

**SYLLABUS – CHEM 224 – Off-Semester – Organic Chemistry B – 2<sup>nd</sup> Semester**  
**FALL 2022** - LOYOLA UNIVERSITY CHICAGO (LUC)

<b>Lecture:</b> #1729	<b>Section:</b> 001 - lecture	<b>MWF</b>	<b>11:30 am – 12:20 pm</b>	<b>Flanner Auditorium</b>
<b>Disc:</b> #1730	<b>Section:</b> 002 - disc	Tues	10:00 am – 10:50 am	Cuneo 002
#6987+	<b>Section:</b> 003 - disc	Thur	2:30 pm – 3:20 pm	Flanner 007

**Sr. Lecturer:** Prof. C. Szpunar  
 Office Hours: *typically:* Tu 11:15 am – 12:30 pm, Wed 12:45 – 1:45 pm, Th 10 – 11 am, 1-2 pm  
 Office: Flanner Hall **200B**

**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 or 4<sup>th</sup> ed.  
 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 or 4<sup>th</sup> ed.

**Suggested / Recommended Materials:**

1. Molecular modeling kit, Darling, Duluth, or equivalent
2. WileyPlus online homework/practice tool – **Course ID: xxxxxx**

**Optional Materials** (found helpful by some students, **but students SHOULD 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**

**EXAMS** – 3 – dates announced **NO MAKE UPS – Exams!!! NO MAKE UPS!!!** **54%**

- UNEXCUSED ABSENCES merit a zero score.
- EXCUSED ABSENCES are handled on a case-by-case basis; grade weighting may be adjusted, depending on the circumstance(s); however, an excused absence **MUST BE CORROBORATED and DOCUMENTED**, 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.

**QUIZZES** – 4 (dates announced) **NO MAKE-UP QUIZZES !!!** **24%**

**FINAL** – scheduled by CAS, no alternative date / time **NO MAKE UPS** **22%**

\*\*\* **Homework (HW)** - per topic, per section, per chapter, not assigned by lecturer – feel free to work any, all, and as many problems as needed, to apply, to integrate, and to master concepts – **recommended for student success.**

\*\*\* 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 be taken into account, *subjectively*, in assigning the student's overall course grade.

\*\*\* 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 – Attendance, Attention, and Participation: *Important, required, and essential.***

- Feel free to use your models at any time, even during a test or a quiz. Many of us need to see a three-dimensional (3-D) 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 and 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, to enhance understanding.
- Explanations to homework problems or lecture concepts deemed particularly relevant or significant will be shared with all students, as appropriate and 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 / no texting in lecture hall or in discussion class – before, during, after class – AT ANY TIME! If you must converse, please take it outside!!!

**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.

**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> .**

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. .

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.

*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):**

Typically, normally, usually, any student requesting accommodation(s) for extra exam time, different test venue, special visual or hearing equipment, and/or other course accommodations / considerations should present his/her required SSWD/SSA letter to the lecturer **in private**. By the second week of the regular term, but NOT later than 10 days BEFORE a scheduled exam, as per SSWD/SSA guidelines.

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 office schedule for his/her requests; he/she must schedule each accommodated exam at least one week prior to any exam, when any such accommodation might be requested.

**SAC Syllabus Statement**

Please utilize the following statement in your syllabus regarding SAC, per Director B.Burns, May 23, 2022

*“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](mailto:SAC@luc.edu).”*

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

<u>Week</u>	<u>Date</u>	<u>Ch-Lecture</u>	<u>Topic</u>
1	Aug 29 M Aug 30 Tu Aug 31 W Sept 1 Th <u>Sept 2 F</u>	14-1  14-2  14-3	Review – IR Spectroscopy and MS discussion – Tu am  discussion – Thur pm <b>*** THQuiz #1 Synthesis Review – due next lecture - Wed</b>
2	Sept 5 Sept 6 Sept 7 Sept 8 <u>Sept 9</u>	  15-1  15-2	***** <i>Holiday – Labor Day</i> ***** discussion – Tu am NMR Spectroscopy discussion – Thur pm <b>*** THQuiz #2 – Weekend Spectroscopy Package due next lecture - Mon</b>
3	Sept 12 Sept 13 Sept 14 Sept 15 <u>Sept 16</u>	16-1  16-2  16-3	Conjugated Systems - Dienes discussion – Tu am  discussion – Thur pm
4	Sept 19 Sept 20 Sept 21 Sept 22 <u>Sept 23</u>	17-1  17-2  17-3	Aromatic Compounds discussion – Tu am  discussion – Thur pm
5	<u>Sept 26</u> Sept 27 Sept 28 Sept 29 <u>Sept 30</u>	  18-1  18-2	<b>*** MONDAY *** EXAM I (Chapters 14-17)</b> discussion – Tu am Aromatic Reactions discussion – Thur pm
6	Oct 3 Oct 4 Oct 5 Oct 6 <u>Oct 7</u>	18-3  18-4  19-1	 discussion – Tu am  discussion – Thur pm Carbonyls – Aldehydes and Ketones
7	Oct 10-11 Oct 12 Oct 13 <u>Oct 14</u>	 19-2  19-3	***** <i>Monday-Tuesday</i> ***** <b>MIDTERM BREAK</b> ***** discussion – Thur pm (Tues am may join in, if available)
8	Oct 17 Oct 18 Oct 19 Oct 20 <u>Oct 21</u>	19-4  19-5  20-1	<b>Quiz #3 in lecture, not discussion</b> discussion Tu am  discussion Thurs pm Carboxylic Acids and Derivatives
9	Oct 24 Oct 25 Oct 26 Oct 27 <u>Oct 28</u>	20-2  20-3  20-4	 discussion Tu am  discussion Thur pm

- 10 Oct 31 **\*\*\* MONDAY \*\*\* EXAM II (Chapters 18-20)**  
 Nov 1 discussion Tu am  
 Nov 2 21-1 Alpha Carbon Enols and Enolates  
 Nov 3 discussion Thur pm  
Nov 4 21-2 \*\*\*\*\* Friday \*\*\*\*\* (last day to withdraw with a W) \*\*\*\*\*
- 11 Nov 7 21-3  
 Nov 8 discussion Tu am  
 Nov 9 22-1 Amines  
 Nov 10 discussion Thur am  
Nov 11 22-2 **Quiz #4 in lecture, not discussion**
- 12 Nov 14 22-3  
 Nov 15 discussion Tu am  
 Nov 16 23 Organometallics  
 Nov 17 discussion Thur pm  
Nov 18 24-1 Carbohydrates
- 13 Nov 21 24-2  
 Nov 22 discussion Tu am (Thur pm may join in, if available)  
Nov 23-25 \*\*\*\*\* Thanksgiving Break \*\*\*\*\*
- 14 Nov 28 24-3  
 Nov 29 discussion Tu am  
 Nov 30 25 Amino Acids, Peptides, and Proteins  
 Dec 1 discussion Thur pm  
Dec 2 \*\*\*\*\* **FRIDAY** \*\*\*\*\* **EXAM III (Chapters 20-24)**
- 15 Dec 5 26 Lipids  
 Dec 6 discussion Tu am  
 Dec 7 \*\*\*  
 Dec 8 discussion Thur pm  
Dec 9 x
- 16 **Dec 15 Thurs Cumulative FINAL EXAM, 7:00 – 9:00 pm**  
**all OC sections testing simultaneously, as mandated by CAS**  
**ON-CAMPUS Flanner Auditorium, 133, unless directed elsewhere**