

Loyola University Chicago

Syllabus Organic Chemistry A CHM 223 Sec. 010

Fall 2014

Lecture: M, W, F 12:35PM - 01:25 PM LSB 142

Discussion: 011 W, 08:15 AM – 09:05 AM Flanner Hall 105
012 W, 09:20 AM – 10:10 AM Flanner Hall 105
013 W, 10:25 AM – 11:15 AM Flanner Hall 105

Instructor: Donald May Contact: dmay4@luc.edu

Office: Flanner Hall 403 Hours: **M, F** 11:30 AM – 12:15 PM;
Other times by appointment.

Required Materials:

Textbook: Organic Chemistry, Wade, L.G., Jr., 8th ed., Prentice Hall, 2013.
ISBN 978-0-321-76841-4

Optional: - Study Guide and Solutions Manual, Wade & Simek, 8th ed.
- Molecular Model kit

As a possible study aid, you may want to consider purchasing, a paperback by D.R. Klein entitled “Organic Chemistry as a Second Language: Translating the Basic Concepts” (published in 2004 by John Wiley & Sons, Inc.; ISBN 0-471-27235-3; www.wiley.com/college/klein). The goals of the latter book are to help the student develop the skills required to solve a variety of problems in organic chemistry and to point out the fundamental principles in organic chemistry. An additional study aid is a paperback by D.P. Weeks entitled “Pushing Electrons: A Guide for Students of Organic Chemistry,” Third Edition (Thomson Brooks/Cole); ISBN 0-03-020693-6. The first 3 chapters (pp. 1-161) of this workbook are intended to help a student understand “structure and bonding in organic molecules,” as well as techniques of “electron pushing” so as to comprehend reaction mechanisms.

Supplementary Textbooks:

Organic Chemistry, Tenth Edition, by T.W.G. Solomons and C. Fryhle (John Wiley & Sons, Inc., 2011).

Organic Chemistry, Eighth Edition, by J. McMurry (Brooks/Cole Publishing Co., 2012).

Organic Chemistry, by F.A.Carey and R.M. Giuliano, Eighth Edition (McGraw-Hill, Inc., 2011).

Organic Chemistry: Structure and Function, by K.P.C. Vollhardt and N.E. Schore, Sixth Edition (W.H. Freeman and Co., 2011).

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. Discussion handouts will be completed and turned in after each discussion. Each discussion handout is worth 1 pt. each and these points are added to the student’s individual point total from exams.

Criteria for discussion handouts: Discussion points are to be earned by the student. Class participation is of paramount importance. Students must attend the discussion on time; students must have the discussion handout initialized by me to possibly obtain credit; students must personally turn in their own discussion handout on the announced due date: no early and no late handouts will be accepted (See Academic Integrity Violations); students must follow the directions on the handouts. Students are allowed and encouraged to work together on discussion handouts.

Grading: Semester grades will be determined by the following criteria: discussion handouts as indicated above; 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 all lectures and discussions, prior to 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. Each exam will be curved with the grade-score correlation determined from individual exams. 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 and present 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 must turn in all exam materials/pages when finished. Exam copies cannot be taken from lecture: see Academic Integrity Violations.

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

Student Conduct: Only students officially enrolled may attend. Students must attend the discussion sections for which they are officially enrolled. 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 and from concepts related to suggested homework problems. If a student begins an exam it must be turned in for grading. 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, if available. Students will sit in every other seat during exams, if possible. Other specific instructions will also be given for exams.

Academic Integrity: Consult the Undergraduate Studies Handbook for additional information. All students in this course are expected to have read and to abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, which can be viewed at:

http://www.luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf

Anything you submit that is incorporated as part of your grade in this course must represent your own work, unless indicated otherwise. All exams are closed book and closed note: No external materials or personnel are allowed. During exams, violations include but are not limited to: cell phone ringing, answering/using a cell phone, using unauthorized notes or books, looking at another student's exam, talking to other students, opening and/or utilizing anything in your book bag, and so forth. Any student found to be in violation or cheating will, at minimum, be given a zero for the assignment/exam and the incident will be reported to the Chemistry Department Chair and the Office of the CAS Dean. Depending on the seriousness of the incident, additional sanctions may be imposed.

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, angles geometry

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

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

Disability Accommodations: Students requiring accommodations at the University need to contact the Coordinator of Services for Students with Disabilities. The instructor will provide accommodations after receiving documentation from SSWD and allowance of a reasonable time frame for arrangements (minimally, one week in advance). Accommodations cannot be retroactive. Information is available at: <http://www.luc.edu/sswd/>

Important Dates:

Monday, September 01: No classes: Holiday (Labor Day)

Monday- Tuesday, October 06- 07: No classes: Fall Break

Monday, November 03: Spring Registration

Wednesday- Saturday, November 26-29; No classes Holiday (Thanksgiving)

Saturday, December, 06: Classes end

EXAM DATES: Tentative**Monday, September 22: EXAM I****Monday, October 20: EXAM II****Monday, November 17: EXAM III****Friday, December 12: FINAL EXAM 09:00 AM – 11:00 AM****Lecture Outline** (tentative, subject to change)

Week	Date	Chapter	Topic	*
1	08/25	01	Lewis structures, bonding, resonance,	
	08/27		formal charges, Acid-Base conjugates	
	08/29	02	MO theory, hybridization, model, bond rotation	
2	09/01		NO CLASS Labor Day- Holiday	
	09/03		functional groups	
	09/05	03	Alkanes, nomenclature, conformations	
3	09/08		Newman Projections	
	09/10		Cycloalkanes, stereochemistry	
	09/12		Chair conformations	
4	09/15	04	Free radicals, bond dissociation energy	
	09/17		radical mechanisms	
	09/19		reaction profiles, intermediates	
5	09/22		EXAM I	
	09/24	05	Stereochemistry, enantiomers, diastereomers,	
	09/26		optical activity, chirality	
6	09/29	06	Alkyl halides, nomenclature, properties,	
	10/01		SN1, SN2 comparison E1, E2	
	10/03		reaction rates and mechanisms	
7	10/06		NO CLASS Midterm Break	
	10/08	07	Alkenes nomenclature, degrees of unsaturation	
	10/10		preparation, stability	
8	10/13	08	Alkene reactions, halogenation, hydration,	
	10/15		hydroxylation, oxidative cleavage	
	10/17		Syntheses	
9	10/20		EXAM II	
	10/22	09	Alkynes, nomenclature,	
	10/24		reaction, synthesis	
10	10/27	10	Alcohols, classification, nomenclature,	
	10/29		properties, synthesis	
	10/31		Last day for "W" otherwise "WF"	
11	11/03		Grignard reagents	
	11/05	11	Reactions of Alcohols	
	11/07		dehydration, carbocation rearrangements	
12	11/10		halogenation, oxidation	
	11/12	12	Infrared Spectroscopy	
	11/14		Mass Spectrometry	
13	11/17		EXAM III	
	11/19		Nuclear Magnetic Resonance: ¹ H-NMR, chemical shifts, splitting patterns	
	11/21		Spectra interpretation	
14	11/24	13	¹³ C-NMR	
	11/26		NO CLASS Thanksgiving Break	
	11/28		NO CLASS Thanksgiving Break	
15	12/01		Spectra interpretation	
	12/03	14	Ethers	
	12/05		Last day of class	
16	12/08			
	12/10			
	12/12		FINAL EXAM 09:00 AM – 11:00 AM	
17	12/15			
	12/16			