CHEM:2240 — Organic Chemistry II for Majors — Spring 2022

Professor: Dr. Mona Maalouf
Email: mouna-a-maalouf@uiowa.edu
Office: W337 CB

Drop-In Office Hours (in W337 CB): Mondays: 3:00PM-4:00PM and Tuesdays: 3:00PM-4:00PM or by appointment.

Department of Chemistry
DEO: Leonard R. MacGillivray
Phone: (319) 335-1350
Email: len-macgillivray@uiowa.edu

“The University of Iowa strongly encourages students, faculty, and staff to be vaccinated against COVID-19. The university also encourages students, faculty, and staff to wear a face mask while on campus, and strongly encourages the use of face masks in all classroom settings and during in-person office hours. However, face mask usage is not required except on CAMBUS and in specified research and healthcare settings”

Students are required to fill out the self-report form to report illness or exposure to COVID-19.

1. COURSE OBJECTIVES
   This course will focus on laying the fundamental principles of organic chemistry. Students will develop an understanding of the synthesis, properties, and reactions of organic compounds, including aromatic compounds, amines, aldehydes, ketones, carboxylic acids and their derivatives and polyfunctional molecules. Students will utilize spectroscopy for structure determination. Emphasis will be placed on reaction mechanism and stereochemistry as well as on the design of multi-step syntheses.

2. PREREQUISITES
   2.1. CHEM:2210 with a minimum grade of C- or CHEM:2230 with a minimum grade of C-.

3. COURSE WEBSITE
   CHEM:2240 – Iowa Courses Online (ICON) website (https://icon.uiowa.edu). Use your HawkID and password to login to ICON. The ICON site includes lecture notes, practice exams, course announcements, and other useful information will be posted regularly on ICON. You should check ICON frequently during the semester.

4. LECTURE AND DISCUSSION SECTIONS
   3.1. Lecture – MWF: 9:30- 10:20 AM W128 CB
   3.2. Discussion Sections:
       Section 0004: M: 10:30- 11:20 AM E203 CB
       Section 0045: W: 11:30- 12:20 PM E215 CB

   *Reasonable accommodations will be made for students with disabilities, according to standard UI policy. Please identify yourself to the instructor the first day of class so that appropriate action may
be taken.

5. TEACHING ASSISTANT (TA)
Discussion teaching assistants (TAs) have scheduled office hours in Room **E208 CB** (Chemistry Resource Center). A schedule of specific TA/hours is posted on ICON. TAs for chemistry courses other than CHEM:2240 may also be able to assist you. CHEM:2240 TA for all three sections is:

5.1. Lucas Howell ([lucas-howell@uiowa.edu](mailto:lucas-howell@uiowa.edu))

6. COURSE MATERIALS
**Textbook:** Organic Chemistry ISBN: 9781118875766, Author: Solomons. Publisher: Wiley ©2016. Approximately $64.97 will be billed to your U-Bill

Other editions: The 10\textsuperscript{th} or 11\textsuperscript{th} editions may be used. However, all references (page numbers, assigned problems, etc.) in the course materials refer to 12\textsuperscript{th} Edition. If a student chooses a different edition, it is the student’s responsibility to correlate these references to their edition.

**Optional:** study guide that contains answers to problems from the text (ISBN # 978-1-118-14790-0).

**Optional:** Molecular model kit (for example: item 1000, 1003 or 1013 from HGS Molecular Structure Model, http://www.hgs-model.com/model/index.html)

**PDF generator/converter software.** Students will need a way to create a single pdf of multiple page assignments. Many free app options are available, including CamScanner and Microsoft Office Lens.

7. Out for ICON Direct Electronic Materials
**To be discussed in lecture January 24:** To maintain compliance with HEA funding rules found in the Code of Federal Regulations, an opt-out mechanism for course fee-funded electronic course materials is provided. Our course has one ICON Direct listings: the Etext…) By choosing to opt-out of from the listing, you will no longer have access to the required etext. Access to the required etext is cheaper through the negotiated course fee than as stand-alone products.

After reading the above description, if you still wish to opt out, instructions on how to do so can be found in the General Information Module of our ICON course. The opt-out period ends on the last add date of the semester, which is January 31\textsuperscript{st} at 6:00 PM. If you have opted out by mistake, please use the same instructions in our ICON course to opt back in before the January 31\textsuperscript{st} deadline. You cannot change your decision after January 31. For more information on ICON Direct opt out, please visit [https://teach.uiowa.edu/icon-direct-opt-out](https://teach.uiowa.edu/icon-direct-opt-out)

8. TECHNOLOGY/SOFTWARE REQUIREMENT
8.1. **Student-provided personal computer.** While tablets, smartphones and other mobile devices may allow for some completion of coursework, they are not guaranteed to work in all areas. It is recommended that you have access to a Windows or Mac based computer to complete coursework in the event your selected mobile device does not meet the needs of the course.

