SYLLABUS – CHEM 224 – Organic Chemistry B – 2nd Semester – MWF am Lecture

Spring 2019 - LOYOLA UNIVERSITY CHICAGO (LUC)

Lecture: #1114	**Section:** 001	**MWF**	**10:25 – 11:15 a.m.**	**Flanner Auditorium**
Discussion: #1115	**Section:** 002	Wednesday	11:30 am – 12:20 pm	Flanner 105
#1116	**Section:** 003	Wednesday	12:35 pm – 01:25 pm	Flanner 105
#1118	**Section:** 004	Wednesday	01:40 pm – 02:30 pm	Flanner 105

Lecturer: Dr. C. Szpunar
Office: Flanner Hall **200B** Contact: best in person, 773-508-3128, cszpuna@luc.edu
Emergency Message via Chemistry Dept. Office: 773-508-3100, fax: 773-508-3086

Office Hours: **Mon:** 11:30 am – 1:00 pm **Tues**: 11 am – 1 pm
Thurs: 10 – 11:15 am (1st Thursday of the month), 10 am – 12 noon (other Thursdays)
(before class, only IF lecturer is prepared for class AND student schedule conflicts w/ regular office hours)
N.B.: Answer keys will be posted in the glass case outside Flanner 200B. NO photographing pls!

Required: (See bookstore for most up-to-date offerings as publisher deals directly with bookstore.)
1. Organic Chemistry, Klein, 3rd ed., Wiley, 2017
2. Student Study Guide and Solutions Manual, Klein, 3rd 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 – **Course ID: 672820**

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

Optional Materials (found helpful by some students, **do not purchase immediately**):
1. Organic Chemistry as a Second Language, II, Klein (2006), Wiley (ISBN 978-0-471-73808-4)
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* equivalent

Grading *(weighting below) with approximate curved-grade guidelines (adj Jan 16, 2019):*

>90% A, 90-88% a-, 88-86% b+, 86-71% B, 71-69% b-, 69-67% c+, 67-51% C, 51-49% c-, 49-45% D, <45% F

♫ **EXAMS** – 2 – dates announced (subject to change, although unlikely) – ***NO MAKE UPS*** **45%**
- 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** – TBD – UNANNOUNCED (during lecture, discussion period, as take-home) **20%**

♫ **FINAL** – date announced (scheduled by CAS), **no alternative date/time, *NO MAKE UPS*** **35%**

♫♫ ***Homework*** - per chapter/topic; feel free to work any/all problems to apply and master concepts.

♫♫ ***Optional Short Report*** *(as detailed below, one option ONLY)* *** ***BONUS*** *(maximum of 3 - 5%)*

*** Please note that because this course, *Organic Chemistry, is* ***cumulative, comprehensive, and improvement-based***, and because 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 standing otherwise (i.e., despite total points.)

*** Please note that once an overall course grade has been posted officially on LOCUS, any subsequent requests for an INCOMPLETE or any additional extra course 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 the various classes of organic compounds, their methods of preparation, and typical reactions.
2. name and draw specific organic compounds.
3. postulate a logical reaction mechanism for simple organic reactions.
4. discriminate amongst relative stabilities of reaction intermediates.
5. plan and write out multi-step syntheses using known 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 various instruments used in separating and identifying organic compounds: IR, NMR, and UV-vis spectrophotometers and mass spectrograph.

Lecture and Discussion – Attendance and Attention: ***Important and required.*** Feel free to bring your books and modeling kit to class. Better yet, use them! Prepare for lecture by prior scanning of new material. Come prepared for discussion; be ready to ask questions on assigned homework or yet-unassimilated lecture material.

Cell Phones: **NONE.** Please be courteous and respectful of others. Silent mode during lecture and discussion. ***Not allowed in sight or within hearing during exams, subject to confiscation.*** NO phone conversations in lecture hall or in discussion class – before class, during class, after class – AT ANY TIME! NO texting – before class, during class, after class – AT ANY TIME! If you must talk or text, 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. Upon student notification, dishonesty dictates consequences which 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 on any item in question (quiz or exam).
Please refer to the LUC CAS Academic Integrity Statement and the sanctions for academic misconduct: http://www.luc.edu/cas/advising/academicintegritystatement
Also refer to the procedures for academic grievances: www.luc.edu/academics/catalog//undergrad/reg_academicgrievance.shtml

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, families of aliphatic and aromatic compounds, 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, *similar to practicing the piano*. Collaboration with others on homework problems is encouraged, especially in a timely fashion. Experience dictates that positive outcomes (for exam and course grades) are directly proportional to working and understanding the assigned problems on a regular basis, i.e., applying the concepts learned to non-generic situations.

Typically, Organic Chemistry is not efficiently self-taught. Overnight cramming will probably not produce success! The student should quickly read the chapter/segment to be covered BEFORE lecture to improve lecture comprehension. After lecture, careful detailed reading of the chapter/segment and focused working of the assigned problems are appropriate, necessary, essential, and expected**.** In addition to student's participation in lecture, discussion, reading, and homework, joining and contributing to a study group is strongly encouraged.

If anticipating a 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 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 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: http://www.luc.edu/chemistry/forms/ and obtain a signature from the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form must be approved by the student's Academic Advisor to secure final permission for the attempt.

Accomodations (SSWD/SAC):

Any student requesting accommodation(s) for extra exam time, different test venue, and/or other course considerations should present their required SSWD/SAC letter to the lecturer in the first or second week of the term, but NOT later than 10 days before a scheduled exam. This request should be made in private, during office hours, NOT before, NOT during, nor after a regularly scheduled class.

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/SAC exam time **must overlap** the official exam time to be fair to ALL students. The student should note the posted SSWD/SAC office schedule and must schedule each accommodated exam at least one week prior to any exam where such accommodation is requested.

