Instructor: Professor Jim Gloer  Office: E515 CB  Phone: 335-1361

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Teaching Assistants: Daniel Goetz (daniel-goetz@uiowa.edu), Qi Zhang (qi-zhang@uiowa.edu)

Web Site: Online content for the course will be managed using the ICON system (http://icon.uiowa.edu). The site will be used to post copies of the slides used in class, as well as practice exams, exam keys, and other kinds of information.


Optional Materials: A study guide is available which contains answers to problems from the text (ISBN # 9780077479824). A molecular models kit is useful in helping to visualize 3D-structures of organic molecules, however, they cannot be used during exams. Some online supplementary instructional materials are also available from the textbook publisher (McGraw-Hill). You may find such materials helpful, but their use is not required and no web-based homework tools will be used in the course.

Course Notes: Copies of the Powerpoint slides used in class will be made available on ICON as PDF files before the classes in which they will be covered. *These notes are intended to be helpful—not to alleviate the need for attending class.* They will be most useful if you look them over before class, and add highlights or further notes to them during lecture.

Lectures: MWF, 9:30-10:20 AM in 100 PH. The 6:30-8:00 PM Wednesday slot is reserved in your schedule only for the three mid-term exam dates—no other class meetings are planned for that time period. If a class has to be cancelled due to some unexpected circumstance, this time slot might be considered as a possible option for a make-up lecture time, but such occasions are very rare. Advance notice would be given in class if this becomes necessary. Also, please note that lectures will *not* be held on mornings of exam dates.

Office Hours: Mondays 1:30-2:30, Tuesdays 11:00-12:00, and Wednesdays, 10:30-11:30. Significantly expanded office hours (times to be announced) will be offered during exam weeks.

Questions are welcome during class, immediately after class (as permitted by time between classes), during discussions, or during office hours. If a meeting is needed outside these times, *please make an appointment.* Each of your TAs will also have two office hours per week, and these will be held in the chemistry resource room (E208 CB). Currently scheduled times are:

Daniel: 3:30-5:30 PM on Tuesdays  Qi: 1:30-2:30 Tuesdays; 3:30-4:30 Wednesdays

You may attend any of these, even if it is not your own discussion TA. Please note that your instructor does not consider email to be appropriate for detailed explanation or clarification of course concepts—if you have conceptual questions, please talk to your instructor or to your TA.
Exams: There will be three regular mid-term exams and a final. Each regular exam will be given on a
Wednesday at 6:30 PM in Macbride Auditorium and will last 90 minutes. The dates of these exams are listed
below. The final exam will be held during the UI-scheduled time (to be announced in mid-September) and
will last two hours. Room assignments for finals will be announced in class when they become available. All
exams will be comprehensive, since understanding of material encountered later in the course will require
application of concepts learned previously. However, each mid-term will focus mainly on material covered
since the previous exam. Announcements will be made in class regarding the material to be covered on each
exam. Topics to be covered on a mid-term exam will conclude with the material presented on the Friday
before the exam. The Monday class before the exam will then be used as a review session, focusing mainly
on discussion of the practice exam. Coverage of new material will resume on the Friday after the exam.

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on discussion of the practice exam. Coverage of new material will resume on the Friday after the exam.

All exams will be closed-book. Prior to the start of each exam, all extraneous materials (e.g., models,
notebooks, papers, backpacks, etc.) should be left at home or brought to the front of the exam room.
Calculators will rarely, if ever, be needed. The use of any other electronic devices during exams is
prohibited. The exams will include some short-answer type questions wherein you will need to write out
answers and/or draw appropriate chemical structures in spaces provided on the exam itself. All exams must
be written in ink, but not red ink. Exams written in pencil or in red or erasable ink cannot be regraded.
Exams will be graded and returned (through the Chemistry Center, E225 CB) as soon as possible. Exam
results and answer keys will be posted on the ICON course web site.

