

SYLLABUS – CHEM 223 – Organic Chemistry A – 1st Semester
FALL 2022 - LOYOLA UNIVERSITY CHICAGO (LUC)

Lecture: #2756 **Section:** 005 **Tu+Thur** **8:30 am – 9:45 am** **Flanner – Auditorium**

Discussion: #2757 **Section:** 006 Mon 10:25 – 11:15 am Flanner 105
#2758 **Section:** 007 Mon 4:15 pm – 5:05 **!LATE!** Flanner 007
#6046+ **Section:** 019+ Mon 2:45 pm – 3:35 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** - maintaining CDC prescribed SOCIAL DISTANCING and masking
Contact: after class or during office hours – BEST, email: cszpuna@luc.edu - EMERGENCY

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

1. Organic Chemistry, Klein, 3rd ed text, Wiley, 2017 or 4th ed. text
Versions – hardbound, softbound, unbound - printed 3-hole punch text, or electronic text
2. Student Study Guide and Solutions Manual, Klein, 3rd ed. Wiley, 2017 or 4th ed.

Suggested / Recommended Materials:

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

Optional Materials (found helpful by some students, **but students SHOULD NOT purchase immediately**; be sure to check Loyola University Chicago Library – Reserve Section for these and other resources):

1. Organic Chemistry as a Second Language, First-Semester Topics, 5th ed. Semester I, Klein (Aug 2019), Wiley (ISBN 978-1-119-49348-8, 1-119-49438*X) *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-UP EXAMS!!!** coordination: **45%** **50%**

- 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 – 3 - 4 (3 dates announced, one quiz may be unannounced) **NO MAKE-UP QUIZZES !!!** **25%**

FINAL – scheduled by CAS, no alternative date / time coordination: **30%** **25%**

*** **common-time, common-content Final Exam coordinated/weighted/determined by Chem Dept.**

*** **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 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.

*** Please note that this course, Organic Chemistry, is **cumulative, comprehensive, and improvement-based**. The Final Exam is deemed a culminating measure of a student's progress where:

- any student meriting an F on the Final Exam may achieve a recorded course grade no higher than D, despite a student's course standing, despite total points;
- a Final-Exam score of D may merit a course grade no higher than C, despite a student's course standing, despite total points: and
- a Final-Exam score of C may merit a course grade no higher than B, despite a student's course standing otherwise, despite total points.

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 functionalities, families, classes of organic compounds, their methods of preparation, their properties, 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 of organic compounds.
7. analyze and interpret data from a combination of spectroscopic / analytical techniques used in separating and identifying organic compounds: IR, NMR, C-13 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 reinforced, 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 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!!!

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.

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.

Chemistry and Biochemistry Department LABORATORY Caution (effective Aug. 4, 2016, adj Aug. 27, 2019):

A student who opts to withdraw from CHEM 223 lecture after midterm may be permitted to remain in CHEM 225 – the accompanying laboratory. If a student plans to continue with the laboratory portion of the sequence, that student must continue to attend all of the lectures until the week of the official drop date, to gain as much background knowledge as possible in preparation for each laboratory assignment and in order to work safely in the laboratory amongst the other students. If a student is considering withdrawing from lecture, but remaining in the laboratory, the student may seek assistance from the Department of Chemistry and Biochemistry Office in the week prior to the deadline for withdrawing, beginning Monday at 9:00 am through Friday at 4:00 pm.

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, and obtain a signature from the department to do so. 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, and discuss **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.”

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

<u>Week</u>	<u>Date</u>	<u>Ch-Lect</u>	<u>Topic</u>
1	Aug 29 Aug 30 <u>Sept 1</u>	disc 1-1 1-2	*** Monday discussion – introduction to course Review – Gen Chem: Electrons, Bonds, Molecular Properties
2	Sept 5 Sept 6 <u>Sept 8</u>	 2-1 2-2	no discussion *** MONDAY ***** LABOR DAY – HOLIDAY Molecular Representations
3	Sept 12 Sept 13 <u>Sept 15</u>	disc 3-1 3-2	*** MONDAY discussion *** Quiz 1 Acids and Bases
4	Sept 19 Sept 20 <u>Sept 22</u>	disc 4-1 	*** Monday discussion Alkanes and Cycloalkanes *** Thursday *** EXAM I (Chapters 1-3)
5	Sept 26 Sept 27 <u>Sept 29</u>	disc 4-2 5-1	*** Monday discussion Stereoisomerism
6	Oct 3 Oct 4 <u>Oct 6</u>	disc 5-2 6-1	*** MONDAY discussion *** Quiz 2 Chemical Reactivity and Mechanisms
7	Oct 10-11 <u>Oct 13</u>	 6-2	*** Monday/Tuesday ***** MIDTERM BREAK
8	Oct 17 Oct 18 <u>Oct 20</u>	disc 7-1 	*** Monday discussion Alkyl Halides: Nucleophilic Substitution and Elimination Reactions *** Thursday *** EXAM II (Chapters 4-6)
9	Oct 24 Oct 25 <u>Oct 27</u>	7-2 7-3 8-1	*** Monday discussion Addition Reactions of Alkenes
10	Oct 31 Nov 1 Nov 3 <u>Nov 4</u>	 8-2 9-1 	*** Monday discussion Alkynes ***** FRIDAY ***** (last day to withdraw with a W)
11	Nov 7 Nov 8 <u>Nov 10</u>	 9-2 10-1	*** MONDAY discussion *** Quiz #3 Alkynes Radical Reactions

- 12 Nov 14 *** Monday discussion
 Nov 15 10-2
 Nov 17 11 Synthesis
- 13 Nov 21 *** Monday discussion
 Nov 22 *** **Tuesday** *** **EXAM III (Chapters 7-10)**
 Nov 23-25 *** WED-FRIDAY *** THANKSGIVING DAY – HOLIDAY ***
- 14 Nov 28 *** Monday discussion
 Nov 29 12-1 Alcohols and Phenols
 Dec 1 12-2
- 15 Dec 5 *** Monday discussion
 Dec 6 14-1 Spectroscopy – IR and MS
 Dec 8 14-2 / 15 ... / Ethers, Epoxides, Thiols, and Sulfides (student to finish on his/her own, if time does not permit)
- 16 **Dec 15 Thurs Cumulative FINAL EXAM, 7:00 – 9:00 pm**
 all Organic-Chemistry sections testing simultaneously, as mandated by CAS
 Flanner Auditorium, 133, unless otherwise mandated