Optional BONUS Report
CHEM 224, Spring 2019, Dr. Szpunar

*****BE SURE to include on the cover sheet OR on the top right of p1:**

a) your name
b) the date
c) CHEM 224 – TuThur – Sec 001
d) lecturer's name

****

Option 1 (max of 3%):
Visit the ***International Museum of Surgical Science*** and write a 3 pp. report (of 12-pt type, 1-in margins, double-spaced, and stapled) highlighting at least 2 of its exhibits. Neatly, attach a pamphlet from the museum or on one of its exhibits or proof of admission.

You may wish to check to see if the # 151 Sheridan Bus (or equivalent) is more efficient than the CTA el; the bus may drop you closer to the museum, located just south of North Avenue Beach near the Polish Consulate (red-and-white flag, Polish eagle) on inner Lake Shore Drive.

1524 N. Lake Shore Drive
Chicago, IL 60610 USA
312.642.6502, fax 312.642.9516, info@imss.org
HOURS: May - September: Tuesday through Sunday 10 am – 4 pm
October - April: Tuesday through Saturday 10 am – 4 pm
ADMISSION: Adults $6, Students & Seniors $3
(Be sure to check the website for updates on the time, current fee, and free day!)

Option 2 (max 5%):
Choose a **drug or health care product** with **organic functionalities,** such as those featured in the following articles or in any similar publication:

- *Chemical & Engineering News (C&E News)*, June 20, 2005, whole issue – "Top Pharmaceuticals, from aspirin to Viagra and more," approx. 50 pharmaceuticals.
- *C&E News*, Sept. 25, 2006, cover story – "Addiction … smoking, drug, and alcohol abuse," pp. 21-44.
- *C&E News*, Oct. 30, 2006, cover story – "Biotechs …," pp. 14-20.
- *C&E News*, Nov. 13, 2006, cover story – "RNA …," pp. 16-23.
- *C&E News*, Oct. 2, 2006, cover story – "Mass Spectrometry … proteins …," pp. 17-25.
- *C&E News*, Oct. 23, 2006, cover story – "Bacterial Banter …," pp. 17-26.
- *C&E News*, Dec. 4, 2006, cover story – "Pharm Year in Review," pp. 17-28.

Write a 4-6 pp. report (of 12-pt type, 1-in margins, double-spaced, and stapled, with at least 3 pertinent references or citations at the end of the report). Include the following:

- Explain why the drug or health care product is of importance or interest to you.
- **Identify all the functional groups from an organic perspective.**
- **Propose how you might verify the various functionalities spectroscopically**, esp. via IR and NMR**.** Mention other methods, as applicable, i.e., via UV and MS.
- Suggest hypothetically how you might change the molecule synthetically, at one functional site minimally, and state what you hope to achieve efficaciously by doing so.

*** due on/before Wednesday, April 24, 2019 – but NOT LATER than noon ***

- **handed directly to the Sr. Lecturer, before or after class**
- **or delivered to her office, Flanner 200B**
- **NOT to be delivered to the Chemistry and Biochemistry Dept Office**

N.B.: This optional BONUS Report, either option but one option only, is intended for enrichment; points therefrom are ONLY considered as a grade component IF the student's interim or final grade is a C or better (i.e., >55% approx weighting).

Lecture Outline for *Klein Ed. 3* (*tentative, subject to change*) – Spring 2019

Week	*Date*	*Ch-Lecture*	*Topic*	***EVENT***
1	Jan 14	14-1	Review – IR Spectroscopy and MS	
	Jan 16	14-2		
	Jan 18	15-1	NMR Spectroscopy	
2	Jan 21	***		********Holiday – Martin Luther King Jr. Day********
2	Jan 23	15-2		
	Jan 25	15-3		
3	Jan 28	16-1	Conjugated Systems	
	Jan 30	16-2		
	Feb 1	16-3		
4	Feb 4	17-1	Aromatic Compounds	
	Feb 6	17-2		
	Feb 8	17-3		
5	Feb 11	18-1	Aromatic Reactions	
	Feb 13	18-2		
	Feb 15	18-3		
6	Feb 18	19-1	Aldehydes and Ketones	
	Feb 20	19-2		
	Feb 22	***		******* ***Friday*** ****** ***EXAM I (Chapters 14-18)***
7	Feb 25	19-3		
	Feb 27	19-4		
	Mar 1	19-5		
8	Mar 4-9	***		********** *Monday-Saturday* ******* *MIDTERM Spring BREAK* ***
9	Mar 11	20-1	Carboxylic Acid and Derivatives	
	Mar 13	20-2		
	Mar 15	20-3		
10	Mar 18	20-4		
	Mar 20	21-1	Alpha Carbon Enols and Enolates	
	Mar 22	21-2		
11	Mar 25	21-3		***** *Monday* ***** *(last day to withdraw with a W)* **********
	Mar 27	21-4		
	Mar 29	22-1	Amines	
12	Apr 1	22-2		
	Apr 3	22-3		
	Apr 5	***		****** ***Friday*** ****** ***EXAM II (Chapters 18-21)***
13	Apr 8	23	Organometallics	
	Apr 10	24-1	Carbohydrates	
	Apr 12	24-2		
14	Apr 15	24-3		
	Apr 17	24-4		
	Apr 19 – Apr 22			******** *Good Friday – Easter Monday* ******** *EASTER BREAK*
15	Apr 24	***		*** ***optional BONUS report due by noon*** ***
		25	Amino Acids, Peptides, and Proteins	
	Apr 26	26	Lipids	
16	***Apr 29 Mon***		***Cumulative FINAL EXAM, 9:00 – 11:00 am, Flanner Auditorium***	