Exam Schedule:
Exam 1: Wednesday, Sept. 24 at 6:30 PM       Exam 3: Wednesday, Nov. 19 at 6:30 PM
Exam 2: Wednesday, Oct. 22 at 6:30 PM        Final Exam: Not yet assigned

Regrades: Occasional grading mistakes are unavoidable in a class of this size. If you feel that a mistake
has been made in grading your exam, you may turn it in at the Chemistry Center (E225 CB) for regrading.
Write on the front of the exam the number of the question to be checked and an explanation (in one
sentence or less) of what you believe was done incorrectly. The entire exam will be reviewed by your
instructor--if points were incorrectly awarded, the corresponding score change will also be made.
Regrade requests must be submitted within one week of the time the graded exams are made available to
you (within 24 hours for the final exam). No regrades will be possible after that time. Please note that
this procedure is intended to apply to situations where your answer matches the answer posted on the key,
but was misgraded. If you disagree with an answer on the key, or feel that a different answer should be
accepted, please discuss the issue with your instructor during office hours.

Make-up Exams: Permission to take a make-up exam will require a valid, written excuse. You must
register for the make-up and provide an acceptable reason before the scheduled time of the regular exam
that you miss. This process requires that you complete a standard Departmental makeup exam request
form (posted on the course ICON site) and submit it to the Chemistry Center (E225 CB). You do not need
to contact your instructor about a make-up unless the Chemistry Center has rejected your request. Each
make-up will be given on the Friday nine days after the regular exam at 5:30-7:00 PM in room W290 CB.
Under no circumstances will a make-up be given in place of a regular exam taken earlier.

Drop-Add: Please note that drop/add signatures for this course should be obtained from staff in the
Chemistry Center (E225 CB), not from your instructor. If you are an undergraduate student, you may, if
approved by your advisor, drop a course through the 10th week of the term. The deadline this semester for
undergraduate students to drop a course is Monday, November 3. However, the last day to drop without
receiving a “W” on your transcript is Monday, September 8.
Course Grades: Grades will be based on performance on the three regular exams (300 points) and the final exam (150 points). Total points possible = 450. No scores will be dropped in calculating the final grade for the course, and everyone must take the final exam. No formal letter grades (A, B, C grades) will be assigned for individual exams, but an approximate letter-grading curve for each exam will be provided during class so that students will know where they stand grade-wise. At the end of the semester, each student’s exam scores will be totaled, and the resulting sum will be fitted to a grading curve in order to assign final grades. The grading curve will be based strictly on this semester’s class performance. College guidelines (for “intermediate classes”) will be followed as closely as possible in establishing the final grade distribution, and +/- grading will be used for final grades.

This course is graded on a curve rather than a strict 90/A-80/B-70/C, etc. type of scale. The main reason for this is to ensure fairness to students. Because the exams in this class change from year to year, and do not consist of multiple choice questions from a test bank, exam averages tend to be more variable (and lower than they would be for multiple choice tests), so past results cannot be safely used to predict class performance. The final curve will not be more stringent than 90-80-70, etc., but will be adjusted in students’ favor as needed to ensure that we are as consistent as possible with grade distribution in the course in other semesters. This policy will be reflected in the approximate letter-grading curve provided during class for each exam.

Discussion Sections: Each student is assigned to one of nine discussion sections conducted by chemistry TAs. Because 004:122 is only a three-credit course, attendance at these sessions is not required, however, they are intended for your benefit. These are essentially "help sessions" that provide opportunities to ask questions about lecture material, and discuss problems from the text, practice exam questions, etc. in smaller group settings. Discussion sessions will begin on Tuesday, September 2.

Supplemental Instruction: Supplemental Instruction (SI) is offered by the UI as part of an effort to foster student success. This is a completely optional program, administered separately from the course itself—your instructor is not involved in its content or administration. The sessions are informal and are peer-led by a student who has taken the course in the past and has done well.

