

## Loyola University Chicago

SPRING 2010

### Syllabus

**Organic Chemistry B** CHM 224 Sec. 010

**Lecture:** M,W 06:15 PM - 08:00 PM Flanner Hall 133 Discussion: W 07:10 PM - 08:00 PM

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

**Office:** Flanner Hall 403 Hours: W 05:30 PM – 06:00 PM ; F 01:00 – 01:30PM Other times announced

**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.

**Grading:** Semester grades will be determined by the following criteria: the best two (2) out of three (3) unit exams and one cumulative final exam. See schedule. There are no early and no make-up 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 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 when finished and are not allowed to take exam copies. Discussions/discussion handouts will be graded on a credit/ no credit basis.

**Final course grade:** Grading will be based on a curve: The mean, standard deviation and quartiles will be given and utilized for assigning grades.

Grades assigned: 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, and drinking (food items) chewing/tobacco products are not allowed. 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. It is recommended that the student read through each chapter before lecture and eventually work through the suggested problems. If a student begins an exam it must be turned in for grading. Students must present 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 at any time, 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 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.

### Course Practices Required:

College-level writing skills on exams; Communication skills for discussion and articulation of questions; Completion of reading assignments; working through suggested homework; completing and submitting discussion handouts on time.

## 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
- 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 (aromatic)
- Relate reaction mechanisms to intermediates, stereochemistry, and kinetics; predict reaction mechanism from experimentally related data and vice versa
- Work with multistep reaction pathways; develop synthetic pathways to simple and more complex organic compounds
- Use NMR, IR, UV, and mass spectrometry data to identify structures; predict the spectroscopic data from the structure
- Predict both physical and chemical properties of alcohols, aromatics, phenols, aldehydes, ketones, carboxylic acids, derivatives of carboxylic acid and amines
- Predict the structure and stereochemistry of various carbonyl and other condensation reactions
- Identify and describe biomolecules including carbohydrates, amino acids/proteins, lipids, and heterocyclic/nucleotide/nucleic acids

**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; leaving unauthorized personal items like books or notes on seats and/or on desks; using unauthorized notes or books; looking at another student's exam; talking or communicating 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.

**Discussion:** This will be an exercise in improving the skills associated with: cooperation, listening, following directions and communicating. We will attempt to emulate directly the pathways of the neuronal networks involved in cognitive processes (perhaps also applicable for non-sentient beings) and for logic circuits. Satisfactory completion of discussion, both individually and collectively, will result in credit for the term. The instructor will serve only as a proactive observer. Students will follow the rules: there will be no exceptions. For each discussion there will be a handout, due at the end of the period. Each student will be a member of a group consisting of only three students. Each student will assume one of three distinct roles. Each student must serve as a communicator, facilitator and transcriber, three times for each role, during the term. There will be three phases for each discussion.

**Communicator:** only the communicator may speak to another communicator and only during Phase II.

**Facilitator:** only the hand-written notes (lecture), allowed during all phases, of the facilitator may be used. The facilitator may have to explain their notes to other members of their group.

**Transcriber:** only the transcriber may write, allowed during all phases, and only on the discussion handout. Each transcriber must accurately record the group communicated with and is also responsible for writing down the names and roles of participating group members on the group's handout.

**Phase I:** (15 minutes) All verbal discussion during this phase will be intra-group: only members within the group may talk to other members of their group. Only the transcriber may write and only on the discussion handout. Only the hand-written notes (lecture) of the facilitator may be utilized (all phases).

**Phase II:** (10 minutes) Only the communicator may speak to another communicator from another group. Each communicator must communicate with one "group", during this phase of discussion. Groups must utilize a different group each week. Talking between members/groups to different groups, by those who are **not** communicators, during all phases, is not allowed and will result in the loss of credit for that discussion session.

**Phase III:** (15 minutes) All verbal discussion during this phase will be intra-group: only members within the group may talk to other members of their group. Only the transcriber may write and only on the discussion handout. Only the hand-written notes (lecture) of the facilitator may be utilized. The communicator may have to explain/incorporate information gained from the other group's communicator, in order to help finalize the final answer(s) submitted on the group's discussion handout.

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

Week	Date	Chapter	Topic	*
1	01/18 01/20	13	NO CLASS, Holiday Review Spectroscopy; Mass Spectrometry; $^1\text{H}$ , $^{13}\text{C}$ NMR	
2	01/25 01/27	14	Ethers, Epoxides, Sulfides	
3	02/01 02/03	15	Conjugated Systems, Orbital Symmetry, Diels-Alder reactions	
4	02/08 02/10	16	Aromatic compounds	
5	02/15 02/17	17	Reactions of Aromatic compounds EXAM I	
6	02/22 02/24	18	Aldehydes and Ketones	
7	03/01 03/03	19	Amines	
8	03/08 03/10		NO CLASS SPRING BREAK NO CLASS SPRING BREAK	
9	03/15 03/17	20	Carboxylic Acids	
10	03/22 03/24	21	Carboxylic Acid derivatives EXAM II	
11	03/29 03/31	22	LAST DAY TO WITHDRAW WITH A "W" GRADE Condensations of Enols	
12	04/05 04/07	23	Class meets Carbohydrates and Nucleic Acids	
13	04/12 04/14	24	Amino Acids and Polypeptides	
14	04/19 04/21		EXAM III	
15	04/26 04/28	25	Lipids, triglycerides Last day of lecture	
16	05/03		FINAL EXAM 07:00 PM - 09:00 PM	