Organic Chemistry 337 Honors (Spring 2017)
Meetings: M,W,F 1:00 PM - 1:50 PM
Location: La Tourette Hall 201
Instructor: Prof. Timothy J. Hagen
Office: FR 350, Office Hours: M 2:00-3:00 pm, W: 9:30-10:30 am, and by appointment
Email: thagen@niu.edu
Phone: (815) 753-1463

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Tentative Lecture Schedule

<table>
<thead>
<tr>
<th>Lecture Dates</th>
<th>Chapters</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/18 to 2/10</td>
<td>9</td>
<td>NMR</td>
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<tr>
<td></td>
<td>10</td>
<td>Radical reactions</td>
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<tr>
<td></td>
<td>11</td>
<td>Alcohols and ethers</td>
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<tr>
<td>2/10</td>
<td></td>
<td>Exam 1</td>
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<tr>
<td>2/13 to 3/10</td>
<td>12</td>
<td>Carboxyl chemistry</td>
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<td></td>
<td>13</td>
<td>Conjugated systems</td>
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<td></td>
<td>14</td>
<td>Aromatics</td>
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<tr>
<td>3/10</td>
<td></td>
<td>Exam 2</td>
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<tr>
<td>3/12 to 3/19</td>
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<td>Spring recess</td>
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<tr>
<td>3/20 to 4/7</td>
<td>15</td>
<td>Reactions of aromatics</td>
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<tr>
<td></td>
<td>16</td>
<td>Aldehydes and ketones</td>
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<tr>
<td></td>
<td>18</td>
<td>α-Carbon chemistry</td>
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<tr>
<td>4/7</td>
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<td>Exam 3</td>
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<tr>
<td>4/10 to 4/28</td>
<td>17</td>
<td>Carboxylic acid and their derivatives</td>
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<tr>
<td></td>
<td>19</td>
<td>Condensation chemistry</td>
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<tr>
<td></td>
<td>20</td>
<td>Amines</td>
</tr>
<tr>
<td>4/28</td>
<td></td>
<td>Exam 4</td>
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<tr>
<td>5/1 to 5/3</td>
<td>21</td>
<td>Phenols and aryl halides</td>
</tr>
<tr>
<td>5/5 (Friday)</td>
<td></td>
<td>Reading Day</td>
</tr>
<tr>
<td>5/10/17</td>
<td></td>
<td>Final exam: Wednesday May 10, Noon-1:50 p.m.</td>
</tr>
</tbody>
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On-Line Course Information and Tools: Blackboard (https://webcourses.niu.edu)

ISBN: 9781118133576


Recommended: Molecular Visions: Flex molecular model kit ISBN: 9780964883710

Class Format: The course will be composed of lectures, in-class exams, in-class quiz and online learning tools and assessments. It is important that you attend class, and attendance will be taken each class period. The in-class lectures need to be supplemented by your reading of the text, working of problems. If you miss a class, it is your responsibility to acquire the lecture notes and any assigned class work from a fellow classmate and you should check Blackboard each day for postings.

Solving the problems for each chapter, with a time limit, is good practice for the exams.

BlackBoard Access: You must know your student id login and password.
https://webcourses.niu.edu/webapps/portal/frameset.jsp
**Exams and Grades:** The course grade will be assigned based on your point totals from the exams and in-class/online quizzes. The course grade will be assigned based on your point totals from exams, quizzes and a final exam. *One exam may be dropped, and because of this no make-up exams will be given.* Under certain justified circumstances students may take tests early or late; please contact me ahead of time to make arrangements. If an exam is missed, a score of zero will be assigned. The on-line quiz will be administered through the NIU Blackboard system. If more than ten quizzes are given then the lowest score(s) will be dropped and the best ten will be used in the grade calculation.

**Research Papers:** Students will read and write an analysis for four articles pertaining to organic chemistry. The source for these articles will Chemical and Engineering News [http://cen.acs.org/index.html](http://cen.acs.org/index.html). Analysis for each article should be approximately one page in length. The analysis should include a discussion of the science, impact of the work and context of the topic with regard to organic chemistry and society. This experience is designed for students to gain a better appreciation of the range and scope of organic chemistry.

