Department of Chemistry: E331 CB, 335-1350 (James Gloer, DEO)
Instructor: Dr. Gregory K. Friestad (E455 CB, 335-1364)
e-mail: gregory-friestad@uiowa.edu
Office hours: Tuesday 2:00–3:30, Friday 10:30–12:00
Scheduled Lectures: Monday, Wednesday, Friday 9:30–10:20, W228 CB
   Note: On exam days, lecture period will be a review session (optional).
Midterm Exams: Wednesday February 15, 6:30–8:00 pm, W268 and E264 CB
   Wednesday March 22, 6:30–8:00 pm, W268 and E264 CB
   Wednesday April 19, 6:30–8:00 pm, W268 and E264 CB
Teaching Assistant: Parin Shah (parin-shah@uiowa.edu)
   Office Hours (to be announced)

Course Goals
Develop an understanding of the properties and reactions of organic compounds:
• spectroscopic properties of organic compounds, use of spectroscopy for structure determination
• physical and chemical properties of aromatic compounds, carbonyl compounds, carboxylic acid
   derivatives, amines, and selected di- and polyfunctional organic compounds
• chemical reactions of the aforementioned functional groups and their application to synthesis of
   organic compounds

Prerequisites: Organic Chemistry I (CHEM:2210 or CHEM:2230)

Course Materials
Required Text: Organic Chemistry Edition 11e; Solomons, Fryhle, Snyder
   Looseleaf (ISBN : 978-1-118-14739-9)
   Electronic Text (ISBN : 978-1-118-54950-6)
   Other editions: The 10th or 12th editions may be used. However, all references (page numbers,
   assigned problems, etc.) in the course materials refer to Edition 11e. If a student chooses a
   different edition, it is the student’s responsibility to correlate these references to their edition.
   (ISBN : 978-1-118-97583-1)
Optional: molecular model kit (for example: item 1000, 1003 or 1013 from HGS Molecular Structure

Course Website: ICON, http://icon.uiowa.edu (for assistance, contact icon-support@uiowa.edu)

Course Administration at the Chemistry Center
The chemistry center can help if you would like to ask questions about times of TA office hours, have
add/drop forms signed, turn in late assignments, submit regrade requests, etc.
E225 CB, 335-1341, email chemistry-center@uiowa.edu
Office Hours: Instructor office hours are Tuesday 2:00-3:30, Friday 10:30-12:00. Prior to exams, expanded office hours will be offered (times will be announced in class). If a meeting is needed outside of these times, I will be very happy to meet with you. Please email (gregory-friestad@uiowa.edu) or phone (319-335-1364) to make an appointment!

Your TA will have scheduled office hours each week in the Student Resource Center (E208 CB). Students can get help from any of the TAs who normally staff that room at various times M–Th 8:30a–6:30p and Fri. 9:30a–3:30p. A listing of the TAs and their office hours is also available in the Chem Center (E225 CB). If your own TA is not there when you need to ask a question, some TAs associated with other Organic Chemistry courses may also have helpful advice.

Discussion Sections: Discussion Sections will be conducted by a Teaching Assistant (Parin Shah). These sessions provide additional opportunities to ask questions, work on problems, and improve understanding of the course material.

004 Monday 10:30-11:20, C129 PC
0045 Wednesday 11:30-12:20, C129 PC
0085 Friday 11:30-12:20, C129 PC

Course Outline
This is a tentative outline of topics to be covered. Adjustments may be made as the semester proceeds; changes (if any) will be announced in lecture and/or on the course website. Practice problems for each chapter will be announced in lecture and/or on the course website.

