor's **written permission**. Content posted without permission will be in violation of Copyright/Intellectual Property laws.

Course Content & Learning Outcomes

Prerequisite knowledge from Chemistry 223 is necessary for in-depth study of topics in Chemistry 224. Topics 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.

Class Attendance & Course Coverage

If you miss a class for any reason, it is your responsibility to work through the content. Contact a classmate for further discussion of the topics as you are still responsible for all material covered and assigned.

An outline will be shown at the beginning of each class and uncompleted lecture notes/handouts/links/animations will be posted on Sakai. We will not cover every topic in every chapter of the textbook this semester. Focus first on the material that is directly covered in lecture or VoiceOver Videos. Explore the additional material in the textbook for your own interest and enrichment.

Classroom & Group Work Guidelines

The classroom is a space designed for learning. My expectations are that all voices will be heard and appreciated in the classroom, and that we will invite each other to engage while recognizing that contributions can take multiple forms.

Peer Tutoring

Group peer tutoring study sessions through the Tutoring Center are available for this course. Sessions are free and anonymous meaning professors do not know who is attending. While attendance is open to all, it is extremely beneficial for those who attend regularly. To view times and Zoom information, please visit the Tutoring Center website (luc.edu/tutoring). Students who attend these interactive sessions find themselves working with peers as they compare notes, demonstrate and discuss pertinent problems and concepts, and share study and test-taking strategies. Research shows students who regularly attend sessions have higher grades and more deeply understand course concepts than those who do not. Students are asked to arrive with their Loyola ID, lecture notes, and textbook. For questions, please contact the Tutoring Center at tutoringcenter@luc.edu.

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 to discuss their accommodations. All information will remain confidential. Please note that in this class, software may be used to record class lectures 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 2 calendar days (July 5th) 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 Friday, August 4th.
- 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 a specific period. For the Summer 2023 semester, students can convert a class to "Pass/No-Pass" or "Audit" through Monday, July 10th. 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 final will be held on:

Friday, August 11th
Section 006: 8:20am
Section 005: 1:10 pm

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.

Lecture Exams

Four exams will be administered synchronously (in class) on **7/14, 7/21, 7/28, and 8/9**. The in-class exam questions will contain three types of questions: mechanism, spectroscopy, and synthesis. Examples of exam questions will be provided in class and during discussion. Additional information explaining how the exams will be administered will be done in class. **No** extensions will be given.

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 four 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

Discussion	6%
Homework	10%
In Class Exams	54%
<u>Final Exam</u>	<u>30%*</u>
Total score	100%

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%

Homework

On-line homework will be assigned through WileyPlus and will be due at 11:59 pm on the corresponding due date. Look on WileyPlus to determine the dates when the assignments will be due. The exact problems will be made visible at least one week prior to the due date. **No** extensions will be given. You are allowed to work others to complete the homework. However, remember that you will take the exam by yourself, so you must understand how to complete problems individually.

Discussion

Discussion problems will be done in groups periodically during the course. Students will be placed into groups to work on assignments and post their answers on Sakai during the class period. Answer keys will be provided after the discussion assignment is complete. The lowest discussion grade will be dropped. **No** extensions will be provided.

Suggested Problems on Syllabus

Additional textbook problems are listed at the end of the syllabus. These problems will not be graded. However, it is highly suggested that you solve these problems. You may work with others to solve suggested problems.

