

Loyola University Chicago

Syllabus Organic Chemistry A CHM 223 Sec. 001

Spring 2013

**Lecture:** M, W, F 02:45 PM - 03:35 PM Flanner Hall 133

**Discussion:** 002 M, 11:30AM – 12:20 PM Cuneo Hall 311; 003 M 01:40 – 02:30 PM Cuneo 311

**Instructor:** Donald May Contact: [dmay4@luc.edu](mailto:dmay4@luc.edu)

**Office:** Flanner Hall 403; Hours: **R** 10:00 AM – 11:00 AM; **F** 12:30- 01:30 PM; other times announced before exams and by appointment. **Required Materials: Textbook:** Organic Chemistry, Wade, L.G., Jr., 7th ed., Prentice Hall, 2010. ISBN 978-032-159-2316

**Optional:** - Study Guide and Solutions Manual, Wade & Simek, 7<sup>th</sup> ed. ISBN 978-032-159-8714  
- Molecular Model kit

**Method of instruction:** Lecture and discussion. Lectures may be supplemented with classroom discussion, use of molecular models, use of multimedia and/or use of computer based materials as well as individual and/or group problem solving. Suggested problems will be given from the textbook but will not be graded. Discussions will incorporate explanation of theory, review of exam questions or completion of lecture material. Discussion handouts will be completed and turned in after each discussion.

**Grading:** Semester grades will be determined by the following criteria: Each discussion handout is worth 1 pt. each and these points are added to the student's point total from exams. Three (3) unit exams (~100 pts. each) and one cumulative final exam (~200 points). See course/exam schedule. Exams will incorporate all theory up to and including the lecture before the exam. There are no early and no make-up exams. For a single missed unit exam the final exam will count more. For a second and third missed unit exam, the score entered will be zero for each missed exam. The student must have a valid and verifiable reason for missing the final exam, such as a serious illness requiring hospitalization, and so forth. Oversleeping, not knowing the date and time of the final exam or not being prepared and so forth, are not valid reasons. If a verifiable and valid reason cannot be provided a zero score for the final exam will be recorded. Students are not allowed to leave during exams. If you leave, you must turn in your exam and you will be considered finished with the exam. Students cannot begin an exam and decide not to complete it. Students must turn in all exam pages when finished. Exams cannot be taken from lecture: see Academic Integrity Violations. The grade-score correlation (curve) for each exam will be given.

**Final course grade:** Grades assigned will be: A, A-, B+, B, B-, C+, C, C-, D+, D, F

**Student Conduct:** At all times students are expected to conduct themselves in a mature and professional manner, which includes but is not limited to: treating everyone in class with respect, avoidance of extraneous comments and small group discussions during lecture. Eating, chewing gum/tobacco products and drinking (food items) are not allowed. Students are expected to take care of their personal matters before discussions/ lectures/exams. Additionally radios, headphones, cell-phones or similar devices are not permitted during discussions/ lectures/exams. Not all contingencies can be listed but inappropriate conduct will be addressed. Disruptive students will be asked to leave. If a cell phone rings (beeps, buzz, etc.) during any exam, the exam will be collected and the student will not be allowed to continue. Suggested textbook homework problems will be given but the student will not be required to turn them in. Exam questions, however, will come predominantly from lecture notes, discussion handouts and from concepts related to suggested homework problems. If a student begins an exam it must be turned in for grading. Students must bring their Loyola I.D. for each exam. Students are not allowed to leave the room during exams until their exam is handed in for grading. If you leave, you must turn in your exam and you will be considered finished. Please keep noises and sounds to a minimum. When leaving, be respectful and leave quietly. During exams, only religious caps/ hats/hoods are allowed: nonreligious caps, hats, hoods, visors and so forth, will not be allowed to be worn during exams. All personal materials, besides pencils and erasers, will be placed at the front of the room. During exams, the first two rows closest to the chalkboard will be utilized. Students will sit in every other seat. Row three will be unoccupied. Row four will be utilized

with students occupying every other seat. Row five will be unoccupied. Continuing with row six (utilized), every other row will be utilized, with students seating in every other seat. Other exam instructions will be given.

**Academic Integrity:** Consult the Undergraduate Studies Handbook for additional information. All exams are self-contained: closed book and closed note. During exams violations include but are not limited to: cell phone ringing, opening a book-bag or back-pack during an exam, using unauthorized notes or books, looking at another student's exam, talking to another student, taking a copy of the exam from the room and so forth. Students caught cheating will receive an "F" for the course. Further actions will also result.