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<th>Chapter</th>
<th>Topic</th>
<th>Reading (pp.)</th>
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<td>13</td>
<td>Conjugated Unsaturated Systems</td>
<td>581–618</td>
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<td>14</td>
<td>Aromatic Compounds</td>
<td>626–658</td>
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<td>15</td>
<td>Reactions of Aromatic Compounds</td>
<td>669–711</td>
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<td>16</td>
<td>Aldehydes and Ketones</td>
<td>720–759</td>
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<td>17</td>
<td>Carboxylic Acids and Their Derivatives</td>
<td>771–813</td>
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<td>18</td>
<td>Reactions at the α Carbon of Carboxyl Compounds</td>
<td>821–850</td>
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<td>19</td>
<td>Condensation and Conjugate Addition Reactions of Carboxyl Compounds</td>
<td>858–886</td>
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<td>20</td>
<td>Amines</td>
<td>897–935</td>
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<td>21</td>
<td>Phenols and Aryl Halides</td>
<td>944–970</td>
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<tr>
<td>22–24</td>
<td>Selected Topics in the Chemistry of Multifunctional Biomolecules (Carbohydrates, Lipids, Amino Acids)</td>
<td>979–1013, 1027–1049, 1060–1068, 1086–1090</td>
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<tr>
<td>G</td>
<td>Special Topic G: C–C Bond Formation with Transition Metals</td>
<td>G1–G16</td>
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Reading Before Class
The textbook readings given in the table above should be completed BEFORE the topic is discussed in class. Skim over the reading and try a few practice problems. This way, you’ll be ready to work practice problems in class, and class time will be a much more effective tool in your learning process. Also this will help later — when you return to read the textbook in more depth, it will make more sense.
Grading
A total of 450 points is possible:
• Exams (3 x 100) = 300 points
• Final Exam = 100 points
• Quizzes, best 5 scores out of 7 quizzes (5 x 10) = 50

Letter grades are not given on the individual exams. Distribution of scores on each exam will be provided, so that students will have a reasonable idea of their standing throughout the semester. At the end of the semester, each student’s exam scores will be totaled and converted to a letter grade based on the following approximate grading scale: A’s 75%, B’s 60%, C’s 45%. This scale is tentative, and will be subject to minor adjustments (+/- 5% or less). Minuses and pluses will be given.

There are variations from year to year, and in any given year, there may be more A’s if the student performance is better than average. From previous years of experience in teaching this course, the distribution of letter grades will likely be very similar to the CLAS recommended grade distribution and grade average (below).

<table>
<thead>
<tr>
<th>Class</th>
<th>Grade Distribution (% of class)</th>
<th>Grade Average</th>
</tr>
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<tbody>
<tr>
<td>CLASRecommended</td>
<td>A 18%, B 36%, C 39%, D 5%, F 2%</td>
<td>2.6 / 4.0</td>
</tr>
<tr>
<td>Spring 2016 Grade Distribution</td>
<td>A 43%, B 24%, C 14%, D 10%, F 10%; Grade Average = 2.9 / 4.0</td>
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<tr>
<td>Spring 2015 Grade Distribution</td>
<td>A 23%, B 26%, C 30%, D 21%, F 0%; Grade Average = 2.6 / 4.0</td>
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Exam Information

The final exam time and location will be announced by the university a few weeks into the semester.

*End-of-Chapter Problems.* All exams will include some questions which are taken directly from the assigned end-of-chapter problems in the textbook, with only slight modifications. Assigned problems in the textbook will be announced in lecture and/or on the course website.

*Cumulative exams:* Because each unit in organic chemistry builds upon prior units, all exams are cumulative. Material covered since the previous exam will be emphasized, but this will require application of concepts learned earlier in the course and in the prerequisite (4:121 or 4:123) course.

*Exam materials:* Exams are closed-book. Prior to the start of the exam, all extraneous materials (models, notebooks, papers, backpacks, etc.) should be left at home or brought to the front of the room. Calculators are not needed. The use of any electronic devices during exams is strictly prohibited.

*Exam Regrades:* Regrades are intended to address issues where the answer matches the answer key, but was misgraded. If you feel that a mistake has been made in grading your exam, you may request a regrade. There is no need to get instructor approval first, just follow these instructions: Add a cover page which specifies the question to be regraded, with a one sentence explanation of what you believe was incorrectly graded. *The entire exam will be regraded, and points awarded incorrectly may also be deducted during the regrading process.* Regrade requests must be received at the Chemistry Center (E225 CB), with time stamped on them, within one week of the time the exams were available to the class for pickup. There will be no regrade requests accepted after the one-week deadline.
**Make-up Exams:** In the event that an exam is missed for valid University-approved reasons, a make-up exam may be arranged in advance. Permission to take a make-up exam will require a valid, written documentation of the reasons for the request. The request must be made directly to the instructor.