8.2. **Computer with reliable Internet access.** A wired Ethernet connection to the internet is very strongly suggested. Wireless and cellphone data connections may experience connection problems. Android and iOS operating systems are not fully supported at this time.

8.3. **Browsers:** Firefox or Chrome must be used for ICON to ensure you can view chemical structure, images, graphs, and equations embedded in the questions and/or answer choices.
9. COURSE ADMINISTRATION

Please go to the Chemistry Center (E225 CB) for drop/add signatures, section changes, tutor lists, and general questions. Center contact information: 319-335-1341, chemistry-center@uiowa.edu. Hrs: M-F 8 AM-noon, M-Th 1-5 PM, F 12:30-4:30 PM.

10. LECTURE AND DISCUSSION

10.1. Come prepared. Read the sections before you come. The reading in your textbook/handouts provides background for and reinforces lecture. At the end of this syllabus is an approximate reading schedule.

10.2. Actively participate and ask questions during lecture and discussion.

10.3. Work problems regularly. The in-chapter solved problems and practice problems are a good starting point. Also, end-of-chapter suggested problems for each chapter should be worked out regularly and not just before an exam.

10.4. Respect your fellow students, their questions and comments, and our class time.

10.4.1. Cell phones should be quiet and stored away for the whole class.

10.4.2. No texting in class/discussion. It is rude and a distraction to everyone.

11. EXAMS

11.1. There are three 90-minute term exams and a 2-hour cumulative final exam (We may use the ACS standardized exam for Organic Chemistry). All exams are cumulative and will consist of multiple choice, fill in the blank, and short answer questions. Answers must be written in ink, but NOT in red ink. Exams are closed books. You should leave all course material and models at home or place them at the front of the room. Data transmitting devices (e.g., tablet, laptop, cell phone, watch) will not be allowed during exams. Reasonable accommodations will be made for students with disabilities, according to standard UI policy. Out of fairness to all other students, exams will not be re-scheduled in order to accommodate personal holiday or travel plans.

11.2. Exam schedule:

- **Exam 1**: Wednesday, February 16th, 6:30 PM – 8:00 PM in W55 CB (material on exam will be announced in class and posted on ICON)
- **Exam 2**: Wednesday, March 23rd, 6:30 PM – 8:00 PM in W55 CB (material on exam will be announced in class and posted on ICON)
- **Exam 3**: Wednesday, April 20th, 6:30 PM – 8:00 PM in W151 W55 CB (material on exam will be announced in class and posted on ICON)
- **Final Exam**: TBA by the Registrar by the 5th week. Cumulative final exam.

12. GRADE COMPONENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Exams (100 points each)</td>
<td>300</td>
</tr>
<tr>
<td>Final Exam</td>
<td>150</td>
</tr>
<tr>
<td>Problem sets</td>
<td>150</td>
</tr>
<tr>
<td>Total Points</td>
<td>600</td>
</tr>
</tbody>
</table>
Final letter grades will be assigned following the recommended guidelines provided by the College of Liberal Arts and Sciences for Intermediate Courses (https://clas.uiowa.edu/faculty/grades-grading-system-and-distribution#Grading%20Guidelines)
CLAS Recommended Grade Average = 2.6 / 4.0

Typical Grade Average in this course is ~ 2.8/4.0

Final course grades will be assigned as follows. If you achieve the minimum number of points required for a given letter grade range below, you will not receive a lower grade regardless of the distribution. For example, a letter grade of C- or higher is guaranteed if you obtain 390 points or more by the end of the semester.

<table>
<thead>
<tr>
<th>Letter Grade Range</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A range (A-, A, A+)</td>
<td>510. – 600.</td>
<td>85.0 – 100%</td>
</tr>
<tr>
<td>B range (B-, B, B+)</td>
<td>450. – 509</td>
<td>75.0 – 84.9%</td>
</tr>
<tr>
<td>C range (C-, C, C+)</td>
<td>390. – 449</td>
<td>65.0 – 74.9%</td>
</tr>
<tr>
<td>D range (D-, D, D+)</td>
<td>330. – 389</td>
<td>55.0 – 64.9%</td>
</tr>
<tr>
<td>F range</td>
<td>below 330.</td>
<td>below 55.0%</td>
</tr>
</tbody>
</table>

Plus and minus grades will be assigned. Those grades will not necessarily be evenly split among the three categories (for example, # B- ≠ # B ≠ # B+). The grade of A+ will be assigned to reward exceptional achievement, typically around the top 1% of the class. Minor adjustments can be made at the end of the semester if necessary.