**Final Exam:** The 200 point final exam will be comprehensive and will be given on Wednesday, May 10\(^{th}\) from 12:00 - 1:50 am. The point total is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Exams (Best 3 of 4 at 100 pts each)</td>
<td>300</td>
</tr>
<tr>
<td>Quiz (ten at 10 pts each)</td>
<td>100</td>
</tr>
<tr>
<td>Research papers</td>
<td>50</td>
</tr>
<tr>
<td>Final exam (Wed, 5/10/17 at 12 noon-1:50 pm)</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td>650</td>
</tr>
</tbody>
</table>

**Approximate Grading Scale:** Average grade: A (100-87%), A- (86-85), B+ (84-83), B (82-75%), B- (74-70), C+ (69-68), C (67-55%), D (54-45%), F (44-0%)

*NOTE: by enrolling in this class, you are agreeing to take the exams on the scheduled dates.*

Optional Study Group Sessions: I will hold an optional one-hour group study session to go over material and work through problems. The time and location will be announced in class.

**Extra Credit:** THERE IS NO EXTRA CREDIT AVAILABLE.

Requests for regrades will be accepted for one week after the day the exams are distributed in class. To request a regrade, list the pages and numbers of the problems that you believe were graded incorrectly along with reasons for a regrade and submit this list along with the original exam. The requests will be reviewed, and exams will be returned during the next class meeting. *The instructor may make copies of exams prior to distribution to the class.* Individuals who make submissions for re-grades will have the copy of the original exam and the exam submitted for re-grading compared. Discrepancies between the two will constitute academic dishonesty and the situation will be dealt with appropriately.

**Important Dates** Consult your academic adviser and the NIU website: http://catalog.niu.edu/content.php?catoeid=41&navoid=1899
January 22 Last day to drop course via self-service in MyNIU.
January 27 Last day to drop course with approval of major college.
February 3 Last day to change course from credit to audit or from audit to credit.
March 10, Last day for an undergraduate to withdraw from course.

**Common Sense Conduct:** No cell phones, pagers, ipods or similar electronic devices allowed. All cell phones must be put in silent/vibrate mode and left on for emergency alerts only. Do not talk, text, etc.
during class. Be quiet and respectful of the other students desire to learn. If repeated disturbances of my lecture occur, you will be required to leave class. **During exams all electronic devices are prohibited.**

**Academic Dishonesty (cheating):** Academic dishonesty includes (but is not limited to) looking at another student's exam during a testing session, allowing another student to copy your work, use of unauthorized materials (e.g., lecture notes, crib sheets, textbooks, prohibited electronic devices including smart phones, cell phones, I-pads or programmable calculators containing stored equations, formulas, or text) during exams. Violation of any of these terms will result in assignment of a score of 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.**

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

**Study Groups:** This will make your organic chemistry experience more enjoyable and you will learn the material better. Research shows that by teaching someone else you will learn the material better and you will get a realistic assessment for how well you know the material.

**General Education Course Objectives**
- Improve ability to think critically and logically
- Improve ability to reason quantitatively and to perform basic chemical computations
- Learn how to use the scientific method and theories to understand organic chemistry
- Develop an appreciation for the importance of the role of organic chemistry in everyday life
- Develop an understanding of the historical development of the field of organic chemistry

**General Context and Outcomes Expected in a Two Semester Organic Chemistry Sequence** (based upon ACS guidelines: https://www.acs.org/content/dam/acsorg/about/governance/committees/training/acsapproved/degreeprogram/organic-chemistry-supplement.pdf)

“Carbon-based molecules are central to a host of chemical and biological processes because of their broad range of structure and reactivity. The millions of organic compounds alone, ranging from polymers to pharmaceuticals, make the field important for study. Yet organic chemistry is also a highly integrated discipline that impacts and is impacted by the other branches of chemistry and other sciences. Indeed organic chemistry enables a molecular understanding of physicochemical phenomena in materials science, the environment, biology, and medicine. Because the field has reached a high level of integration with these areas, progress in organic chemistry continues at a fast pace and much more remains to be discovered.

