

## Chemistry 224-001,002 – Summer 2013 Lecture Syllabus

<b>Course:</b>	Chemistry 224, Organic Chemistry B, 3 Credits, Lecture and discussion
<b>Prerequisites:</b>	Chemistry 223 or 222 – a student missing a prerequisite may be withdrawn at any time
<b>Lecture:</b>	MWF 12:30-3:20 pm Cuneo Hall 002
<b>Instructor:</b>	Dr. Sandra Helquist
<b>Email:</b>	shelquist@luc.edu - put "Chem 224" in the subject line to receive a prompt response
<b>Office:</b>	Flanner Hall 200B
<b>Office Hours:</b>	Immediately following class, MWF 11-11:30am, or by announcement/appointment.
<b>Textbook:</b>	<u>Organic Chemistry</u> , Wade, 7 <sup>th</sup> edition, Prentice Hall, hard copy or eText (Required) Organic Chemistry II: As a Second Language, Klein (Highly Recommended) Study Guide and Solutions Manual to above text, Wade & Simek (Recommended) Molecular Modeling Kit (Recommended)

**Course Content & Objectives** Second semester of a two semester sequence for non-chemistry majors. Mastery of the second semester material requires comprehensive understanding and recall of the first semester material. Organic chemistry of conjugated  $\pi$  systems, aromatics, carbonyl compounds, amines, carboxylic acids and their derivatives, carbohydrates, lipids and proteins. The student should learn how to:

1. identify the various classes of organic compounds, their methods of preparation, and typical reactions.
2. name and draw specific organic compounds.
3. postulate a *logical* reaction mechanism for organic reactions.
4. discriminate among relative stabilities of reaction intermediates.
5. plan and write out multi-step syntheses using known functional group transformations, including syntheses of polyfunctional organic compounds.
6. name, draw and interpret the 2- and 3-dimensional structures of important biopolymers, and techniques for their synthesis and characterization.
7. analyze and interpret data from various instruments used in separating and identifying organic compounds including: IR, NMR, UV-vis and MS.

**Course Materials** Bring your books and modeling kit to class and use them! You should become familiar (if not already) with Sakai, to be used for announcements, posting of course materials, grades, etc. Answer keys for in-class assessments will commonly be posted on 2<sup>nd</sup> floor Flanner display case. Emails to the class will be sent from Sakai as necessary, so you must plan to regularly check your email account of record as listed on Sakai. You will not be permitted to use a calculator on exams or quizzes.

**Class Attendance** Vital for your learning: you are responsible for all material presented or handed out, as well as reading and problems recommended in lecture even if you are not in attendance for a course meeting. Attendance and Attention is important and required. Prepare for lecture by reading the new material to be covered and working the problems within the text sections. Come prepared to engage in discussion, ready to ask questions on homework or yet unassimilated lecture material. Contact a classmate for notes, sections/topics covered if you miss a class.

**Academic Integrity** Research and learning in chemistry relies heavily on collaborative efforts. You are encouraged to study with other students in and out of class, however, anything submitted for an individual grade must represent your own knowledge and understanding of the material. On quizzes and exams you are expected to obtain information only from your own mind. Any student caught cheating will receive, at a minimum, a "zero" on the item and penalty up to automatic failure of the course, as well as referral to the Dean's Office. For the full College of Arts and Sciences statement on academic integrity, visit:  
[http://www.luc.edu/cas/pdfs/CAS\\_Academic\\_Integrity\\_Statement\\_December\\_07.pdf](http://www.luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf)

**Disability Accommodations** At times, students with disabilities may wish to avail themselves of the University's ancillary services. Students requiring accommodations at the University need to contact the Coordinator of Services for Students with Disabilities, then provide documents and schedule arrangements with the instructor at least one week prior to the first exam. Information is available at: <http://www.luc.edu/sswd/>

**Tutoring Center** The Center for Tutoring & Academic Excellence generally offers free walk-in tutoring during the summer. Check the website for contact information: <http://www.luc.edu/tutoring/index.shtml>

**Grading** Your grade for Chemistry 224 will depend on the following factors: Quizzes 20% and Exams 80%. Generally, 85.0% is the lowest A-; 70.0% is the lowest B-; 55.0% is the lowest C-; 40.0% is the lowest D. Cutoffs for plus/minus grades will be determined by the overall distribution of course scores. These are the highest standards that will be used: very small adjustments may be made, but only at the end of the semester.