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**How to Succeed in Organic Chemistry**

*Put in a Solid Effort.* From the CLAS website, “in a 3 semester hour course, students should expect (on average) 6 additional hours of outside work per week or a total of around 9 hours per course if classroom time is included. A student taking 5 courses (3 s.h. each) should expect to spend around 45 hours a week on academic work.” Some students who fall short of this recommendation still manage to do OK in other classes, but organic chemistry is not a place to cut corners. If you can average 6 hours per week (this means studying even in weeks when there is no exam), you’ll find that you’ll have a lot more success in organic chemistry!

*Work Problems and Read Regularly.* Read over the chapter before it is covered in class, and try a few of the in-chapter problems. After class, re-read it again, and then do problems at the end of the chapter. It’s very important that you work problems to make sure you can use the concepts and retain the information for future application to new and different problems. This requires lots of simple ordinary practice; regurgitation from memory is not enough. Sit down with a pencil and paper and write out practice problems until you are sure you know how to actually apply your knowledge. Don’t assume that you can skip studying a particular topic and get by without it later! *Sticking to a regular schedule of reading and problem-solving is highly recommended.* This is not the sort of course where you can cram for the exams the night before and expect to do well.

*Come to Class.* Course lecture notes will be provided online, but they are incomplete without the explanations, emphasis, model demonstrations, and examples provided in class. Most students find that they learn best by a combination of inputs, including listening and taking notes of their own in class to complement the lecture notes provided online. It is not likely that reading the online lecture notes will be sufficient to understand the material. Usually, more explanation is needed, not less.

*Take Advantage of Discussion Sections and Office Hours.* Attending discussion sections regularly will provide opportunities to ask questions and discuss sample problems in a less formal environment. It may also help facilitate formation of study groups with classmates; working problems together in pairs or groups can be a useful study strategy for some students.

**Some general comments about learning Organic Chemistry.**

Learning *Organic Chemistry* is an exciting endeavor because it is the language of life. Indeed Organic Chemistry is critical to communication, energy transfer and storage, nutrient uptake, growth, replication, and virtually everything else needed for life to exist on earth. Our understanding and manipulation of Organic Chemistry also impacts our daily lives in uncounted ways; treating our diseases (drugs), fueling our civilization (traditional and alternative energy processes), maintaining our bodies (food, nutrition), coloring our clothes (dyes), and inventing our next lightweight electronic gadgets (advanced electronic materials). We can all be enriched through a better understanding of something so ubiquitous in our daily lives, and so critical to life itself.

To gain this enrichment through learning Organic Chemistry, you essentially need to learn a new language. As you may know, once you learn a new word in a foreign language, you must retain that vocabulary in order to be able to make a complete sentence or carry on a conversation. When you don’t know any words at all, a foreign language seems mysterious and perhaps intimidating. Learning the language of organic chemistry is no different; you have to build the foundation first. Each new concept will build upon a foundation that you will construct from scratch. You must learn to use each organic chemistry concept properly, and then retain that knowledge so that the foundation doesn’t collapse later.
The process of learning Organic Chemistry will benefit you in intangible ways. Many students find Organic Chemistry fun because it involves an appealing combination of both logic and creativity. This combination stimulates the development of valuable critical thinking skills which will be useful no matter what career path you eventually choose. Good luck and have fun!

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**Statements of University and/or College Policy**

**Administrative Home.** The College of Liberal Arts and Sciences 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 Academic Policies Handbook at [https://clas.uiowa.edu/students/handbook](https://clas.uiowa.edu/students/handbook).

**Electronic Communication.** University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences ([Operations Manual, III.15.2, k.11](https://clas.uiowa.edu/students/handbook)).

**Accommodations for Disabilities.** The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See [https://sds.studentlife.uiowa.edu/](https://sds.studentlife.uiowa.edu/) for information.

**Academic Honesty.** All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College’s [Code of Academic Honesty](https://sds.studentlife.uiowa.edu/): "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 is reported to the College and placed on disciplinary probation or may be suspended or expelled ([CLAS Academic Policies Handbook](https://clas.uiowa.edu/students/handbook)).

**CLAS Final Examination Policies.** The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

**Making a Suggestion or a Complaint.** Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident ([CLAS Academic Policies Handbook](https://clas.uiowa.edu/students/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 Office of the Sexual Misconduct Response Coordinator](https://outrage.uic.edu) 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 [Department of Public Safety website](https://dps.uiowa.edu).