

SYLLABUS – CHEM 224 – Off-Semester – Organic Chemistry B – 2<sup>nd</sup> Semester  
**FALL 2021** - LOYOLA UNIVERSITY CHICAGO (LUC)

Lecture: #1808	Section: 001 - lecture	TuThur	09:45 – 11:00 am	Flanner Auditorium
Disc: #1809	Section: 002 - disc	Fri	12:10 am – 1:00 pm	Flanner 007
#3518	Section: 003 - disc	Fri	1:30 pm – 2:20 pm	Flanner 007

\*\*\* Please note that upon returning to campus, this course is scheduled to be taught, participated, completed, and administered **ON-CAMPUS, NOT ONLINE, NOT as a hybrid course**, subject to any changes for public safety mandated by the City of Chicago and by Loyola University.

**Sr. Lecturer:** Prof. C. Szpunar, cszpuna@luc.edu  
 Student Office Hours: typically available, Tu 11:30 am – 1 pm, W 12 – 2 pm, Th 12:45 – 1:45 pm  
 Office: Flanner Hall **200B**  
 Emergency Message via Chemistry Dept. Office: 773-508-3100, fax: 773-508-3086

**Required:** (See bookstore for most up-to-date offerings as publisher deals directly with bookstore.)

1. Organic Chemistry, Klein, 3<sup>rd</sup> ed text, Wiley, 2017 – **changing to 4<sup>th</sup> ed., Wiley 2021? Or not?**  
 Versions – softbound, unbound - printed 3-hole punch text, or electronic
2. Student Study Guide and Solutions Manual, Klein, 3<sup>rd</sup> ed. Wiley, 2017 – **changing to 4<sup>th</sup> ed., Wiley 2021?**

**Suggested / Recommended Materials:**

1. Molecular modeling kit, Darling, Duluth, or equivalent
2. WileyPlus online homework/practice tool, if/as available

**Optional Materials** (found helpful by some students, **do not purchase immediately**):

1. Organic Chemistry as a Second Language, 5<sup>th</sup> ed., Second-Semester Topics, Klein (Oct 2019), Wiley (ISBN 978-1-119-49391-4, 1-119-49391-9) \*or\* equivalent previous editions.
2. 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

**Grading Guidelines** (approx. weighting below):

>91% **A**, 91-90% **a-**, 90-88.5% **b+**, **88.5-75% B**, 75-70% **b-**, 70-68.5% **c+**, **68.5-55% C**, 55-50% **c-**, **50-45% D**, <45% **F**

♪	<b>EXAMS</b> – dates announced <b>NO MAKE UPS - Exams</b>	<b>*54%</b>
	<ul style="list-style-type: none"> <li>• UNEXCUSED ABSENCES merit a zero score.</li> <li>• EXCUSED ABSENCES are handled on a case-by-case basis; grade weighting may be adjusted, depending on the circumstance(s); however, an excused absence <b>MUST BE CORROBORATED and DOCUMENTED</b>, e.g., accompanied by a note from the doctor, dentist, hospital rep, or funeral director; by a court summons, plane ticket stub, hospital release form, obituary, or other. With proper documentation, religious observance, representing the university, or personal emergency constitutes an Excused Absence.</li> </ul>	
♪ ♪	<b>QUIZZES</b> – dates announced <b>NO MAKE UPS - Quizzes</b>	<b>*20%</b>
♪ ♪ ♪	<b>FINAL</b> – scheduled by CAS <b>NO MAKE UPS</b>	<b>*26%</b>
♪ ♪ ♪	<b>Homework (HW)</b> – per chapter/topic; feel free to work any, all, and as many problems to apply/master concepts – <b>recommended for student success.</b>	

\*\*\* Please note that this course, Organic Chemistry, is **cumulative, comprehensive, and improvement-based**. The final-exam grade – deemed a culminating measure of a student's progress – and the student's LUC-Early-Alert status grade may also be taken into account, *subjectively*, in assigning the student's overall course grade.

\*\*\* Also please note that once an overall course grade has been posted officially on LOCUS, any subsequent requests for an INCOMPLETE GRADE or for any additional extra credit WILL NOT and CANNOT be considered.