**Course Practices Required:**

College-level writing skills on exams: Communication skills for discussion and articulation of questions: Completion of reading assignments and hand-outs. It is recommended that the student read through each chapter before lecture and eventually work through the suggested problems.

**Learning Objectives:**

Students who successfully complete this course will be able to do the following at an acceptable level:

Relate molecular orbital hybridization to bonding types

Name and draw simple and more complex organic structures

Predict both physical and chemical properties of alkanes, alcohols, alkenes, alkynes and alkyl halides

Differentiate between isomer types (structural and stereo) and conformers; predict and name different stereoisomers

Describe and differentiate between various mechanisms, such as addition versus substitution, and electrophilic versus nucleophilic

Relate reaction mechanisms to intermediates, stereochemistry, and kinetics; predict reaction mechanism from experimentally related data and vice versa

Work with multi-step reaction pathways; develop synthetic pathways to simple organic compounds

Use nuclear magnetic resonance (NMR), infrared (IR), ultraviolet (UV), and mass spectrometry (MS) data to identify structures; predict the spectroscopic data from the structure

Important Dates:

Monday, January 21: No classes: Holiday

Tuesday, February 11: Summer Registration

March 04 – 09: No classes: Spring Break

Monday, March 25, Last day for "W" otherwise "WF"

Thursday, March 28: No classes after 04:15 PM: Holiday

Monday, April 01: Classes beginning after 04:15 PM are held

**EXAM DATES: Subject to change**

**Wednesday, February 13: EXAM I**

**Friday, March 22: EXAM II**

**Friday, April 19: EXAM III**

**Thursday, May 02: FINAL EXAM 01:00 PM – 03:00 PM**

**Lecture Outline** (tentative, subject to change)

Week	Date	Chapter	Topic	*
1	01/14 01/16 01/18	01 02	Lewis structures, bonding, resonance, formal charges, Acid-Base conjugates MO theory, hybridization, bond rotation	
2	01/21 01/23 01/25		<b>NO CLASS</b> Holiday functional groups	
3	01/28 01/30 02/01	03	Alkanes; nomenclature, physical properties conformations Newman Projections Cycloalkane nomenclature, stereochemistry Chair conformations; 1,3-diaxial interactions	
4	02/04 02/06 02/08	04	Free radicals, bond dissociation energy radical mechanisms reaction profiles	
5	02/11 02/13 02/15	05	Stereochemistry, chirality centers, configurations, enantiomers, <b>EXAM I</b> optical activity, optical resolution, diastereomers,	
6	02/18 02/20 02/22	06	Alkyl halides, nomenclature, properties, carbocation stabilities SN1, SN2 comparison E1, E2 comparison	
7	02/25 02/27 03/01	07	reaction rates and mechanisms Alkenes; nomenclature, degrees of unsaturation preparation, stability	
8	03/04 03/06 03/08		<b>NO CLASS</b> Spring Break <b>NO CLASS</b> Spring Break <b>NO CLASS</b> Spring Break	
9	03/11 03/13 03/15	08	Alkene reactions, halogenation, hydration hydroxylation, oxidative cleavage, reaction mechanisms	
10	03/18 03/20 03/22	09	Alkynes, nomenclature, reactions, syntheses <b>EXAM II</b>	
11	03/25 03/27 03/29	10	Alcohols, nomenclature, properties; Last day for "W" otherwise "WF" Alcohol syntheses <b>NO CLASS</b> Holiday	
12	04/01 04/03 04/05		<b>NO CLASS</b> Holiday Reactions of Alcohols; oxidations, dehydration, carbocations revisited Grignards, carbonyl reductions	
13	04/08 04/10 04/12	12 13	Infrared Spectroscopy Mass Spectrometry 1H-NMR, chemical shifts, splitting patterns,	
14	04/15 04/17 04/19		1H-NMR, chemical shifts, splitting patterns, spectra interpretation <b>EXAM III</b>	
15	04/22 04/24 04/26		<sup>13</sup> C-NMR spectra interpretation 14 Ethers Last day of class	
16	04/29 05/01 05/02		Week of final exams begins Study day ends at 04:15 PM Thursday <b>FINAL EXAM 01:00 PM – 03:00 PM</b>	