Organic Chemistry
Chem 223
Spring 2010

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http://chemistry.brookscole.com/mcmurray7e

Meeting: TTR 8:00-9:15 PM in SH 10

Molecular model kits are available from the American Chemical Society affiliates.

Exam Schedule:

<table>
<thead>
<tr>
<th>Exam</th>
<th>Date</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Exam I</td>
<td>2/11/10</td>
<td>100 pts</td>
</tr>
<tr>
<td>Exam II</td>
<td>3/23/10</td>
<td>100 pts</td>
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<tr>
<td>Exam III</td>
<td>4/15/09</td>
<td>100 pts</td>
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<tr>
<td>Graded Homework (3 x 25 pts)</td>
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<td>75 pts</td>
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<tr>
<td>Final Exam</td>
<td>5/5/10 at 9:00 AM</td>
<td>125 pts (ACS standard exam)</td>
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<tr>
<td>Total</td>
<td></td>
<td>500 pts</td>
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Evaluation: Grades will be assigned according to the guidelines established in the Wake Forest University 2009-2010 Bulletin (page 28, A = exceptionally high achievement, B = superior, C = satisfactory.) based upon the following scale. The instructor also reserves the right to adjust this scale based upon class performance.

500-450 pts (90%) = A  
449-400 pts (80%) = B  
399-350 pts (70%) = C  
349-300 pts (60%) = D  
< 300 pts (<60%) = F

Exams: Will test a students understanding of material over a significant portion of the course. No make-up exams will be given. See the course calendar for a schedule. If you miss an hourly exam due to a valid reason (sickness, death in the family, university travel) your final grade will be determined based using the same % scale but using your total number of points. Requests for a re-grade must have a short explanation attached and be submitted within one week of receiving the graded exam.

If you have needs due to learning differences or physical disability, it is your responsibility to talk with me as soon as possible, so that we can make whatever appropriate arrangements that will help you succeed in the course. If you have a disability that may require an accommodation for taking this course, be sure to meet with a staff member at the Learning Assistant Center (758-5929) within the first 2 weeks of the semester.
**Graded Homework:** Homework assignments will prepare students for upcoming exams. These exercises will be prepared by the instructor and returned to the student before the examination. See the course calendar for a schedule.

**Attendance:** Regular attendance is expected. Students are responsible for all material covered in class and homework assignments will be made daily.

**Homework:** Homework problems from the text and study guide will be assigned each class period to reflect the important concepts of that lecture. Working problems is strongly encouraged and it is in your best interest to do more than the assigned problems. Molecular model sets are recommended for this course as an aid to visualizing the three dimensional structure of molecules. This aid is especially valuable in the early portions of the course.

**Ethics:** Students are expected to know and abide by the Wake Forest Honor Code as outlined in the Wake Forest University Bulletin (pg 13).

**Office Hours:** TTH 11:00 AM -12:00 noon. I will try to be available in my office at these times. Feel free to come by at other times as needed and I will try to see you then or arrange a specific meeting time. Email is another approach. Please contact me if you are having problems with the course.

**How to Study Organic Chemistry:** Study this material everyday. Read the book, review your notes and do the assigned problems. Do more problems. Make sure that you use a pencil and paper to write problems out. Exams are written on paper with pen or pencils. Try to learn trends, do not try to memorize the book. Use molecular models or visual aids to “see” compounds. Discuss the material with friends, but do not rely on one person in your study group to answer all the questions. Test yourself frequently and grade yourself harshly. Come see me anytime.

Other Important Dates

1/13/10  Classes Begin  
1/18/10  Martin Luther King Day  
1/27/10  Last day to add courses  
2/17/10  Last day to drop courses  
3/6/10-3/14/10  Spring Break  
3/12/10  Mid-term Grades Due  
4/2/10   Good Friday  
4/28/10  Classes End
Course Objective

Similar to CHM 122/123, the purpose of this course is to arm students with a thorough understanding of the basic concepts behind organic chemistry and how these concepts are employed in chemical reactions. This course relies on a strong background in the principals of organic chemistry (CHM 122/123) further applied to more complicated molecules and biological molecules. Students will be expected to work outside of class to build on these skills as the course progresses. The course is fast-paced, and successful students will apply themselves to daily studying.

Required Chem 122/123 skills:

Able to describe atomic theory and structure and relate electronic structure to the periodic table
Able to draw Lewis structures and resonance forms (without hesitation)
Able to work with basic equilibria systems in solving problems, including simple acid/base equilibria of organic molecules
Able to use pKa’s (or even K_a’s) to predict the outcome of acid base reactions.
Able to name general organic compounds
Able to recognize and classify various types of isomers of organic compounds (constitutional vs. stereo)
Able to rank conformations in terms of energy
Able to use reaction coordinate diagrams to describe organic reactions
Able to use electron pushing as a method of describing mechanisms of organic reactions
Able to predict the organic reactions of alkanes
Able to predict the organic reactions of alkenes
Able to predict the organic reactions of alkynes
Able to predict the organic reactions of alkyl halides (SN1/SN2/E1/E2)
An understanding of aromaticity in organic molecules.
An understanding of the basics of spectroscopy (especially IR, NMR and mass spectrometry)
Able to predict organic structures from given spectra
Able to predict aromatic electrophilic substitution reactions

Tentative Schedule for Lecture Topics

Chapter 16-Chemistry of Benzene
Chapter 17-Alcohols and Phenols
Chapter 18-Ethers and Epoxides
Chapter 19-Aldehydes and Ketones: Nucleophilic Addition Reactions
Chapter 20-Carboxylic Acids and Nitriles
Chapter 21-Carboxylic Acid Derivatives: Nucleophilic Acyl Additions
Chapter 22-Carbonyl Alpha Substitution Reactions
Chapter 23-Carbonyl Condensation Reactions
Chapter 24-Amines/Heterocycles
Chapter 25-Carbohydrates
Chapter 26-Amino Acids/Peptides
Chapter 27-Lipids
Chapter 28-Nucleic Acids