**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.

**Student Outcomes:** If successful, the student will learn how to ...

1. identify the various classes / families of organic compounds, their properties, their methods of preparation, and some typical reactions / transformations.
2. name and draw specific organic compounds.
3. postulate logical, acceptable, conventional, step-by-step mechanisms for simple organic reactions.
4. discriminate amongst relative stabilities of reaction intermediates.
5. plan and write out effective, efficient, high-yield, multi-step syntheses using known reagents/conditions to transform functional groups and to add or remove carbons.
6. prepare for purification / separation / synthetic laboratory techniques for organic compounds.
7. analyze and interpret data from a combination of spectroscopic / analytical techniques used in separating and identifying organic compounds: IR, NMR, UV-vis, and mass spectrometry.

**\*\*\*Lectures – Attention/Participation: *Important and essential. N.B.!!!***

- Feel free to use your models at any time. Many of us need to see a 3-dimensional (3D) representation.
- Prepare for lectures by scanning the Klein-text headers and illustrations for the new material.
- Feel free to print out the Power-Point lecture highlights (via Sakai – Resources) to use for notetaking in lecture to acquire new concepts to be learned and applied.
- 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; the study-guide answers may not be unique, nor complete.
- Feel free to ask questions during discussion on homework problems or as yet-unassimilated lecture material, anything chemistry.
- Explanations to homework problems or lecture concepts deemed particularly relevant or significant will be shared with all students, as appropriate.

**Academic Honesty: Essential, expected, and enforced. Be advised!!!**

Upon student notification, dishonesty dictates consequences which will include:

- (1) notification of Chemistry and Biochemistry Department Chair,
- (2) notification of the CAS Assistant Dean for Student Academic Affairs, and
- (3) notation in the student's official university record, upon documentation and investigation.

**Immediate consequences will include a ZERO score on any item in question, i.e., the quiz or the exam.**

Please refer to the LUC CAS Academic Integrity Statement and the sanctions for academic misconduct:

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

**N.B.!** Assignments/submissions for this course are subject to the **Honor System**. Do your own work! Googled and U-Tube responses are NOT acceptable. Lecture and discussion dictate acceptability for all responses to be graded.

**As per the Aug. 6, 2021 CAS policy-and-procedures directives, students are hereby reminded: “that materials from the course cannot be shared outside the course without the instructor’s written permission. Students may not be aware of copyright and intellectual property rights. As noted in various University communications ... privacy ... about recording of online class sessions” is mandated.**

**Study Strategies, Suggestions, and Warnings:** 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, already 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, 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. .

However, **collaboration is NOT acceptable and NOT permitted on assessments, i.e., NOT DURING a quiz, nor an exam!!! Collaboration on any assessment demands consequences and accountability**, so that ALL students are treated fairly. Moreover, after a graded assignment has been returned, students are advised that unless an obvious grading error has occurred, point questioning (point scavenging) is frowned upon and adjusting partial credit on the grading key for any individual’s assignment (point fighting), AFTER an assessment, will most likely not occur.

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 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. **Please remember that collaboration is NOT permitted during an assessment, not for a quiz, not for an exam.** Such an activity is subject to Loyola’s Academic Integrity Policy. This policy has been, is, and will continue to be enforced!

*If 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.*

\*\*\* **Note well!** *In this course, in this term, a student may forego his/her final exam if he/she has taken ALL 3 mid-term exams, no exceptions, if he/she has taken ALL 3 quizzes, no exceptions, and if he/she has earned a status grade of C or better, no exceptions. Prior to the final exam, if so requested by the student and if accepted by the lecturer, the status grade will be entered on LOCUS as the overall course grade for CHEM 224, thereby allowing the student to waive the final exam for this course in this term. N.B.!*

#### **Chemistry and Biochemistry Department Course Repeat Rule (effective Aug. 24, 2017):**

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 a student’s second attempt, the student must secure approval for a third attempt. Students must contact the Chemistry & Biochemistry Department, request permission to register from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and obtain a signature from the Undergraduate Program Director, Assistant Chairperson, or Chairperson. Approval is also required from the student’s Academic Advisor to secure final permission for the attempt.

