Chemistry 223-001 – Spring 2011
Lecture Syllabus

Course: Chemistry 223, Organic Chemistry A, 3 Credits, Lecture and discussion
Prerequisites: Chemistry 102 and 112, or 106 with a grade of C- or better. A student may be withdrawn from the course at any time if the prerequisites have not been satisfied.

Lecture: MWF 2:45-3:35 pm Flanner Hall 133
You must also be registered in one of the accompanying discussion sections:
Discussion: M 9:20-10:10 am Flanner Hall 7 Section 002
M 1:40-2:30 pm Dumbach 123 Section 003

Instructor: Dr. Sandra Helquist
Email: shelquist@luc.edu – put "Chem 223" in the subject line to receive a response
Office: Flanner Hall 213
Office Hours: Immediately after lectures, MWF 12-1:30pm, and Tu by appointment. You are encouraged to drop by my office during open times (see the schedule posted outside my door) if you cannot attend regular office hours.

Textbook: Organic Chemistry, Wade, 7th edition, Prentice Hall (Required)
Study Guide and Solutions Manual to above text, Wade & Simek (Recommended)
Organic Chemistry I As a Second Language, Klein (Recommended)
Molecular Modeling Kit (Recommended)

Course Content & Objectives

This course is the first semester of a two semester sequence for non-chemistry majors. A survey of topics including stereochemistry; spectroscopy; and fundamental concepts of organic chemistry. Nomenclature, properties and syntheses of aliphatic and aromatic hydrocarbons, alkyl halides, alcohols and ethers. To guide, encourage, and foster the learning and understanding of organic chemistry – nomenclature, structures, properties, reactions, mechanisms, and syntheses – by the individual student, helping him/her to connect, extrapolate, integrate, and apply the many different aspects learned. 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 simple organic reactions.
4. discriminate amongst relative stabilities of reaction intermediates.
5. plan and write out multi-step syntheses using known functional group transformations.
6. prepare for basic purification/separation techniques of organic compounds required in the laboratory.
7. analyze, interpret data from instruments used in separating and identifying organic compounds: IR, NMR, MS

Course Materials

Bring your books and modeling kit to class and use them! You should become familiar (if not already) with Blackboard (Bb), to be used for announcements, posting of course materials, grades, etc. Materials will commonly be posted on 4th floor Flanner *in the display case by the elevators* as well. Emails to the class will be sent from Bb as necessary, so you must plan to regularly check your email account of record as listed on Bb. You will not be permitted to use a calculator on exams.

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 and discussion even if you are not in attendance for a course meeting. For each class you are expected to indicate your presence by signing in on the class roster sheet, to be circulated during the lecture. Attendance and Attention is important and required. Prepare for lecture by scanning the new material to be covered. Come prepared to engage in discussion, ready to ask questions on homework or yet unassimilated lecture material -- especially bring questions to discussion classes. If you miss a class for any reason, contact a classmate promptly to get the notes.

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 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 test, and penalty up to automatic failure of the course as well as referral to the Dean's Office. You may review the University guidelines from the academic catalog at http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml.

Disability Accommodations

At times, students with disabilities may wish to avail themselves of the University's ancillary services. Students who would like accommodations at the University need to contact the Coordinator of Services for Students with Disabilities. Contact information is available at http://www.luc.edu/depts/lac/disabilities.

Tutoring Center

The Center for Tutoring & Academic Excellence offers free Small Group tutoring for Loyola students. The groups meet once a week through the end of the semester and are led by a peer tutor who has successfully completed study in the course material. For selected subjects, Tutor-led Study Hall is also available. There is no need to make an appointment for Study Hall hours, simply bring your coursework and there will be tutors on hand to assist you. To learn more or request tutoring services, visit the Center online at http://www.luc.edu/tutoring.

Grading

Your grade for Chemistry 223 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, however, grading may or may not be curved only at the end of the semester.