Opportunities to earn points in the course are complete once the final exam is finished (by May 13th). At that point, there is no opportunity for additional extra credit or redoing assignments for the chance to change your letter grade. Additionally, I will not round your final percentage up to the nearest whole percentage point.

13. IN-LECTURE ACTIVITIES
13.1. In-lecture activities are designed to engage student in the content.
13.2. Students work on these short activities during lecture
13.3. Students must upload their work to ICON by 10:30AM on lecture day to receive participation points and will count as bonus points with a maximum of 40 points for the semester.
13.4. No make-ups for missed in-lecture activities.

14. PROBLEM SETS
14.1. No problem set due first week of classes. Problem sets must be submitted by 11:59PM on Thursday of each week.
14.2. Students work on these problem sets during discussion with their TA and/or on their own.
14.3. Students submit quiz electronically as a single PDF file in ICON. More details in lecture and discussion and posted in ICON.
14.4. No make-ups for missed problem sets.

15. REGRADES
15.1. Exams: Turn in to the chemistry center (E225 CB) no later than 5 business days after the initial date of return. Request for regrades will NOT be accepted after the due dates. The document must be time-stamped when you turn it in otherwise it will NOT be regraded.
15.2. Items for regrade must be written in ink.
15.3. Exams on which white-out was used will NOT be considered for regrading.
15.4. Indicate the question/item with a brief explanation (one sentence maximum) on a separate paper and attach it to the front of the document submitted for regrading.
15.5. Exams submitted for regrade will be considered in their entirety. Therefore, points awarded incorrectly may be deducted in the regrading process.

16. ABSENCES AND MAKE-UP INFORMATION

Attendance to all lectures, discussions, and exams is expected.

16.1.1. Any student who is absent due to a University-sanctioned reason (e.g. short-term illness, family emergency, etc.) should contact Professor Maalouf and complete the absence form as soon (https://clas.uiowa.edu/faculty/student-attendance-and-absences#absences-short-term-illness) as soon as possible. The instructor reserves the right to request additional documentation if deemed necessary.

16.1.2. For COVID-19 related absence, students are required to fill out the self-report form to report illness or exposure to COVID-19.

16.2. For longer illness (three or more consecutive classes) the student should contact Professor Maalouf as soon as possible. The student must complete the CLAS absence form; the form is found here (Absence Form for CLAS Undergraduates) and on every ICON course site under "Student Tools," Absence Form (Student Attendance and Absences | College of Liberal Arts and Sciences (uiowa.edu)). The instructor reserves the right to request additional documentation if deemed necessary.

16.3. Exams: There are NO scheduled make-up times for any of the exams. If you know you will miss an exam due to a university-sanctioned activity, you must notify the instructor via email at least one week in advance. However, if you miss an exam due to illness on the day of the exam, you need to email Professor Maalouf on the same day at the latest. In all cases, you will need to submit appropriate supporting documentation directly to the instructor with your request.

16.4. Problem sets: No make-ups for missed problem sets.

16.5. Discussion: Students may attend discussion sections other than the one they are enrolled in but will require approval from the discussion TA.

16.6. The instructor will work with the student to make reasonable arrangements keeping in mind the time constraints for completing an experiment.

16.7. Final Exam: The final exam will be given in-person at the scheduled date and time announced by the Registrar around the fifth week of the semester. Until the final examination schedule has been published and all make-up final examination arrangements have been completed, students should be prepared to be available on campus from the first final exam period until the last exam period of the final exam week. A student with two final examinations scheduled for the same period or more than three examinations scheduled for the same day may file a request for a change of schedule before the published deadline (https://registrar.uiowa.edu/spring-2022-exam-information) at the Registrar's Service Center, 17 Calvin Hall, M–F, 8:00 AM–4:30 PM (319-384-4300).
College of Liberal Arts and Sciences: Policies and Procedures

Home of the Course: The College of Liberal Arts and Sciences (CLAS) is the home of this course, and CLAS governs the course’s add and drop deadlines, the “second-grade only” option (SG0), and other undergraduate policies and procedures. Different UI colleges may have other policies or deadlines. See https://clas.uiowa.edu/students/handbook. Questions? Contact CLAS at clasps@uiowa.edu or 319-335-2633.