According to the SI website (http://uc.uiowa.edu/swat/supplemental-instruction-si):
“SI helps you figure out how to be successful in your course. You’ll meet with a fellow student (the SI Leader) who did well in the course, compare notes with other students, discuss readings, get organized, and predict and prepare for test items. The leader attends all class lectures and takes notes, so you can be sure that your leader knows what’s going on in your class and is working with the professor. The sessions are informal, so you can come and go as you please. This service is free and open to all undergraduate students.” SI for 4:122 is scheduled to be offered:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mondays</td>
<td>4:30-5:20 PM</td>
<td>E215 CB</td>
</tr>
<tr>
<td>Wednesdays</td>
<td>1:30-2:20 PM</td>
<td>E224 CB</td>
</tr>
<tr>
<td>Thursdays</td>
<td>9:30-10:20 AM</td>
<td>16 EPB</td>
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</tbody>
</table>

Special Needs: We need to hear from anyone who has a disability that may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. The Student Disability Services (SDS) office is located in 3101 Burge Hall (335-1462). If any such special arrangements are needed for exams, please inform both your instructor and the Chemistry Center (E225 CB; 335-1341).

Other Course Information: Inquiries about most logistical issues not covered above can be handled by the Chemistry Center (E225 CB; 335-1341).
**Course Description:** This course is intended to follow 004:121, Organic Chemistry I. It is partly organized around functional groups and compound types, but methods for determining the structures of organic compounds are also introduced, with an emphasis on NMR spectroscopy. The chemistry of various unsaturated organic compounds, carboxylic acids, carboxylic acid derivatives, other carbonyl compounds, amines, and heterocyclic compounds will be discussed. Finally, a few highlights of the organic chemistry of carbohydrates, lipids, and amino acids will be presented, as time permits.

**Course Objectives and Outline:** Our main objective this semester is to cover the material summarized in the table below. Any changes will be announced in class. Note that we will directly follow the sequence in the textbook, except for Chapter 15, which was already covered at the end of 4:121, and section 18.13 (in Chapter 18), which is new to 4th Edition, but will not be covered this semester. A few selected highlight topics from Chapters 26-29 will be covered at the end of the semester if time permits, but no readings (beyond the slides), or book problems for such highlight topics will be assigned.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Pages</th>
<th>Title</th>
<th>Suggested Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>483-513</td>
<td>Mass Spectrometry and Infrared Spectroscopy</td>
<td>1-3, 5-16, 18, 21, 24, 26, 28-32, 34, 36, 38-43, 44-46, 48, 55</td>
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<tr>
<td>16</td>
<td>593-629</td>
<td>Conjugation, Resonance, and Dienes</td>
<td>1-24, 26, 30, 31-37, 39-40, 44, 46, 50-55, 57, 58, 60, 65-67</td>
</tr>
<tr>
<td>17</td>
<td>630-664</td>
<td>Benzene and Aromatic Compounds</td>
<td>1-19, 23, 24, 29-30, 32-35, 39-44, 47, 48, 50, 51, 54-58, 60</td>
</tr>
<tr>
<td>18</td>
<td>665-717</td>
<td>Reactions of Aromatic Compounds</td>
<td>1-17, 19-23, 28-33, 36, 37, 38a-i, 39, 40a-e, 41, 44-47, 54-56, 64-68, 71-74</td>
</tr>
<tr>
<td>20</td>
<td>753-806</td>
<td>Introduction to Carboxylic Chemistry; Organometallic Reagents; Oxidation and Reduction</td>
<td>1-35, 38-48, 52, 55, 58-62, 64-67, 69-76</td>
</tr>
<tr>
<td>21</td>
<td>807-858</td>
<td>Aldehydes and Ketones–Nucleophilic Addition</td>
<td>1-38, 42-43, 45-51, 54, 57-63, 68, 70, 73, 78a-b, 81-87</td>
</tr>
<tr>
<td>22</td>
<td>859-914</td>
<td>Carboxylic Acids and their Derivatives – Nucleophilic Acyl Substitution</td>
<td>1-20, 24-36, 40-42, 44-45, 47-52, 54, 57, 59, 64, 66-68, 70, 73, 76, 77, 79-85</td>
</tr>
<tr>
<td>23</td>
<td>915-953</td>
<td>Substitution Reactions of Carbonyl Compounds at the α-Carbon</td>
<td>1-19, 21-27, 29, 32-36, 38, 39, 41, 43-54, 57, 60, 66, 69, 70, 73</td>
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**Suggested Problems:** Working problems from the text is an essential step in learning the course material. Lists of suggested problems for each chapter are included in the Table above. However, we will not collect or grade these. They are intended for you to use independently as learning tools, and to help provide topics for coverage in discussion sections. You do not have to do all of the suggested problems in order to assimilate the material or perform well on exams. Generally, though, the more problems you can do, the better you will understand the material, and the better prepared you will be.