Quizzes: No early quizzes, no make-ups! 6 quizzes will be given. Quizzes are worth 20 points each; points will be added up to a maximum of 100 points total on all quizzes taken (out of the 120 points available) so that consistently good scores on the quizzes will contribute positively to the overall course grade. Quizzes may be given in lecture or discussion as individual or group exercises, or as take-home activities. Dates, time of quizzes may or may not be announced in advance. Keep up with the material so that you can test yourself on the quizzes in order to identify areas of weakness prior to the exams.

Exams: No early exams, no make-ups! Midterm exams will be given during the lecture classes and will begin promptly at 2:45pm. Exams will include a combination of multiple-choice, short-answer and long-answer questions.
Unexcused absence (traffic, weather, oversleeping, forgetfulness, etc) results in a ZERO.
Excused absence requires documentation of an emergency situation (note from doctor, hospital, funeral director, court summons, police report) and will be handled on a case-by-case basis.
Midterms: 50 minutes, Monday February 14, Friday March 18, Wednesday April 13, 15% each.
Final Exam: 2 hours, Thursday May 5, 1-3pm, 35%, **MANDATORY**. Comprehensive, with emphasis on material covered after 3rd midterm. The final exam must be taken on the date scheduled by the college or a course grade of **F** will automatically result.

Exam Procedure: Cell phones, PDAs, mp3 players, 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 purses, bags, jackets, etc must be left at front of room. 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 (photocopies 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 the new foreign language, in the foreign country! Prepare for each class by quickly reading the chapter/segment to be covered before lecture to improve lecture comprehension. After lecture, careful detailed re-reading of the chapter/segment and focused working of the assigned problems are appropriate and expected, along with formulating follow-up/clarifying questions for your instructor by the next class meeting. Especially bring questions to discussion sections. 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 and suggested 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. On exams you will be asked to work problems, therefore, you should study by working problems. Listed below are questions from your textbook that you may find particularly helpful.

If anticipating a passing grade, the MINIMAL time per week in the regular academic year devoted to Organic Chemistry is estimated at 4 hr for lecture/discussion, 3-6 hr for reading, and 4-8 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.

There are some things in any subject that must simply be memorized. Chemistry is no exception. Some students may find it helpful to make notecards or keep lists of nomenclature, important definitions, reagents, and reactions to quickly master the material as needed to keep pace with the class. You may wish to use the Glossary, Essential Problem-Solving Skills, and Summary of Reactions from the Chapters in your textbook as a review tool, or to make your own study guides/outlines prior to exams: find a review method that works for you.

You are encouraged to form study groups – talk to the people sitting next to you in lecture or discussion and exchange phone numbers or email addresses – and attend office hours regularly to receive help. *You are urged to contact the instructor to discuss problems before they become serious.*

Suggested Textbook Problems

To be completed on your own for daily practice: very highly recommended! Work the problems without looking at the solutions manual: your goal is to solve these as if they were exam questions. Bring questions about these problems (and others) to office hours and discussion sections. For more practice, work additional problems from your textbook or access problems online using the additional resources provided with your text.

Chapter 1: 1-11, 14-15, 17-21, 23, 25-27, 29, 31, 34, 36, 37, 39-43, 45-47
Chapter 2: 1, 3-5, 7-11, 14-16, 18-25, 28, 30, 32-36, 40, 41, 44
Chapter 3: 1-7, 9-12, 14-18, 21, 22, 24, 25, 27-29, 32-35, 37, 39, 40, 42-44
Chapter 4: 1-2, 4, 7, 9a, 11, 15-16, 18-19, 22, 24-26, 28-35, 37-39, 41-43, 45-46
Chapter 5: 1-7, 14, 16-22, 24-31, 35
Chapter 6: 1-3, 6-7, 9-12, 14-20, 22-24, 26-27, 30, 32-42, 44-46, 48-49, 53-54, 56-57, 59-63, 65-66, 71-72
Chapter 7: 3-7, 11-14, 16-17, 22-25, 27-36, 38, 40-46, 50
Chapter 8: 1-11, 13-15, 17-19, 21-23, 27-30, 32-38, 45, 46-49, 56, 58-61, 67-68
Chapter 9: 1-2, 5, 7-12, 15-16, 18-21, 23-29, 31, 33-34, 36-37, 40
Chapter 10: 1-2, 4-5, 7-9, 12-19, 23-27, 30-41, 44, 47, 51-52
Chapter 11: 1-2, 5-6, 9-14, 16, 19, 21-23, 30-31, 33-35, 37-42, 46-49, 52-53, 56-60
Chapter 12: 2-9, 12, 14-16, 19-20, 23-29
Chapter 13: 2-15, 20-24, 32-36, 38-40, 43-47, 50, 52
Chapter 14: 1, 3-4, 6, 8-10, 14-15, 19, 21-13, 25-30, 33-34, 38-39, 41, 43, 47, 49