Attendance and Classroom Expectations: Students are responsible for attending class and for knowing an instructor’s attendance policies, which vary by course and content area. All students are expected to attend class and to contribute to its learning environment in part by complying with University policies and directives regarding appropriate classroom behavior or other matters.

Absences: Students are responsible for communicating with instructors as soon they know that an absence might occur or as soon as possible in the case of an illness or an unavoidable circumstance. Students can use the CLAS absence form to help communicate with instructors who will decide if the absence is excused or unexcused; the form is located on ICON within the top banner under "Student Tools.” Delays by students in communication with an instructor could result in a forfeit of what otherwise might be an excused absence (https://clas.uiowa.edu/students/handbook/attendance-absences).

Absences: Illness, Unavoidable Circumstances, and University Sponsored Activities: Students who are ill, in an unavoidable circumstance affecting academic work, or who miss class because of a University sponsored activity are allowed by UI policy to make up a missed exam. Documentation is required by the instructor except in the case of a brief illness. Students are responsible for communicating with instructors as soon as the absence is known (https://opsmanual.uiowa.edu/students/absences-class#8.1).

Absences: Holy Days: Reasonable accommodations are allowed for students whose religious holy days coincide with their classroom assignments, tests, and attendance if the student notifies the instructor in writing of any such religious Holy Day conflicts within the first days of the semester and no later than the third week. (See the UI Operations Manual, https://opsmanual.uiowa.edu/students/absences-class#8.2).

Absences: Military Service Obligations: Students absent from class due to U.S. veteran or U.S. military service obligations (including military service-related medical appointments, military orders, and National Guard Service obligations) must be excused without penalty. Instructors must make reasonable accommodations to allow students to make-up exams or other work. Students must communicate with their instructors about the expected possibility of missing class as soon as possible. (For more information, see https://opsmanual.uiowa.edu/iv-8-absences-class%2C2%20A0-0).

Academic Misconduct: All undergraduates enrolled in courses offered by CLAS have in essence agreed to the College's Code of Academic Honesty. Academic misconduct affects a student's grade and is reported to the College which applies an additional sanction, such as suspension. Outcomes about misconduct are communicated through UI email (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code).
Academic Accommodations for Students with Disabilities: UI is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (such as a mental health, attention, learning, vision, and a physical or health-related condition) through the Student Disability Services (SDS) office. The student is responsible for discussing specific accommodations with the instructor. Note that accommodations are not granted retroactively but from the time of the student’s request to the instructor onward; additionally, accommodations must be requested at least two weeks in advance of the related assignment or exam (https://sds.studentlife.uiowa.edu/).

Class Recordings: Privacy and Sharing: Course lectures and discussions are sometimes recorded or live-streamed. These are only available to students registered for the course and the intellectual property of the faculty member. These materials may not be shared or reproduced without the explicit written consent of the instructors. Students may not share these recordings with those who are not enrolled in the course; likewise, students may not upload recordings to any other online environment. Doing so is a breach of the Code of Student Conduct and could be a violation of the Federal Education Rights and Privacy Act (FERPA); also see https://dos.uiowa.edu/policies/code-of-student-life/.

Communication: UI Email: Students are responsible for all official correspondences sent to their UI email address (uiowa.edu) and must use this address for any communication with instructors or staff in the UI community (Operations Manual, III.15.2). Emails should be respectful and brief, with complex matters addressed during the instructor’s drop-in hours, for example. Faculty are not expected to answer email after business hours or during the weekends.

Complaints about Academic Matters: Students with a complaint about a grade or a related academic issue should first visit with the instructor and then with the course supervisor (if one is assigned), and next with the Chair of the department or program offering the course. If not resolved, students may bring their concerns to the College of Liberal Arts and Sciences: https://clas.uiowa.edu/students/handbook/student-rights-responsibilities.

Final Examination Policies: The final exam schedule is published during the fifth week of the fall and spring semesters or on the first day of summer classes; students are responsible for knowing the date, time, and place of their final exams. Students should not make travel plans until knowing this information. A student with exams scheduled on the same day and time or who have more than two final exams on the same day should visit this page for how to resolve these problems by the given deadline: https://registrar.uiowa.edu/makeup-final-examination-policies. No exams may be scheduled the week before finals; some exception, however, have been made for labs, language courses, and off-cycle courses (https://registrar.uiowa.edu/final-examination-scheduling-policies).

