Chemistry 330
Fall 2016
Organic Chemistry I

Instructor: Wayne Baran

Contact Information: Office: Faraday Hall 335
Email: wbaran@niu.edu

Office Hours: MW 2:00-3:00 pm, and by appointment

Lecture: MWF 1:00-1:50 pm; Faraday Hall 143

Required Text

Recommended Materials:
3) Molecular Visions Organic Chemistry Molecular Modeling Kit

On-Line Course Information: Blackboard (https://webcourses.niu.edu)

Class Format:
The course will be comprised of lectures, in class exams, in class quizzes and online learning tools and assessments. It is important that you attend class as quizzes will be randomly given out. If you miss a class, it is your responsibility to obtain lecture notes and any assigned work. You should check Blackboard each day for postings. Suggested homework from the text will be given for each chapter. Although this will not be graded it is important to complete so that you become familiar with the content of the course for exams.
Outcome Expectation Statement

After this course students should be able to:
- Draw Lewis dot structures, calculate formal charge, understand atom electronegativity and how it created dipoles in bonds, determine the shape of a molecule form its Lewis dot structure, identify different functional groups, and know common bonding situations for 1st and 2nd row elements
- Identify $\sigma$ and $\pi$ bonds, identify the hybridization of any give atom in a molecule, identify the molecular orbital occupied by electron pairs, and identify the orbitals involved in a given bond.
- Know trends in bond strength and lengths for common bonds, recognize constitutional isomers, and be able to generate them from a given empirical formula, calculate degree of unsaturation, recognize and produce organic molecules drawn in shorthand, examine the structure of a compound and determine the intermolecular forces that are operating, and understand relative physical properties and how they relate to intermolecular forces.
- Name simple organic molecules using the IUPAC system
- Recognized compounds that exist as cis-trans isomers and compare stabilities, use Z and E descriptors, determine the conformations about a C-C single bond and estimate relative energies, determine types and relative amounts of strain present in cyclic molecules, draw the two chair conformations of cyclohexane derivatives, these two conformational isomers.
- Identify chiral compounds and stereocenters, designate chiral center as $R$ or $S$, understand the relative properties of enantiomers, recognize meso-stereoisomers, determine the stereochemical relationship between two compounds, understand chiral separation techniques, and draw and use Fisher projections
- Draw important resonance structures for any molecule and assign the relative importance of such structures
- Understand Bronsted acid-base theory, write an acid-base reaction, recognize Lewis acid and Lewis bases, understand the meaning of $K_a$ and $pK_a$ values and use them to predict equilibrium of an acid-base reaction and understand how structure affects acidity
- Draw the mechanism for the $S_N1$ and $S_N2$ reactions, recognize various nucleophiles and leaving groups and understand the factors that control their reactivity, understand the factors that control the rates of the two substitution reactions, understand the importance of stereochemistry in the substitution reactions and apply this knowledge to predict products from a reaction mixture.
- Draw the mechanism for the E1 and E2 reactions, understand the factors that the rates of the two elimination reactions, understand the implications of stereochemistry in elimination reactions, and apply this knowledge to predict products (resulting from either substitution or elimination) from a reaction mixture.
- Using substitution and elimination chemistry to understand how to interconvert a variety of functional groups, including alcohols, ethers, esters, alkyl halides, amines, hydrocarbons, nitriles, phosphorous and sulfur compounds, alkenes, alkynes, ketones, aldehydes, epoxides, and cyclopropanes.
Exams and Grades:

The course grade will be assigned based on your point totals for the exams, online homework (Learnsmart) administered through Connect and in-class quizzes. One exam may be dropped for the class and because of this no make-up exams will be given. If you miss an exam a score of 0 will be entered for that exam. The online Learnsmart will be administered through Connect that can be accessed through NIU Blackboard. All exams will be comprehensive since understanding the material encountered latter in the course will require application of concepts learned previously. However emphasis will be given to material covered since the last exam. Exams are closed book, and closed note. Textbooks, models, notes electronic devices (including cell phones, i-watches and laptop computers) are not permitted in the classroom during the exam. All exams and in-class quizzes will be multi-choice.