***Tentative* Lecture Schedule**: Our actual pace may vary from this schedule: if you miss a class for any reason, get the notes/topics covered from a classmate!

Week	Dates	Monday	Wednesday	Friday
1	Jan 17, 19, 21	MLK HOLIDAY	Introduction, Bonding, Structures (Chapter 1)	Structures, Resonance, Formulas (Ch. 1)
2	Jan 24, 26, 28	Acids & Bases, Bonding Theory (Ch. 1, 2)	Geometry, Molecular Properties (Ch. 2)	Intermolecular Forces, Functional Groups (Ch. 2)
3	Jan/Feb 31, 2, 4	Alkanes, Nomenclature (Ch. 3)	Alkane Properties, Conformations (Ch. 3)	Cycloalkanes, Conformations (Ch. 3)
4	Feb 7, 9, 11	Radical Halogenation, 1st Mechanism! (Ch. 4)	Thermodynamics, Kinetics of Halogenation (Ch. 4)	Reactive Intermediates (Ch. 4)
5	Feb 14, 16, 18	**Exam I Ch. 1-4**	Chirality, Enantiomers, Optical Purity (Ch. 5)	Fischer Projections, Diastereomers (Ch. 5)
6	Feb 21, 23, 25	Meso Compounds, Alkyl Halides (Ch. 5, 6)	Properties, Reactions of Alkyl Halides (Ch. 6)	Substitution and Elimination Rxns (Ch. 6)
7	Feb/Mar 28, 2, 4	Substitution & Elimination, Alkenes (Ch. 6, 7)	Properties of Alkenes (Ch. 7)	Alkene Synthesis (Ch. 7)
8	Mar 7, 9, 11	SPRING BREAK		
9	Mar 14, 16, 18	Electrophilic Addition to Alkenes (Ch. 8)	Alkene Hydration (Ch. 8)	**Exam II Ch. 5-7, 8 (1st half)**
10	Mar 21, 23, 25	Alkene Reactions (Ch. 8)	Alkene Oxidative Cleavage, Alkynes (Ch. 8, 9)	Alkyne Properties, Synthesis (Ch. 9)
11	Mar/Apr 28, 30, 1	Alkyne Reactions, Alcohol Nomenclature (Ch. 9, 10)	Alcohol Properties, Synthesis (Ch. 10)	Alcohol Synthesis (Ch. 10)
12	Apr 4, 6, 8	Alcohol Oxidation (Ch. 11)	Alcohol Reactions (Ch. 11)	Alcohol Reactions (Ch. 11)
13	Apr 11, 13, 15	Ethers, Epoxides (Ch. 14)	**Exam III Ch. 8-11, 14 (if covered)**	IR Spectroscopy (Ch. 12)
14	Apr 18, 20, 22	Interpreting IR Spectra (Ch. 12)	Mass Spectrometry (Ch. 12)	GOOD FRIDAY
15	Apr 25, 27, 29	EASTER MONDAY	NMR Spectroscopy, Shielding (Ch. 13)	Last Class! Interpreting NMR Spectra (Ch. 13)

Thursday May 5, 1-3 pm
FINAL EXAM Comprehensive: Chapters 1-14