This course will motivate students to appreciate the breadth of organic chemistry by facilitating an understanding of the principles, and the practice of applying them, to gain a working knowledge and appreciation of organic structure and reactivity.”

**Learning Outcome Expectations:**
After this course, students should be able to: a) understand the structure and bonding of organic molecules b) understand the nomenclature of aliphatic and aromatic compounds c) understand conformational structures of alkanes d) recognize and assign stereo chemical designations of organic compounds e) predict products from reactions based on a mechanistic understanding and apply these reactions in multi-step syntheses

**Conceptual Topics**
- bonding and its consequences on molecular structure and reactivity
- interplay between electronic, steric, and orbital interactions in the behavior and properties of molecules
- the dependence of structure and reactivity on context, particularly solvent effects and other non-covalent interactions
- Lewis and Brønsted acid-base chemistry

January 13, 2017
stereochemistry and conformational analysis
addition, elimination, substitution and rearrangement mechanisms, and reactive intermediates
functional groups and their interconversions, particularly redox transformations
organic synthesis, including retrosynthetic analysis of target molecules
synthesis and behavior of macromolecular species, including biomolecules such as proteins and polysaccharides, and synthetic polymers
methods of activation, including Brønsted or Lewis acid/base, free radical chemistry, and organometallic catalysis
carbonyl chemistry, including nucleophilic addition, alkylation and condensation reactions
oxidation and reduction
nucleophilic substitution reactions
addition and elimination
acidity and basicity of organic compounds
stereochemistry, as applied to the previous topics
concepts and consequences of resonance and aromaticity
spectroscopy at a basic level as applied to the previous topics

Preferred Gender Pronoun Statement
This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is on the class roster, please let me know. Please also inform me and feel free to correct me and your classmates on your preferred gender pronouns. If you have any questions or concerns, please do not hesitate to speak with me in person, or email me. The Gender and Sexuality Resource Center also has a webpage designed to help support people of all genders as they navigate NIU’s system: http://niu.edu/gsrc/audience/trans.shtml.

Accessibility Statement
Northern Illinois University is committed to providing an accessible educational environment in collaboration with the Disability Resource Center (DRC). Any student requiring an academic accommodation due to a disability should let his or her faculty member know as soon as possible. Students who need academic accommodations based on the impact of a disability will be encouraged to contact the DRC if they have not done so already. The DRC is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu.

Multilingual Student Statement
I am committed to making course content accessible to all students. If English is not your first language and this causes you concern about the course, please speak with me.

Student Sexual Misconduct Policy
Title IX prohibits sex discrimination to include sexual misconduct: harassment, domestic and dating violence, sexual assault, and stalking. If you or someone you know has been harassed or assaulted, you can receive confidential support and advocacy at the Counseling & Consultation Service’s Advocacy Services, which can be contacted on at 815-753-1206, or in Campus Life Building-room 200. Alleged violations can be reported non-confidentially to the Affirmative Action & Equity Compliance Office in Lowden Hall-room 101, at 815-753-1118, or online at http://www.niu.edu/sexualmisconduct/help/form.shtml. Reports to law enforcement can be made to NIU Police & Public Safety at 815-753-1212. For an emergency, call 911. For more information about Sexual Misconduct Prevention & Resources, visit http://niu.edu/sexualmisconduct/index.shtml.

Note: As an instructor, one of my responsibilities is to help create a safe learning environment on our campus. I also have a mandatory reporting responsibility related to my role as an instructor and a faculty advisor to a student organization. I am required to share information regarding sexual misconduct or information about a crime that may have occurred on NIU’s campus with the University. Students may speak to someone confidentially by contacting Counseling & Consultation Service’s Advocacy Services at 815-753-1206, or in Campus Life Building-room 200.

*See Northern Illinois University Catalog for all other policies and guidelines.