NOTE: No extra-credit assignments will be given.

Final Exam

The 20% final exam will be comprehensive and will be given on Wed. December, Noon-1:50 p.m.

Point Total

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Exams (Best 3 of 4 at 100 points each)</td>
<td>40%</td>
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<tr>
<td>Learn Smart (100 points total)</td>
<td>20%</td>
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<tr>
<td>In-class quizzes (50 points total)</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
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</tbody>
</table>

Approximate Grading Scale:

- A (100-87%)  
- A- (86-85%)  
- B+ (84-82%)  
- B (81-73%)  
- B- (72-70%)  
- C+ (69-67%)  
- C (66-55%)  
- D (54-45%)  
- F (44-0 %)

Note: by enrolling in this class you are agreeing to take the exams on the scheduled dates.
**Requests for Regrades**

Submissions for regrade will be accepted for one week after the day the exams are distributed in class. The entire test will be regrade. The regraded exams will be returned after the end of the next class period. If the exam pages are altered in any way, the request for regrade will be denied. The instructor may make copies of exam before distributing them to the class.

**Important Dates:**

Consult your academic adviser and the NUI website.

- Thursday September 1  Last day to drop course via self-service in MyNIU
- Friday, September 2  Last day to drop course with approval of major college
- Friday, September 9  Last day to change course from credit to audit or audit to credit
- Friday, October 16  Last day to withdraw from course

**Study Groups:**

It is encouraged to study in groups. This will make the chemistry experience more enjoyable and you will learn the content better. Explaining to someone else the material will be a great benefit in your own learning as it will be provide different insights on how to tackle the material.

**Student Code of Conduct:** [http://www.niu.edu/communitystandards/pdf/SCC.PDF](http://www.niu.edu/communitystandards/pdf/SCC.PDF)

**Academic Dishonesty (cheating)**

Academic dishonesty includes looking at another student’s exam during a testing session, allowing another student to copy your work, use of unauthorized materials such as notes, crib sheets, textbooks, prohibited electronic devices such as smart phones, cell phones, I-pads or programmable calculators that contain stored equations, formulas or text during an exam. Violation of any of these will result in a zero for the exam, quiz or assignment in question. **Academic dishonesty in any form will not be tolerated and may result in failure of the entire course.**
Notification of Services for Students with Documented Disabilities

NIU abides by Section 504 of the Rehabilitation Act of 1973 which mandates reasonable accommodation by providing for qualified students with disabilities. If you have a disability and may require some type of instructional and/or examinations accommodation, you will need to register with the Center for Access-Ability Resources (CAAR), the designated office on campus to provide services and administer exams with accommodations for students with disabilities. The CAAR office is located on the 4th floor of the University Health Services building (815-753-1303). Accommodations are not retroactive. Please contact me early in the semester so that I can provide or facilitate in providing accommodations you may need. You must for each exam have a form filled out about 10 business days in advance to be sure to have a CAAR test time appointment.

Tentative Schedule

<table>
<thead>
<tr>
<th>Lecture Dates</th>
<th>Chapters</th>
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<tr>
<td>8/22</td>
<td>Introduction</td>
</tr>
<tr>
<td>8/24 - 9/2</td>
<td>Chapter 1 and 2</td>
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<td>9/5</td>
<td>No Class</td>
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<td>9/7</td>
<td>Exam 1</td>
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<td>9/9 –9/28</td>
<td>Chapter 3, 4, and 5</td>
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<td>9/30</td>
<td>Exam 2</td>
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<td>10/3 -10/21</td>
<td>Chapters 6, 7, 8</td>
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<td>10/24</td>
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<td>10/26- 11/9</td>
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<td>11/11</td>
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<td>11/14-11/30</td>
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<td>12/2</td>
<td>Review</td>
</tr>
<tr>
<td>12/7</td>
<td>Final Exam</td>
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