Organic Chemistry II, CHEM 224, Summer 2017

Instructor

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SI

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OH: Monday 12-2pm in CTAE

Lecture: M/Tu/We 8:30 – 11:10 AM Cuneo Hall Room 324 (CHEM 224-007)

Office Hours: Tuesday 12:30 – 2:00 p.m. FH-217

Required Text: L.G. Wade, Jr., "Organic Chemistry" 8th Ed. ISBN-13 978-0321768414 **or** 7th Ed. ISBN 978-0-321-59231-6 **or** 6th Ed. ISBN 0-13-147871-0

Required Key: J.W. Simek, "Solutions Manual Organic Chem.", 8th Ed. ISBN-13 978-0321773890 **or** 7th Ed. ISBN 978-0321598714 **or** 6th Ed. ISBN 0-13-147882-6

Recommended: Your favorite molecular modeling kit. Here are some options. ($ not guaranteed)

- Darling $18.65 in LUC Bookstore with cardboard box; $15 in stockroom
- Darling $36.00 in LUC Bookstore with green plastic box
- Prentice Hall Molecular Model Set for Organic $35.33 (colorful & pretty)
- Prentice-Hall Framework Molecular Models (Brumlik) $45.80 (tubes to cut)
- HGS Fundamental Organic Set $17.00

Extra Resources:

- Organic Chemistry as a Second Language I (first semester topics) by David R. Klein
- Organic Chemistry as a Second Language II (second semester topics) by David R. Klein
- *Pushing Electrons* by Daniel Weeks for extra help with *mechanisms*
- Fun Chemistry YouTube Channels:
  - Periodic Videos: https://www.youtube.com/channel/UCtESv1e7ntJaLJYKIO1FoYw
  - NurdRage: https://www.youtube.com/user/NurdRage
  - Armando Hasudungan: https://www.youtube.com/channel/UCesNt4_Z-Pm41RzpAClfVcg
  - NutritionFacts.org: https://www.youtube.com/channel/UCddn8dUxYdgJz3Qr5mjADtA

CHEM 224 Course Description:

Second semester of a two-semester sequence for non-chemistry majors. Mastery of the second semester material requires comprehensive understanding and recall of the first semester material and will continue the functional group-based approach with an emphasis on mechanisms toward understanding the synthesis and reactions of conjugated π systems, aromatics, carbonyl compounds, amines, carboxylic acids and their derivatives, carbohydrates, lipids and proteins. The student will learn how to:

1. Identify the various classes of organic compounds, their methods of preparation, and typical reactions.
2. Assign and understand IUPAC nomenclature for specific organic compounds.
3. Predict reaction products and mechanisms, and postulate logical reaction mechanisms for organic reactions.
4. Discriminate among relative stabilities of reaction intermediates.
5. Plan and write out multi-step syntheses using known functional group transformations,

including syntheses of polyfunctional organic compounds.
6. Name, draw and interpret the 2- and 3-dimensional structures of important biopolymers, and techniques for their synthesis and characterization.
7. Analyze and interpret data from various instruments used in separating and identifying organic compounds including: IR, NMR, UV-vis and MS.

***Syllabus*:** The current syllabus is posted on Sakai and is subject to change (dated at the top) during the semester. *You are responsible for all changes announced whether or not you are in attendance.*

Homework: Organic chemistry is a new language that is spoken in words and in structures. The best way to learn a language is to practice speaking and writing it, so the best way to learn organic is to work problems **every day**. Homework problems will be assigned for each chapter, **but will not be collected**, so you must be disciplined about your own studying and problem solving, which includes working assigned problems and keeping up with the pace of the lecture. Experience has clearly demonstrated a direct correlation of exam success with consistently working the assigned problems in the book. Your grade in my organic chemistry section will be determined only by your exam scores. If you are unable to be disciplined about doing homework and you would like for someone to collect and grade your homework on a regular basis, please switch sections.

Homework Assignment for Wade's 8th edition:

Chap 15: 1, 4-18, 22-27, 30, and 33
Chap 16: 3-4, 7-8, 9 (a, b), 12-29, 31-32, 38-39, 45
Chap 17: 1-29, 33-35, 37-40, 42-44, 46-52, 54
Chap 18: 1-4, 6-11, 15-30, 33-39, 43-44, and 46-51
Chap 19: 1-21, 25-33, 34-37, 39, 42, 44, 47, 51, 53
Chap 20: 1-21, 23-33, 35-40, 45
Chap 21: 1-39, 42-54, 62, 64-65
Chap 22: 1-47
Chap 23: 1-14, 16-17, 21-22, 24-26, 28-31, 32 (a), 33-36, 40, 41 (a,b), 52-53, 55, 58
Chap 24: 1-3, 20, and 33
Chap 25: 1-5, 9-13, 15, 30
Chap 26: 17 and as warranted

Take Home Quiz and Dates (subject to change): There will be four take home quizzes assigned over the course of this class **constituting 20 % of your final grade**. Quizzes will equal 2**5 points each** and be due the following class period. All four quizzes will be combined at the end of the course for a **total of 100 points**. These quizzes are open note and feel free to work as groups but all answers should clearly show your own work (refer to ***Academic Honesty*** section below).

Assigned	Due	Quiz No.
7/10	7/11	Quiz 1
7/18	7/19	Quiz 2
7/26	7/27	Quiz 3
8/7	8/8	Quiz 4

Exam Dates (subject to change):

Dates	Exam No.
7/12	Mid-term Exam 1
7/24	Mid-term Exam 2
8/1	Mid-term Exam 3
8/9	Final Exam

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

Exams and Grading: There are three 1-hour mid-term exams and one 2-hour final exam. The lowest of the three mid-term exams will be dropped. If you miss an hourly exam for any reason, that is the exam that will be dropped. No make-up mid-term exams will be given under any circumstances. The final exam is cumulative and cannot be dropped.