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.***

Tentative Organic Chemistry II Lecture*

Date	Chapter	Topic	Suggested Problems (not collected or graded)
7/3-7/5	15	Nuclear Magnetic Resonance Spectroscopy	<i>¹H NMR Number of Signals:</i> 32, 33, 35, 45, 46, 50 <i>¹H NMR Chemical Shift:</i> 47, 51 <i>¹H NMR Multiplicity:</i> 39 <i>General ¹H NMR:</i> 37, 42, 43, 49 <i>Types of Hydrogens:</i> 41 <i>¹³C NMR Number of Signals:</i> 34, 36, 40, 48 <i>Combined ¹H and ¹³C NMR:</i> 53-59, 72-74, 76 <i>Multiple Choice:</i> 63-71
7/7	16	Conjugated Pi Systems and Pericyclic Reactions	<i>Conjugation:</i> 31 <i>1,4 vs 1,2-Addition:</i> 34-38 <i>Diels-Alder:</i> 39, 40, 42-45 <i>Synthesis:</i> 71 <i>Mechanism:</i> 75 <i>Multiple Choice:</i> 60-65
7/10	17	Aromatic Compounds	<i>Nomenclature:</i> 24, 25 <i>General Spectroscopy Problem:</i> 42, 46, 59, 61, 62 <i>Resonance:</i> 56 <i>Aromaticity:</i> 32-34 <i>Stability:</i> 36, 37, 39-41 <i>Constitutional Isomers:</i> 26-29 <i>π electrons:</i> 30 <i>Multiple Choice:</i> 48-53
7/12-7/14	18	Aromatic Substitution Reactions	<i>Halogenation:</i> 46, 55 <i>Nitration and Sulfonation:</i> 41, 42, 47 <i>Friedel-Crafts Alkylation and Acylation:</i> 45, 48, 61, 66 <i>Substituents:</i> 43 <i>General Reactions:</i> 52, 64 <i>Synthesis:</i> 57, 60 <i>Mechanisms:</i> 58 <i>Multiple Choice:</i> 73-79 Ch 17 <i>General Reactions:</i> 42 <i>Synthesis:</i> 53, 54, 63, 67 <i>Mechanisms:</i> 58
7/14		EXAM I	Ch 15, 16, 17
7/17-7/19	19	Aldehydes and Ketones	<i>Nomenclature:</i> 43, 44, 46-48 <i>Wittig Reaction:</i> 50, 51 <i>Grignard:</i> 52 <i>Reactions:</i> 54, 64, 83, 98 <i>Mechanisms:</i> 55, 58, 63, 70, 91 <i>Synthesis:</i> 57, 66, 67, 69, 73, 84, 85, 90 <i>Imines/Enamines:</i> 59-62 <i>Acetals:</i> 65 <i>Multiple Choice:</i> 60-65
7/19-7/26	20	Carboxylic Acids and Their Derivatives	<i>Acidity:</i> 35 <i>Nomenclature:</i> 37, 39, 40 <i>Synthesis:</i> 41, 47, 48, 50, 51, 54, 59, 69, 78, 79, 90 <i>General Reactions:</i> 44, 45, 46, 49, 53, 63 <i>Mechanisms:</i> 61, 80

			<i>Multiple Choice: 70-77</i>
7/21		EXAM II	Ch 18, 19
7/28-7/31	21	α -Carbon Chemistry: Enols and Enolates	<i>Resonance: 49 Enol/Enolate: 51-53 Aldol Reaction: 61-64 Condensation: 67, 71 Michael Addition: 83 General Reactions: 74, 76, 84 Synthesis: 66, 68, 69, 73, 77, 78 Mechanisms: 75, 79, 80 Robinson Annulation: 85, 86 Multiple Choice: 89-96</i>
7/28		EXAM III	Ch 20
8/2	22	Amines	<i>1°, 2°, 3°: 33 Basicity: 36 Nomenclature: 37, 40 General Reactions: 57, 65 Synthesis: 45, 46, 54, 58, 68 Mechanisms: 49 Multiple Choice: 74-79</i>
8/4-8/7	24	Carbohydrates	<i>Fischer Projections: 52 L/D Sugars: 42, 43 Acetals: 46 Relationships: 45, 49 Haworth Projections: 48, 53 Multiple Choice: 81-85</i>
8/4		EXAM IV	Ch 21, 22
8/9	25	Amino Acids, Peptides, and Proteins	NA
8/9	26	Lipids	<i>General Reactions: 30 Mechanisms: 43-45</i>
8/11		FINAL EXAM	Cumulative Exam

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