

CHEM 223 Organic Chemistry A
 Summer I 2015
 Course Syllabus

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|----------------------|------------------------------|------------------|
| Instructor: | Mark Aparece | |
| Email: | maparece@luc.edu | |
| Office: | Flanner Hall 200A | |
| Office Hours: | MWF 11:10am-12:00pm | Dumbach Hall 119 |
| | MWF 2:55-3:45pm | Dumbach Hall 231 |
| | Also by prior appointment | |
| Lecture: | Section 003 MWF 12:15-2:55pm | Dumbach Hall 231 |
| | Section 004 MWF 8:30-11:10am | Dumbach Hall 119 |

Textbook and Materials

Required:

Organic Chemistry (8th edition) by L. G. Wade, Jr.

Recommended:

Study Guide and Solutions Manual (8th edition) by Wade and Simek

Molecular modeling kit

Colored pens/pencils (I use lots of colors in lecture)

Optional:

Organic Chemistry as a Second Language: First Semester Topics (3rd edition) by David Klein**Course Overview**

This course is the first in a yearlong two semester sequence of organic chemistry covering the structure, properties, and reactivity of aliphatic and alkenic molecules. Specific topics include bonding, nomenclature, conformational analysis, reaction mechanisms, multi-step synthesis, and spectroscopy (MS, IR, and ¹H and ¹³C NMR).

For success in this course, it is important to review your notes, read the textbook, and work on homework problems **every day**. **DO NOT FALL BEHIND.** Learning organic chemistry is a lot like learning a language, a sport, or a musical instrument: daily practice and immersion are required to master the concepts taught in this course. Memorization **does not work**, nor does cramming the night before an exam. Deeper understanding by recognizing underlying patterns is better than rote memorization, and this is especially true in a class like organic chemistry. **DO NOT FALL BEHIND.**

Grading and Assessment

| | | |
|---------------------------|--------------------------|------|
| Exam 1 | Monday, June 1, 2015 | 25% |
| Exam 2 | Monday, June 15, 2015 | 25% |
| Final Exam | Friday, June 26, 2015 | 40% |
| Quizzes (Best 2 out of 3) | Wednesday, May 27, 2015 | 10% |
| | Wednesday, June 10, 2015 | |
| | Monday, June 22, 2015 | |
| | | 100% |

Numerical scores will be converted to letter grades by the following:

| | | | |
|---------|----|--------|----|
| 93-100% | A | 70-75% | C+ |
| 90-93% | A- | 60-70% | C |
| 85-90% | B+ | 55-60% | C- |
| 80-85% | B | 50-55% | D+ |
| 75-80% | B- | 45-50% | D |
| | | <45% | F |

Exams

There will be two in-term hour-long exams each worth 25% of your overall grade as well as a two-hour **cumulative** final exam worth 40%. There are **NO MAKE-UP EXAMS**. Under no circumstances may an exam be taken at a time and date other than that assigned. **Unexcused absences** (alarm didn't go off, overslept, missed the bus, etc.) will warrant a "zero" on that exam. **Excused absences** (a death in the family, sickness, university-sponsored athletic events, etc.) require appropriate documentation and will be dealt with on a case-by-case basis, usually by making the final exam count more toward your final grade.

Quizzes

Three (3) quizzes will be administered over the course of the semester. Only the best two (2) quizzes will count toward 10% of your overall grade. Because your lowest quiz score will be dropped, there are **NO MAKE-UP QUIZZES**. Under no circumstances may a quiz be taken at a time and date other than that assigned. These quizzes may be administered at the start of class **OR** they may be given to take home.

Re-grade Policy

In the event of a grade challenge, only exams and quizzes **completely done in pen** will be eligible for a re-grade. No assignments done in pencil—even partially—are eligible for a re-grade. This policy excludes other errors such as those made by me (e.g., tallying up points).

Homework

As incentive for you to do the practice problems for each chapter, you have the opportunity to earn **five extra credit points** on each exam if you do the following:

- Exam 1 (Chapters 1-5): At least **15 problems** per chapter (**75 problems total**)
- Exam 2 (Chapters 6-9): Do at least **20 problems** per chapter (**80 problems total**)
- Final Exam (Chapters 10-13): Do at least **20 problems** per chapter (**80 problems total**)

On the day of the exam, turn in your homework in an **organized stapled packet**. If not stapled or organized, you will only earn **four** extra credit points. These extra credit points are based on completion, not accuracy. Thus, you are encouraged to work together in study groups. You are also encouraged to do **more** than the minimum required homework problems—in fact, you are encouraged to do **all** of them—though this will not earn you more extra credit points. However, students who do more homework problems tend to do better on exams and in the class in general than students who do the bare minimum.

I will send out suggested homework problems and reading assignments from the textbook via Sakai. Do your homework every day. Do not wait until the last minute. You can expect to devote **20-40 HOURS OUTSIDE OF CLASS TIME PER WEEK** to studying for organic chemistry. Try not to do homework with the solutions manual out. **THIS IS A COMMON MISTAKE STUDENTS MAKE**. Students who study in this manner often trick themselves into thinking they know organic chemistry when really they do not.

