

Loyola University Chicago

Syllabus Organic Chemistry A CHM 223 Sec. 007

Fall 2011

Lecture: M, W 06:15 PM - 08:00 PM Flanner Hall 133

Discussion: Incorporated into scheduled lecture time: M and/or W 07:35 PM – 08:00 PM

Instructor: Donald May Contact: dmay4@luc.edu

Office: Flanner Hall 403 Hours: W 05:15 PM – 06:00 PM;

Additional times announced before exams. Other times 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, 7th ed.
- 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. Discussion handouts will be completed and turned in after each discussion. Credit for discussion will be utilized for border-line grades.

Grading: Semester grades will be determined by the following criteria: three (3) unit exams (~100 pts. each) and one cumulative final exam (~200 points). See course/exam schedule. There are no early and no make-up exams. For a single missed unit exam the final exam will count 50% more (40% → 60%). For a second and third missed unit exam, the score entered will be zero.

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 must bring their Loyola I.D. to each exam. 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 materials/pages when finished. Exams cannot be taken from lecture: see Academic Integrity Violations.

Final course grade: Grading will be based on a curve for each exam: The mean and standard deviation will be given and utilized for assigning grades. Typically the lowest "C-" is ~50% +/- 5%. 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 lectures/exams. Additionally radios, headphones, cell-phones or similar devices must be in silent mode and are not permitted during lectures and 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 and from concepts related to suggested homework problems. See exam format. 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. Students will sit in every other seat.

Exam time will be ~ 60 minutes followed by a 10 minute break. Lecture will then continue with new material.

Academic Integrity: Consult the Undergraduate Studies Handbook for additional information. All exams are 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 NMR, IR, UV, and mass spectrometry data to identify structures; predict the spectroscopic data from the structure

Lecture Outline (tentative, subject to change)

Week	Date	Chapter	Topic	*
1	08/29 08/31	1 2	Lewis structures, bonding, resonance, formal charges, Acid-Base Molecular Orbital theory, hybridization, model, bond rotation	
2	09/05 09/07		NO CLASS Labor Day- Holiday 2 Alkanes, nomenclature, conformational analysis, functional groups	
3	09/12 09/14		Conformational analysis continued 3 Cycloalkanes, stereochemistry	
4	09/19 09/21	4	Free radicals, bond dissociation energy Reaction profiles	
5	09/26 09/28	5	Stereochemistry, enantiomers, diastereomers, optical activity, chirality EXAM I, Chapters 1-4	
6	10/03 10/05	6	Alkyl halides, nomenclature, properties, reaction rates and mechanisms SN1, SN2 comparison E1, E2	
7	10/10 10/12		NO CLASS Midterm Break 7 Alkenes nomenclature, degrees of unsaturation, preparation,	
8	10/17 10/19	7 8	Heats of hydrogenation, Zaitsev's rule Alkene reactions, bromination, hydration, Markovnikov's Rule, carbocation stability	
9	10/24 10/26	8	Alkene reactions EXAM II Chapters 5-8	
10	10/31 11/02 11/04	9 10	Alkynes, nomenclature, reactions synthesis Alcohols, classification, nomenclature, properties, synthesis Last day to withdraw with a "W" otherwise "WF"	
11	11/07 11/09	11	Reactions of Alcohols Reduction of carbonyls, Grignard reagents	
12	11/14 11/16	12	IR Spectroscopy, Mass Spectrometry spectra interpretation	
13	11/21 11/23		EXAM III, Chapters 9-12 NO CLASS Thanksgiving Break	
14	11/28 11/30	13	¹ H-NMR, chemical shifts, integration, splitting patterns, spectra interpretation	
15	12/05 12/07		¹³ C-NMR, chemical shifts, spectra interpretation 14 Ethers, nomenclature, synthesis	
16	12/12		FINAL EXAM 06:15 – 08:15 PM	