Take-home Quizzes	100 points	20%
Mid-term exam	100 points	20%
Mid-term exam	100 points	20%
Mid-term exam	*(Replaces lowest mid-term exam)*	
Final Exam	200 points	40%
TOTAL	500 points	

A curve will be applied based on the average and the standard deviation with the approximate guidelines of > 90% A; 75-90% B; 55-75% C. I will give statistics including the mean, the median, and the standard deviation for all exams. I do not predict cutoffs.

You must bring a form of photo identification, such as your Loyola Student ID or your driver's license, with you to the exam, which you may be asked to show. All exams are closed book and closed notes. When you are finished with your exam, please bring your completed exam to the front, and leave the room quietly without disturbing the other students.

There are no make-up exams! If you miss an exam for any reason, the final exam will be weighted to compensate for the missed exam. Exams will be graded and returned as quickly as possible, usually by the following class period. All grading questions, points of clarification, and grading errors must be brought to the instructor's attention no later than three class periods after the graded exam is returned.

***Sakai Materials*:** Handouts given in class are mirrored on Sakai so you can access materials and obtain extra copies if you wish.

Academic Honesty: First off, let me say that I grade all exams individually and personally, and I pay especially close attention to written answers in order to check your understanding and to assign appropriate credit for work demonstrate. I grade each page in order (i.e., I grade page 1 on all exams, then page 2 on all exams, etc.) to ensure that partial credit is awarded consistently and fairly. Thus, it is very obvious to me when two exams have identical answers, especially when the answer has some peculiar flaw. Therefore, resist the temptation to ever let eyes drift during an exam, first of all because copying is cheating and is wrong, and secondly, because I am very good at detecting duplicate answers. Furthermore, be mindful of your own exam by not providing an attractive nuisance for

wandering eyes of other possibly weak-willed students. All students in this course are expected to have read and to abide by the appropriate standard of personal honesty and integrity, drafted by the College of Arts & Sciences, that can be viewed online at:

http://www.luc.edu/cas/advising/academicintegritystatement/.

For this course, all exams are closed book and closed note **unless otherwise specified**. Academic dishonesty includes using notes or books during exams, looking at another student's test during the exam period, or talking during an exam. The consequence of academic dishonesty is failure of the course, and the incident will be reported to the Chemistry Department Chair and the Office of the Dean. Additional sanctions including expulsion from the university may be imposed. The Undergraduate Handbook contains a complete description of the University policy regarding academic dishonesty. Anything you submit that is incorporated as part of your grade in this course (quiz, exam, lab report, etc.) must represent your own work. Any student caught cheating will, at the very minimum, receive a grade of "zero" for the item that was submitted. If cheating occurs during a course exam, the incident will be reported to the Chemistry Department Chair and the Office of the CAS Dean. Additional sanctions may be imposed.

Strategies and Suggestions: The best method of learning organic chemistry is to work the assigned problems and write out the answers. *Then* check your answers versus the Solutions Manual by Simek.

- Study at least 12 hours per week and maintain a steady pace of studying. Organic chemistry continually builds, like a language, so studying every day is most effective.
- Homework will not be collected, but it is essential to work problems in a timely fashion.
- Skim the current chapter before the lecture, so that you will be aware of the topics to be covered.

The Tutoring Center offers free small group tutoring and lab (drop-in) tutoring for Loyola students. The groups meet once a week through the end of the semester and are led by a student who has successfully completed study in the course material. To learn more or request tutoring services, visit the Tutoring Center online at www.luc.edu/tutoring.

A supplemental instructor (SI) has been provided for this course. **You are required to show them courtesy and respect, and remember that they are here to help.** The SI office hours are posted above and I encourage you to contact them with any questions about homework, quizzes or general questions by email or before/after class.

CAS has accommodations for students with disabilities (SSWD), including a testing center in the Sullivan Center. For more information see http://www.luc.edu/sswd/.

Students wanting to drop lecture may stay in the co-req lab only if midterm grade posted in LOCUS is a D or better. Students should continue to attend lecture until the week of the drop date to gain as much knowledge as possible.

Organic Chemistry 224 Tentative Lecture Schedule (subject to change)

Dates	Chapters	Topic
7/5	12-13	IR and MS, ^{1}H and ^{13}C NMR review
7/10	14	Ethers, Epoxides, and Sulfides
7/11	15	Conjugated Systems, Orbital Symmetry, UV
7/12		**EXAM I (Chapters 12-15 or as announced, cumulative)**
7/17	16-17	Aromatic Compounds and Reactions of Aromatic Compounds
7/18	18	Ketones & Aldehydes
7/19	19	Amines
7/24		**EXAM II (Chapters 16-18 or as announced, cumulative)**
7/25	20	Carboxylic Acids
7/26	21	Carboxylic Acid Derivatives
7/31	22	□-Substitution, Condensations of Enols & Enolates
8/1		**Exam III (Chapters 19-22, cumulative)**
8/2	23	Carbohydrates and Nucleic Acids
8/7	24	Amino Acids, Peptides and Proteins
8/8	25-26	Lipids & Polymers
8/9		***Cumulative*** **Final, Tuesday, Aug 9th 8:30 – 11:10am Cuneo Hall Room 324**

Notes

*** Prerequisite: 223 or equivalent. Lecture. Continuation of 223; for non-chemistry majors. Organic chemistry of carbonyl compounds, amines, carboxylic acids and their derivatives, carbohydrates, lipids and proteins.

*** Students who drop the co-req lecture must be receiving a grade of D or better in the lecture in order to continue in the co-req lab.