**Accommodations (SSWD/SAC):**

Any student requesting accommodation(s) for extra exam time, different test venue, special equipment, and/or other course considerations should present his/her required SSWD/SSA letter to the Chair of the Chemistry and Biochemistry Department by the second week of the term, but NOT later than 10 days before a scheduled exam.

Please note that when requesting extra exam time, the student MUST NOT have scheduled another class directly BEFORE and directly AFTER this course, which would preclude him/her from taking the scheduled exam AT THE TIME OF THE GIVEN EXAM, *i.e.*, the SSWD/SSA exam time **must overlap** the official exam time to be fair to ALL students. The student should note the posted SSWD/SSA schedule for his/her requests; he/she must schedule each accommodated exam at least one week prior to any exam, where any such accommodation might be requested.

\*\*\*Lecture Outline – Klein Text Reference – by Topic

<u>Week</u>	<u>Date</u>	<u>Ch-Lecture</u>	<u>Topic</u>
1	Aug 31 Sept 2 Sept 3	14-1 14-2 <b>disc</b>	Review – IR Spectroscopy and MS ... ...
2	Sept 6 Sept 7 Sept 9 Sept 10	*** 15-1 15-2 <b>disc</b>	***** Holiday – Labor Day ***** NMR Spectroscopy ... *** Quiz #1 – Weekend Spectroscopy Package due Tuesday Sept 14, 2021 by 9:45 am
3	Sept 14 Sept 16 Sept 17	16-1 16-2 <b>disc</b>	Conjugated Systems - Dienes ... ...
4	Sept 21 Sept 23 Sept 24	17-1 17-2 <b>disc</b>	Aromatic Compounds ... ...
5	<i>Sept 28</i> Sept 30 Oct 1	*** 18-1 <b>disc</b>	*** <b>Tuesday</b> *** <b>EXAM I (Chapters 14-17)</b> Aromatic Reactions ...
6	Oct 5 Oct 7 Oct 8	18-2 18-3 <b>disc</b>	... ... ...
7	Oct 11-12 Oct 14 Oct 15	*** 19-1 <b>disc</b>	***** Monday-Tuesday ***** <b>MIDTERM BREAK</b> ***** Carbonyls – Aldehydes and Ketones *** <b>Friday</b> *** <b>Quiz #2</b>
8	Oct 19 Oct 21 Oct 22	19-2 19-3 <b>disc</b>	... ... ...
9	Oct 26 Oct 28 Oct 29	20-1 20-2 <b>disc</b>	Carboxylic Acids and Derivatives ... ...
10	<i>Nov 2</i> Nov 4 Nov 5	*** 21-1 <b>disc</b>	*** <b>Tuesday</b> *** <b>EXAM II (Chapters 18-20)</b> Alpha Carbon Enols and Enolates ... ***** <b>Friday</b> ***** (last day to withdraw with a W) *****
11	Nov 9 Nov 11 Nov 12	21-2 22-1 <b>disc</b>	... Amines *** <b>Friday</b> *** <b>Quiz #3</b>
12	Nov 16 Nov 18 Nov 19	22-2 23 <b>disc</b>	... Organometallics ...

- 13    Nov 23    24-1    Carbohydrates  
      Nov 24-26    \*\*\*                    \*\*\*\*\* Thanksgiving Break \*\*\*\*\*
- 14    Nov 30    24-2  
      Dec 2    \*\*\*                    \*\*\* **Thursday** \*\*\* **EXAM III** (Chapters 20-24 partial)  
      Dec 3    **disc**                    ...
- 15    Dec 7    24-3    ...  
      Dec 9    25 / 26    Amino Acids, Peptides, and Proteins / Lipids  
      Dec 10    **disc**
- 16    **Dec 16 Thurs Cumulative FINAL EXAM, 8:00 – 10:00 pm**  
      **all OC sections testing simultaneously, as mandated by CAS**  
      **ON-CAMPUS Flanner Auditorium, 133, unless directed elsewhere**