

**SYLLABUS - CHEM 224 – ACCELERATED and \*\*CV-Mandated ONLINE\*\***  
**Organic Chemistry B – 2<sup>nd</sup> semester, Summer 2021 - LOYOLA UNIVERSITY CHICAGO**

Lecture/Discussion: #1147 CHEM 224-001 MWF am: 8:00 – 10:40 am **ONLINE**  
#2027 CHEM 224-002 MWF pm: 1:20 – 4:00 pm **ONLINE**

Sr. Lecturer: Prof. C. Szpunar  
Student Office Hours: **via email** - cszpuna@luc.edu – typically available, MWF mornings  
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., Wiley, 2017
2. Student Study Guide and Solutions Manual, Klein, 3<sup>rd</sup> ed. Wiley, 2017

Option 1: ISBN 978-1-119-38071-9

1. Soft, unbound, printed 3-hole punch text
2. Paperback solutions manual/study guide
3. Wiley Plus plus Orion – the online homework/practice tool

Option 2: ISBN 978-1-119-43349-1

1. Soft, unbound, printed 3-hole punch text
2. Etext solutions manual/study guide
3. Wiley Plus plus Orion – the online homework/practice tool

**Suggested / Recommended Materials:**

1. Molecular modeling kit, Darling, Duluth, or equivalent
2. WileyPlus online homework/practice tool – **Course ID: 810267**, may end July 31, 2021

**Optional Resource Materials** (found helpful by some students, **but students SHOULD NOT purchase**):

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 – 2 – dates announced – ONLINE <b>! NO MAKE UPS !</b>	<b>40%</b>
♪ ♪ ♪ QUIZZES – 3 – dates announced – ONLINE <b>!!! NO MAKE UPS !!!</b>	<b>30%</b>
♪ ♪ ♪ FINAL – date announced - ONLINE, <b>no alternative date/time, NO MAKE UPS !!!</b>	<b>30%</b>

**HOMEWORK (HW)** - per topic, per section, per chapter, not assigned – feel free to work any, all, and as many problems, as many 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 is deemed a culminating measure of a student's progress. Any student meriting an F on the Final Exam may achieve a recorded course grade no higher than D, despite total points; a Final-Exam score of D may merit a course grade no higher than C, despite total points; and a Final-Exam score of C may merit a course grade no higher than B, despite student's course standing otherwise, despite total points.

\*\*\* Please note that once an overall course grade has been posted officially on LOCUS, any subsequent requests for an INCOMPLETE or for any additional extra credit with NOT 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.

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

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

\*\*\***Online Lectures – Attention and Participation: *Important and essential.*** N.B. (Note well!)

- Feel free to use your models at any time. Many of us need to experience a 3-dimensional (3D) representation.
- Prepare for lectures by scanning the Klein-text headers and illustrations for the new material.
- Use the Power-Point lecture highlights in combination with detailed PP commentary, to acquire new concepts to be learned / applied, in lieu of normal face-to-face lectures.
- Take advantage of the weekly Zoom discussion meetings, when offered. No individual Zoom interactions.
- Then, read the corresponding text. For grading purposes, however, whatever is covered in lecture, in the commentary, or on Zoom rules! Feel free to use the text as a resource.
- 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 by email – homework or as yet-unassimilated lecture material, anything chemistry. Please try to be concise and specific for a judicious, efficient, effective, illustrative, responsive reply.
- Explanations to HW or lecture questions deemed particularly significant will be shared via email with all students.

**Academic Honesty: Essential. Expected. Enforced.**

Upon student notification, dishonesty dictates consequences which may 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.

**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>** .

\*\*\* ALL student assignment submissions – quizzes or exams – in this course are to be delivered via Sakai Assignments, if technologically possible. Feel free to contact the Loyola IT Help Desk for support and assistance with your specific equipment. Students are expected to download the assignment from Sakai at the appointed time, complete it, and upload via Sakai within the appointed time. If any technology issues arise, contact the lecturer by email for individual resolution. Responses for this course are subject to the **Honor System**. Do your own work!!! Googled responses are NOT acceptable. Lecture, commentary, and Zoom discussions RULE, dictating acceptability for all responses.

**Study Strategies and Suggestions:** One may approach the study of Organic Chemistry in a manner *similar to tackling a new foreign language*. Its 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, the course will cover: bonding, functional groups, properties of aliphatic- and aromatic-compound families, nomenclature, structures, stereochemistry, reaction mechanisms, multi-step syntheses, and spectroscopic techniques. Because the 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, collaboration with others on HW problems is encouraged. However, collaboration is NOT acceptable for an assessment, i.e., on a quiz or test!!!**

\*\*\* Online, Sakai Assignments is the avenue to student submissions for quizzes and exams.

Experience dictates that positive outcomes (for exam and course grades) 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!!!

Furthermore, experience has demonstrated that overnight cramming will probably NOT produce success! The student should scan the text chapter / segment to be covered BEFORE viewing the PowerPoint lecture highlights and assimilating the PP-detailed commentary (\*\**what would have been said in lecture, if the course were not online*\*\*) to improve lecture comprehension. After each PP lecture, careful detailed reading of the chapter / segment and focused working of the homework (HW) problems are appropriate, necessary, essential, and expected.