*Please note: the page ranges and problem numbers above correspond to those in the 4th Edition of the text. Corresponding suggested problem numbers for the 3rd Edition will be posted on ICON. There are very few changes in the problems from one Edition to the next, but those differences result in different numbering.*
The problems suggested in the Table provide more than ample coverage of the course topics, and practice exams will also be made available. Entries omitted in the lists correspond to problems that are off-topic, or confusingly worded, or redundant, or more advanced than necessary, etc. Some of the suggested problems include many parts/examples, and doing a subset (e.g., half) of the examples should serve the purpose (unless you are not getting the right answers…). However, if you wish to have additional practice, you could try omitted problems, or seek out any other organic chemistry text.

**Anticipated Timeline:** This course requires coverage of a lot of new material. The chapters vary in length, and some topics may inspire more questions than others. In-class questions are welcome and all will be answered. There is no desire to rush through any topics, so our exact pace is difficult to predict. However, for planning purposes, our approximate coverage objectives for each exam are as follows:

- **Exam I:** Chapters 13, 14, 16, and 17
- **Exam II:** Chapters 18 through most of Chapter 21
- **Exam III:** The remainder of Chapter 21 through Chapter 24
- **Final Exam:** Cumulative, including Chapter 25 and any other material covered as time permits

**Some Study Suggestions for Organic Chemistry II**

First, it is essential to make sure that you understand the concepts from Organic I, because we have to assume that you do in order to proceed. As in Organic I, you will likely be most successful if you strive to understand the concepts presented, how they relate to one another, and how they can be applied to new situations that you encounter. Some things need to be memorized, of course, but memorization alone is not generally an effective strategy in this class.

Keep up with the reading and problems. If you fall behind, it will be very difficult to catch up. This is not the type of course in which you can cram the night before an exam and expect to do well. A standard suggestion is to study at least a couple of hours outside of class for every hour of lecture. Work as many of the text problems as you can as we go through each chapter, and then check your answers. Don’t just go look at the answers without trying hard on the problems first. These problems are intended to help you master the course content, and you are free to work on them with others, but grades are based on exam performance, so it is best to do as many of the problems on your own as you can.

Use the practice exams that will be provided. The questions on the real exams will be different, but the style will be very similar. Practice exams are intended to help relieve stress about what you will face at exam time. If you take them seriously and impose a time limit on yourself, you can get a feel for the time it will take you to finish the real exam. Check your answers with the key, and investigate any that you get wrong. We will go over the practice exam in detail in class on the Monday before the exam.

**Come to class.** The availability of downloadable course notes leads to a natural temptation to skip class. The notes are intended to help you learn, and to enable you to listen in class and make a few extra notes of your own, rather than focus on frantically copying everything. However, they are incomplete without the explanations, emphasis, etc. that will be provided during class. Many organic chemistry concepts are new to most people, making it less likely that you can simply read the notes or the book and understand everything (or be sure what your instructor considers most important…). Most students find that more explanation of this material is needed—not less!
The Powerpoint notes are intended to provide concise summaries of each topic that you can review more efficiently than re-reading entire book chapters. Students often use the notes as a core resource, with the textbook serving as a supplement/reference that offers more detail and, of course, many relevant problems to work. In class, focus will be placed on explaining the concepts, relating them to other concepts learned earlier, and emphasizing the most important points, not on reading the slides to you.