In-class Worksheets

At the end of every week, we will work on in-class worksheets in the last 15-45 minutes of class, depending on how far we get in the schedule. **Exam and quiz problems are modeled after in-class worksheets.** Thus, it is in your best interest to work on in-class worksheets. **You must be present to receive a worksheet.** I only post keys to worksheets on Sakai, not the worksheets themselves.

Drop Date

The last day to drop with a grade of “W” is **Friday June 19.** If you drop after this date, you will receive a grade of “WF”.

Student Conduct

Students are expected to come to class every day and to behave in a civil and professional manner. Turn off or silence cell phones during class. Any student caught using their cell phone during class will receive **ONE warning. Thereafter, the student will lose FIVE (5) POINTS on the next exam EACH TIME they are caught.** If you must talk on your phone, step outside. Anyone who is repeatedly disruptive during class will be asked to leave as a courtesy to other students.

Academic Integrity

All submitted work must represent your own work and your own work only. Any student caught cheating in any way will receive a “zero” for that assignment which **cannot be dropped.** Furthermore, the student may be reported to the chairperson of the Chemistry Department, the chairperson of the student’s department, and the Dean of the College of Arts and Sciences. The incident may also be documented in the student’s record and may result in dismissal from the university. For further information regarding the Academic Integrity policy and disciplinary procedures, refer to the LUC Undergraduate Handbook or the CAS website: http://ww.luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf

Services for Students with Disabilities (SSWD)

If you require special accommodations through the university’s Services for Students with Disabilities (SSWD) program, please inform me as soon as possible, preferably during the first week of the course.

Instructor Privileges

I reserve the right to make changes and adjustments to this syllabus as necessary, including, but not limited to, the grading policy and course schedule.

Tentative Schedule

| Week | Day | Date | Chapters | Topics |
|------|-----|--------|--|---|
| 1 | M | 5/18 | 1 | Introduction and review: Lewis structures, bonding, resonance, acid-base conjugates. |
| | W | 5/20 | 2 | Structure and properties: molecular orbital (MO) theory, VSEPR and hybridization, isomerism, functional groups. |
| | F | 5/22* | 3 | Alkanes and cycloalkanes: nomenclature and conformational analysis (Newman projections and chair conformations). |
| 2 | M | 5/25 | MEMORIAL DAY. NO CLASS. | |
| | W | 5/27 | QUIZ 1 (Chapters 1-3) | |
| | F | 5/29* | 4 | Reaction energetics: thermodynamics, kinetics, free radical halogenation. |
| 3 | M | 6/1 | 5 | Chirality: <i>R</i> & <i>S</i> (Cahn-Ingold-Prelog convention), enantiomers, diastereomers, meso compounds, racemic mixtures, enantiomeric excess (ee). |
| | W | 6/3 | 6 | Alkyl halides: nomenclature, structure, properties, synthesis, nucleophilic substitution (S_N2 , S_N1), β -elimination (E1, E2). |
| | F | 6/5* | 7/8 | Alkenes: nomenclature, structure, <i>cis-trans</i> isomerism, properties, synthesis. Alkene reactions: electrophilic addition, oxidative addition, catalytic hydrogenation, oxidative cleavage, carbene reactions. |
| 4 | M | 6/8 | 9 | Alkynes: nomenclature, structure, properties, synthesis reactions, acetylide ions, introduction to multi-step synthesis. |
| | W | 6/10 | QUIZ 2 (Chapters 6-8) | |
| | F | 6/12* | 10/11 | Alcohols: nomenclature, structure, properties, organometallic reagents, carbonyl compounds, synthesis. Alcohol reactions: oxidation, nucleophilic substitution, elimination, Williamston ether synthesis. |
| 5 | M | 6/15 | EXAM 1 (Chapters 1-5) | |
| | W | 6/17 | 6 | Alkyl halides: nomenclature, structure, properties, synthesis, nucleophilic substitution (S_N2 , S_N1), β -elimination (E1, E2). |
| | F | 6/19*† | 7/8 | Alkenes: nomenclature, structure, <i>cis-trans</i> isomerism, properties, synthesis. Alkene reactions: electrophilic addition, oxidative addition, catalytic hydrogenation, oxidative cleavage, carbene reactions. |
| 6 | M | 6/22 | EXAM 2 (Chapters 6-9) | |
| | W | 6/24* | 9 | Alkynes: nomenclature, structure, properties, synthesis reactions, acetylide ions, introduction to multi-step synthesis. |
| | F | 6/26 | QUIZ 3 (Chapters 10-11) | |
| 6 | M | 6/22 | 12 | Spectroscopy I: infrared (IR) spectroscopy and mass spectrometry (MS). |
| | W | 6/24* | 13 | Spectroscopy II: Proton and carbon nuclear magnetic resonance (^1H and ^{13}C NMR) spectroscopy. |
| | F | 6/26 | CUMULATIVE FINAL EXAM (focus on Chapters 10-13) | |

*In-class worksheets administered at the end of class.

†Last day to drop with a grade of "W". Afterward, the student will receive a grade of "WF".