Loyola University Chicago

Syllabus Organic Chemistry B CHM 224 Sec. 001 Discussion 002, 003 **Fall 2013**

Lecture: M, W, F 08:15 AM – 09:05 AM Cuneo Hall 210

Discussion: 002 **F** 09:20 AM – 10:10 AM Dumbach 120; 003 **F** 12:35 PM - 01:25 PM Dumbach 123

Instructor: Donald May Contact: dmay4@luc.edu

Office: Flanner Hall 403 Hours: **T, W** 01:00 PM – 02:00 PM

Additional times announced before exams. Other times by appointment.

Required Materials: **Textbook**: Organic Chemistry, Wade, L.G., Jr., 7th ed., Prentice Hall, 2010.

Optional: - Study Guide and Solutions Manual, Wade & Simek, 7th ed.

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. 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 weekly discussion will incorporate a handout worth one (1) point. The collective point total of the handouts prior to each unit exam will be added to the subsequent exam. Exams will incorporate theory up to and including all lectures and discussions, prior to the exam. The best two (2) out of 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, that exam will be dropped. 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 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 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: Only students officially enrolled may attend. 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/discussions/exams. Additionally radios, headphones, cell-phones or similar devices must be in silent mode and are not permitted to be used during lectures/discussions/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, students will sit in every other seat. Other exam instructions will be given.

Academic Integrity: 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. For an exam, a zero score resulting from cheating cannot be dropped as the lowest exam score. Depending on the seriousness of the incident, additional sanctions may be imposed.

Course Practices: 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. For discussions there will be a handout to be completed and turned in at the end of discussion. Each discussion will have a value of 1 point, which will essentially be "free" points to be added to the student's point total, earned from the subsequent individual exam. Discussions will reinforce topics covered in lecture.

Learning Objectives:
Students who successfully complete this course will be able to do the following at an acceptable level:
Name and draw simple and more complex organic structures;
Predict both physical and chemical properties as well as identify and name, aromatics, phenols, aldehydes, ketones, carboxylic acids, derivatives of carboxylic acid, and amines.
Describe and differentiate between various mechanisms, such as electrophilic versus nucleophilic aromatic 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 NMR, IR, UV, and mass spectrometry data to identify structures; predict the spectroscopic data from the structure
Predict the structure and stereochemistry of various carbonyl and other condensation reactions
Identify and describe biomolecules including carbohydrates, amino acids/proteins and heterocyclic/nucleotide/nucleic acids

Important Dates:
Monday, September 02: No classes: Holiday
Monday- Tuesday, October 07- 08: No classes: Fall Break
Monday, November 04: Spring Registration
Wednesday- Saturday, November 27-30; No classes Holiday
Saturday, December, 07: Classes end

EXAM DATES: Tentative
Monday, September 23: EXAM I
Monday, October 21: EXAM II
Monday, November 18: EXAM III
Monday, December 16: FINAL EXAM 09:00 AM – 11:00 AM

Lecture Outline (tentative, subject to change)

Week	Date	Chapter	Topic	*
1	08/26	12	IR Spectroscopy	
	08/28		Mass Spectrometry	
	08/30		Spectra interpretation	
2	09/02		***NO CLASS*** Labor Day- Holiday	
	09/04	13	1H-Nuclear Magnetic Resonance Spectra interpretation	
	09/06		C-13 NMR	
3	09/09		Spectra interpretation	
	09/11	14	Ether nomenclature, Physical Properties	
	09/13		Synthesis, Reaction, Epoxides, Sulfides	
4	09/16	15	Conjugated Systems; 1,2 vs 1,4 additions to 1,3-Dienes	
	09/18		Molecular Orbital Theory;	
	09/20		Diels'Alder Reactions	
5	09/23		**EXAM I**	
	09/25	16	Aromaticity of Compounds/Ions; Huckel's Rule,	
	09/27		Nomenclature of Aromatic Compounds	
6	09/30	17	Electrophilic Aromatic Substitution Reactions	
	10/02		Mechanisms	
	10/04		Directing Effects: *ortho,para* vs *meta*	
7	10/07		***NO CLASS*** Midterm Break (OCT. 07,08)	
	10/09		Nucleophilic Aromatic Substitution;	
	10/11		Side-Chain reactions; Birch Reduction	
8	10/14	18	Aldehydes and Ketones; Nomenclature; Physical Properties	
	10/16		Spectroscopy, Synthesis	
	10/18		Reactions; Imine Formation; Hemiacetals/Acetals	
9	10/21		**EXAM II**	
	10/23	19	Amines; Classification pKb's	
	10/25		Physical properties	
10	10/28		Spectroscopy; Synthesis	
	10/30		Reactions	
	11/01		**Last day for "W" otherwise "WF"**	
11	11/04	20	Carboxylic Acids; Nomenclature, Physical Properties; pKa's	
	11/06		Spectroscopy; Synthesis	
	11/08		Reactions	
12	11/11	21	Carboxylic Acid Derivatives; Nomenclature	
	11/13		Physical Properties; Spectroscopy	
	11/15		Reactions; Nucleophilic Acyl Substitutions	
13	11/18		**EXAM III**	
	11/20	22	Condensation reactions and alpha Substitutions of Carbonyl Compounds	
	11/22		Enolizable Protons, Keto-Enol Tautomerism; Aldol Condensations;	
14	11/25	23	Carbohydrates, Classification; Chair Conformations/Haworth Projections	
	11/27		***NO CLASS*** Thanksgiving Break	
	11/29		***NO CLASS*** Thanksgiving Break	
15	12/02	23	Reactions of Carbohydrates	
	12/04		Nucleic Acids	
	12/06	24	Amino Acids; Hendersen-Hasselbalch equation; Protein Structures; Last day of class	
16	12/09			
	12/12			
	12/14			
17	12/16		**FINAL EXAM 09:00 AM – 11:00 AM**	
	12/17			