**Quizzes:** No early quizzes, no make-ups! Quizzes (4 total) will be given as in class and/or as take-home activities. Date/ time of quizzes may or may not be announced in advance. The lowest quiz score will be dropped at the end of the term. Any missed quiz receives a score of zero. Keep up with the material and use these for exam preparation.

**Exams:** No early exams, no make-ups! Exams will begin promptly at 12:30pm. Lecture/discussion will follow each of the midterm exams. Unexcused absence (traffic, weather, oversleeping, forgetfulness, etc) results in a ZERO. Excused absences require documentation of an unforeseeable emergency situation and will be handled on a case-by-case basis. Midterms: 1 hour, July 15 and July 29, 20% each. Final Exam: 2 hours, August 9, 40%, **MANDATORY**. Comprehensive, with emphasis on material covered after 2<sup>nd</sup> midterm. The final exam must be taken on the date scheduled or a grade of **F** will automatically result.

**Exam Procedure:** Phones, other electronic devices, calculators are not permitted. If seen or heard, will be confiscated along with exam copy and student will be asked to leave. Come to the exam with Photo ID, such as Loyola ID or Driver's License, and leave visible on desk during exam to be checked. All other items and materials must be stowed and inaccessible. Once the exam is distributed, if you exit the room (quietly, please), for any reason before time is up, your exam is considered complete and will be collected. I will return your exams (copies will be kept) for the midterms only. Scoring errors must be brought to my attention in person no later than one week after the exams are returned. The final exam cannot be returned.

**Study Strategies and Suggestions** One may approach the study of organic chemistry in a manner similar to tackling a new foreign language. Its study will provide a basis to understanding future material – building constantly, incessantly, and relentlessly on the structural and mechanistic information presented previously. Over 2 semesters, the course will cover functional groups, aliphatic and aromatic compounds, bonding, nomenclature, stereochemistry, conformational analysis, reaction mechanisms, multi-step syntheses, and spectroscopy. Because the course is cumulative and builds heavily on prior material, the best plan is to study organic chemistry regularly, every day, similar to immersing yourself in the study of a new foreign language, in the foreign country! Collaboration on homework problems is encouraged, especially in a timely fashion. Experience dictates that positive outcomes (for exam and course grades) are directly proportional to working and understanding the assigned problems on a regular basis, i.e., applying the concepts learned in lecture to non-generic compounds. Typically, organic chemistry is not efficiently self-taught. Overnight cramming will probably not produce success. The student should read the chapter/sections to be covered and work basic text problems BEFORE lecture to improve lecture comprehension and identify initial questions/areas of confusion. After lecture, careful review of textbook and lecture notes along with focused working of as many additional problems as needed to fully comprehend the material are appropriate and expected, as well as asking additional rounds of questions. A list of textbook problems to be worked for each chapter is available on Sakai. *If you are anticipating a grade of C (passing/satisfactory completion), the MINIMAL time per week in the summer devoted to Organic Chemistry is estimated at 9 hr for lecture, 6-12 hr for reading, and 6-12 hr for homework. Studying needs will vary for each student. It is therefore up to the individual student to devote the time necessary to achieve the desired grade.*

### Tentative Lecture Schedule

Our actual pace may vary from this schedule: if you miss a class for any reason, get the notes from a classmate!

Week	Dates	Monday	Wednesday	Friday
1	July 1, 3, 5	Ch. 12-13: Review of IR, MS, NMR	Ch. 13: NMR Ch. 14: Ethers, Epoxides	Ch. 15: Conjugated Systems, UV-vis
2	July 8, 10, 12	Ch. 16: Aromaticity, Aromatic Compounds	Ch. 17: Electrophilic Aromatic Substitution	Ch. 17: Directing Effects, NAS, Side-Chain Rxns
3	July 15, 17, 19	<b>MIDTERM I</b> Ch. 18: Carbonyls	Ch. 18: Carbonyl Synthesis and Reactions	Ch. 19: Amines
4	July 22, 24, 26	Ch. 20: Carboxylic Acids	Ch. 20: Acyl Transfer Ch. 21: Acid Derivatives	Ch. 21: Acid Derivatives
5	July, August 29, 31, 2	<b>MIDTERM II</b> Ch. 22: $\alpha$ -carbons	Ch. 22: $\alpha$ -carbon Reactivity, Synthesis	Ch. 23: Carbohydrates
6	August 5, 7, 9	Ch. 23: Nucleic Acids Ch. 24: Amino Acids	Ch. 24 : Amino Acids, Peptides, Proteins	<b>FINAL EXAM COMPREHENSIVE</b>