Take advantage of discussion sections. These are weekly help sessions for you, but they cannot magically catch you up in one sitting right before an exam. For those who attend regularly, these sessions offer an opportunity for getting additional help and concept reinforcement in a smaller, less formal class setting. They may also facilitate formation of study groups with your peers.

Don't hesitate to seek help. Make use of the office hours offered by your instructor and TA throughout the semester. They get more crowded as exams loom, so extra office hours will be added during the days before exams in an effort to accommodate everyone. I prefer this over holding a large help session outside of class time because 1) not everyone will be able to attend a help session outside of class time, 2) we will already hold a mini-help session in class the Monday before the exam, 3) I can tailor answers to individual student needs, and 4) many students are just as reluctant to ask questions in a help session as they are during class. Office hours enable you to ask your questions in a much smaller setting, and at a time of your convenience.

Collegiate Policies & Procedures

The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Student Academic Handbook. Class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College. These policies are summarized here and can be found at: http://www.clas.uiowa.edu/faculty/teaching/policies.shtml.

Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the College of Liberal Arts and Sciences. Details of the University policy on cross-college enrollments may be found at: http://www.uiowa.edu/~provost/deos/crossenroll.doc.

The following additional policy and procedural statements have been summarized from the web pages of the College of Liberal Arts and Sciences and The University of Iowa Operations Manual.

Electronic Communication. University policy specifies that students are responsible for all official correspondence sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondence.

Accommodations for Disabilities. A student seeking academic accommodations should first register with Student Disability Services and then meet privately with the course instructor to make particular arrangements. See www.uiowa.edu/~sds/ for more information.

Academic Honesty. All CLAS students have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any
student committing academic misconduct will be reported to the College and placed on disciplinary
probation or may be suspended or expelled (Please see the CLAS Academic Policies Handbook).

**CLAS Final Examination Policies.** The final examination schedule for each class will be
announced around the fifth week of the semester by the Registrar. Your instructor has no input into
this schedule, and students should not ask their instructor to reschedule a final exam. Final exams are
offered only during the official final examination period. No exams of any kind are allowed (or
planned) during the last week of classes. All students should plan on being at the UI through the
entire final examination period. Once the Registrar has announced the dates and times of each final
exam, the complete schedule will be published on the Registrar’s web site. Questions about these
policies should be addressed to the Associate Dean for Undergraduate Programs and Curriculum.

**Suggestions or Complaints.** Students with a suggestion or complaint about this course should first
visit the instructor, then the Departmental Executive Officer (DEO). The Chemistry DEO can be
contacted by calling the Chemistry Department front office at 335-0200. Complaints must be made
within six months of the incident—please refer to the CLAS Student Academic Handbook.

**Understanding Sexual Harassment.** Sexual harassment subverts the mission of the University and
threatens the well-being of students, faculty, and staff. All members of the UI community have a
responsibility to uphold this mission and to contribute to a safe environment that enhances learning.
Incidents of sexual harassment should be reported immediately. See the UI Comprehensive Guide on
Sexual Harassment for assistance, definitions, and the full University policy.

**Reacting Safely to Severe Weather.** In severe weather, class members should seek appropriate
shelter immediately, leaving the classroom if necessary. The class will continue, if possible, when the
event is over. For more information on Hawk Alert and the siren warning system, visit the Public
Safety web site.

**Public health** authorities recommend that people with flu-like illnesses stay home and not return to public
spaces until 24 hours after they have no fever. In order to prevent the spread of disease, please do not come to
class, meet with other groups of students, attend office hours, or contact offices in person while you are ill
with a fever.