Free Speech and Expression: The University of Iowa supports and upholds the First Amendment protection of freedom of speech and the principles of academic and artistic freedom. We are committed to open inquiry, vigorous debate, and creative expression inside and outside of the classroom. Visit Free Speech at Iowa for more information on the University’s policies on free speech and academic freedom (https://freespeech.uiowa.edu/).
Mental Health: Students are encouraged to seek help as a preventive measure or if feeling stressed or overwhelmed. Students should talk to their instructors for guidance with specific class-related concerns and are encouraged to contact University Counseling Service (UCS) at 319-335-7294 during regular business hours to schedule an appointment. UCS offers group and individual therapy as well as counseling for couples about relationships while making referrals to other resources (https://counseling.uiowa.edu/). Student Health can also address related concerns (https://studenthealth.uiowa.edu/). These visits are free to students. After hours, students are encouraged to call the Johnson County Community Crisis Line at (319) 351-0140 or dial 911 in an emergency.

Nondiscrimination in the Classroom: The University of Iowa is committed to making the classroom a respectful and inclusive space for people of all gender, sexual, racial, religious, and other identities. Toward this goal, students are invited in MyUI to optionally share the names and pronouns they would like their instructors and advisors to use to address them. The University of Iowa prohibits discrimination and harassment against individuals based on race, class, gender, sexual orientation, national origin, and other identity categories indicated by the University’s Human Rights policy. Contact the Office of Equal Opportunity and Diversity at https://diversity.uiowa.edu/division/office-equal-opportunity-and-diversity-eod.

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 are expected to conduct themselves in a manner that maintains an environment free from sexual harassment and sexual misconduct. Those experiencing sexual harassment are strongly encouraged to report the incidents and to seek help (https://osmrc.uiowa.edu/).

SUGGESTIONS FOR SUCCESSFUL STUDY IN ORGANIC CHEMISTRY II:

- Learning Organic Chemistry requires commitment of time and effort on your part. This course will require at least two hours of out-of-class preparation and study for every credit hour.

- Reinforce the material that is presented in the lectures by reading the corresponding sections in the book. Work out the in-chapter problems as you go. Go to discussion and be an active participant. In discussion you can ask the TA and/or your classmates questions. It is a good place to try new learning skills and/or strategies or improve and build upon existing study skills.

- Test your understanding of the material by working out the problems at the end of each chapter. Work out the problems before you check the answers in the Student Study Guide/Solutions Manual.

You have a wealth of opportunities to reinforce concepts and solve problems with which you may be having difficulty. Avail yourself of the instructor office hours, attend the lectures and, and bring your questions to walk-in hours. These opportunities are offered to help you learn Organic Chemistry. Use them!
Suggested practice problems will be announced in class and posted on ICON.

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<tr>
<th>Chapt</th>
<th>Topic</th>
<th>Reading (pp.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Conjugated Unsaturated Systems</td>
<td>572–616</td>
</tr>
<tr>
<td>14</td>
<td>Aromatic Compounds</td>
<td>617–659</td>
</tr>
<tr>
<td>15</td>
<td>Reactions of Aromatic Compounds</td>
<td>660–710</td>
</tr>
<tr>
<td>16</td>
<td>Aldehydes and Ketones</td>
<td>711–760</td>
</tr>
<tr>
<td>17</td>
<td>Carboxylic Acids and Their Derivatives</td>
<td>761–810</td>
</tr>
<tr>
<td>18</td>
<td>Reactions at the ( \alpha ) Carbon of Carbonyl Compounds</td>
<td>811–848</td>
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<tr>
<td>19</td>
<td>Condensation and Conjugate Addition Reactions of Carbonyl Compounds</td>
<td>849–889</td>
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<tr>
<td>20</td>
<td>Amines</td>
<td>890–937</td>
</tr>
<tr>
<td>21</td>
<td>C–C Bond Formation with Transition Metals</td>
<td>938 - 964</td>
</tr>
<tr>
<td>22–25</td>
<td>Selected Topics in the Chemistry of Multifunctional Biomolecules (Carbohydrates, Lipids, Amino Acids, nucleic acids)</td>
<td>965–1010, 1011–1044, 1045–1089, 1090–1124</td>
</tr>
</tbody>
</table>

**Important Note:** Changes may be performed to the above syllabus without any prior notification. These changes will be announced in class and updated on ICON.