In addition to student's viewing and absorbing of PP lecture, assimilating the PP-detailed commentary, participating in face-to-face Zoom discussions as the Internet permits, reading the text, and infusing, ensuring comprehension with practice through homework problems, joining and contributing to a study group is typically, normally, usually, strongly encouraged. But, NOT during an assessment, NOT for a quiz, NOT for an exam. **Let's say that again. For study purposes, collaboration with others on HW problems is strongly encouraged, especially in a timely fashion. However, collaboration is NOT acceptable for assessment, i.e., NOT on a quiz, NOT on an exam!!!**

*In anticipation of an acceptable / passing grade of C, the minimal time per week in the summer devoted to Organic Chemistry is estimated at 8 hr for lecture and discussion, 6-12 hr for reading, and 6-12 hr for homework. For a higher course grade, more study time needs to be expended. Please be advised that experience dictates that a full-time summer job may not allow for a dedicated effort regarding Organic Chemistry.*

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

A student who opts to withdraw from CHEM 224 lecture after midterm may be permitted to remain in CHEM 226 – the co-required 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 wishes to remain in the lab, 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 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 the second attempt, the student must secure approval for a third attempt. Students must contact the Chemistry and Biochemistry Department, fill out a permission to register form or print it from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and obtain a signature from the Chemistry and Biochemistry Department. A copy of this form must be approved by the student's Academic Advisor to secure final permission for the attempt.

**Accomodations** (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 considerations would present his/her required SSWD/SSA letter to the Chair of the Chemistry and Biochemistry Department in the first or second week of the 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, where any such accommodation might be requested.

\*\*\* This online-accelerated summer course will build in sufficient extra time for ALL students. For assessment accommodations and for technology-submission considerations. Other accommodations will be considered on a case-by-case basis.

<u>Wk-Lecture</u>	<u>Date</u>	<u>Chapters</u>	<u>Lecture Outline</u> <i>Klein Text Reference – by Topic</i>
	M-July 5	***	***** <b>Independence Day Holiday</b> – observed
1 - 1	W-July 7	14	Review – IR Spectroscopy and MS
1 - 2	F-July 9	15	NMR - Spectroscopy ...
	*** <b>Weekend QUIZ 1, Assignment #1 – Spectroscopy</b> – distributed through Sakai Assignments on Friday and <b>due completed Monday noon!!!</b> Each student must work on his/her own and submit for grading his/her own assignment, on his/her HONOR, with no assistance from anyone or any source except course materials.		
2 - 3	M-July 12	16	Conjugated Systems, Dienes, UV Spectroscopy ...
2 - 4	W-July 14	16 / 17	... / Aromatic Compounds Part 1 ...
2 - 5	F-July 16	17	...
	*** <b>QUIZ 2, Assignment #2 – Dienes + Aromatic Cmpds</b> Distributed through Sakai Assignments on Friday, <b>due/completed same day.</b> (10- to 30-minute quiz by design, will allow students <b>2 hours</b> for acclimation, accommodation, AND technology issues). Students must do own work.		
3 - 6	M-July 19	18	Aromatic Reactions Part 2 ...
3 - 7	W-July 21	18 / 19	... / Aldehydes and Ketones
3 - 8	<b>F-July 23</b>	19	...
	*** <b>EXAM 1, Assignment #3 – Spectroscopy, Dienes, Aromatics – Chap 14, 15, 16, 17, and 18</b> Subject to content-coverage adjustment, as announced, distributed through Sakai Assignments, <b>due same day.</b> (50-minute exam by design without look-ups, will allow <b>3 hours</b> ). Students must do own work.		
4 - 9	M-July 26	20	Carboxylic Acids and Derivatives
4 - 10	W-July 28	20 / 21	... / Alpha Carbon Enols and Enolates
4 - 11	F-July 30	21	...
	*** <b>QUIZ 3, Assignment #4 – Aldehydes/Ketones, Carbox Acids/Derivs, Alpha Carbons/Enols - Chap 19, 20, and 21</b> , subject to content-coverage adjustment, as announced, distributed through Sakai Assignments, <b>due same day.</b> (10- to 30-minute quiz, will allow <b>1 hour</b> ). Students must do own work.		
5 - 12	M-Aug 2	22	Amines
5 - 13	W-Aug 4	22 / 23	... / Organometallics
5 - 14	<b>F- Aug 6</b>	23	...
	*** <b>EXAM 2, Assignment #5 – Carbox Acids/Derivatives, Alpha Carbons/Enols, Amines, and Organometallics – Chap 20, 21, 22, and 23</b> , subject to content-coverage adjustment, as announced, distributed through Sakai Assignments, <b>due same day.</b> (50-minute exam by design without look-ups, will allow <b>2 hours</b> ). Students must do own work.		
6 - 15	M-Aug 9	24	Carbohydrates
6 - 16	W-Aug 11	24 / 25	... / Amino Acids and Peptides
6 - 17	<b>F-Aug 13</b>	25 / 26	... / Lipids
	*** <b>CUMULATIVE FINAL EXAM, Assignment #6</b> – including <b>Carbohydrates, Amino Acids, Lipids – Chap 24, 25, and 26</b> , but comprehensively covering entire 2-semester course, Klein Chapters 1 – 26, distributed through Sakai Assignments, <b>due same day.</b> (2-hour exam by design, will allow <b>3 hours</b> ). <b>STUDENTS MUST COMPLETE and SUBMIT their OWN WORK</b> - honesty ramifications mandating that all students are subject to enforcement of the university's Academic Integrity Policy.		