1  CLASS INFO

TTh  9:30-10:45  C139 Pomerantz Center (PC)

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.

Instructor: Dr. Florence Williams (she, her)

Online Materials: ICON website, e-books as shown below

This course will be a flipped course, meaning that in-person class time will be used for discussion, and lectures will be available in video format for you to view at any time point. However, we will still have homework to be done at home.

Course Textbooks/Materials:


Modern Physical Organic Chemistry, Eric Anslyn and Dennis Dougherty (printouts will be available for specific reading sections upon request)

Molecular Orbitals and Organic Chemical Reactions, Student Edition Ian Fleming (available as e-book from UIowa Library)

In addition, we will be covering several primary literature examples (i.e. journal articles). These books will help outline some of the topics we’ll discuss.

2  INFO ABOUT PROF. WILLIAMS

Contact: florence-williams@uiowa.edu

Office: W285-CB

Office hour location: W285-CB – mask required. Meetings may switch to zoom at any time during the semester.

Office hours: Tuesday 11:00-12:00 am, Thursday 4-5 pm, or by appointment

When you can reach me: I will respond to emails as I am able – M-F, 8 am-5 pm, except during holidays. PLEASE INCLUDE CHEM5328 IN THE SUBJECT LINE. If you send an email during normal
work hours, please expect a wait time of 24 hours for a response. If I have not responded within 24 hours, please feel free to resend the email (It may have gotten overlooked/lost in my inbox, despite my best efforts). Emails over the weekend will be replied to on the following school day.

** Prior to exams, I will guarantee a response to any question sent 48 hours before the exam time. After that there is no guarantee that I will respond, but I will try to do so if I am able. I highly recommend sending late questions to the discussion board on ICON. I monitor this as often as I am able to as well.**

*University policy specifies that students are responsible for all official correspondences sent to their standard University of Iowa e-mail accounts. Students should check this account frequently.*

Organic chemistry is often not easily communicated over email, as it is a very visual science. Therefore, I encourage you to bring your questions to office hours.

## 3 Course Introduction

**Outline of Course Topics:** The dates for each section are intended to help calibrate your studying habits and may not be completely accurate for each lecture topic for a specific day.

<table>
<thead>
<tr>
<th>Approx Dates</th>
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<tbody>
<tr>
<td>Aug 25-30</td>
<td>Writing Reaction Mechanisms</td>
</tr>
<tr>
<td>Sept 1-8</td>
<td>Molecular Orbital, Perturbation, and FMO Theory</td>
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<td>13 - 20</td>
<td>Energetics – Thermodynamics and Reaction Coordinates</td>
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<tr>
<td>22 - Oct. 6</td>
<td>Huckel Theory and Pericyclic Reactions</td>
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<tr>
<td>11 - 18</td>
<td>Conformational Analysis – Fragmentations and Cascades</td>
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<tr>
<td>20 – 27</td>
<td>Stereoelectronic Effects</td>
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<tr>
<td>Nov. 1-8</td>
<td>Transition State Theory and Kinetics</td>
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<tr>
<td>10 - 17</td>
<td>KIE Experiments and Dynamic Kinetic Resolutions</td>
</tr>
<tr>
<td>22 – Dec. 1</td>
<td>Kinetics in Catalysis – Organometallic and Enzyme Reactions</td>
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<tr>
<td>6 – 8</td>
<td>Radical Reactions and Carbenes/Nitrenes</td>
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**My Philosophy:** I am teaching this mechanism class with a significant focus on physical organic chemistry. Physical organic concepts explain why reactions occur the way they do, and therefore are the basis of mechanistic understanding. As a result, for this class you should focus less on memorizing specific reactions or problems and more on understanding why a reaction proceeds the way that it does, or why a particular molecule exhibits chemical characteristics.

Please do not hesitate to ask a question because you think it is too “simple.” Questions also help me gauge what I need to explain further and what the class seems to be understanding well.

What is most important to me is that you

**If you feel overwhelmed and hopeless, please come to my office hours or make a special appointment with me before giving up on the class!!**

Often there is a fairly straightforward way for me to help you start to make sense of things.
Studying: Because this class is highly literature focused, and largely flipped, much of your learning will be done in a more independent manner than you may be used to. This class is designed to prepare you for graduate level work. Learning how to teach yourself and how to distill important concepts from journal articles is a pivotal skill.

Please keep in mind that you cannot simply memorize your way through this class. You have to understand the concepts and then apply them in new ways. You should tailor your studying habits to support this ability. For instance, if after getting a problem set back, you realize that you did it incorrectly, make sure you fully understand what the right answer is and why. Make sure you could reach that correct answer on your own.

If you feel overwhelmed and hopeless, please come to my office hours or make a special appointment with me before giving up on the class!! Often there is a fairly straightforward way for me to help you start to make sense of things.

Reading: This class will require significant at-home learning before participating in class discussion. All major lecture sections will be posted online, for you to watch at your convenience. I will assign primary literature (journal articles) as well as book chapters on the topic that will be discussed, and will assume you have read the material before coming to discussion. If you do not do the reading you will fall behind in understanding.

**Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).**

4 Learning Objectives

1) Moderate understanding of a variety of central tenants of mechanistic rationale in organic chemistry, arising often from physical organic principles

2) Increased comfort with critical thinking at a graduate level, including comfort in self-learning from primary literature

3) An ability to propose reasonable arguments to explain or predict mechanistic outcomes, arising both from canonical transformations as well as non-canonical transformations

4) An understanding that not everything is known or understood, and that we can only propose mechanisms but never “prove” them to be true. As such, open discussion and intellectual exchange is necessary to advance mechanistic insight.
5 Grades

Grade Distribution: The following percentages reflect the weight each examination will have on your final status in this class:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Midterm</td>
<td>24%</td>
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<tr>
<td>Presentations</td>
<td>24%</td>
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<tr>
<td>Problem Sets</td>
<td>18%</td>
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<tr>
<td>Participation</td>
<td>10%</td>
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<tr>
<td>Final Exam Presentation</td>
<td>24%</td>
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<tr>
<td>Total</td>
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Problem Sets Due: Sept 8, Oct 6, Nov. 17
Midterm: Oct 29,* 9:30 am -12:30 pm
Final Exam Presentations: Dec. 10, all day

Midterm: The midterm will be conducted in person. *schedule pending approval

Final Exam: The final exam will be a final presentation. Further details will be provided in a separate document.

The final examination date and time will be announced by the Registrar generally by the fifth week of classes and it will be announced on the course ICON site once it is known. Do not plan your end of the semester travel plans until the final exam schedule is made public. It is your responsibility to know the date, time, and place of the final exam. According to Registrar’s final exam policy, students have a maximum of two weeks after the announced final exam schedule to request a change if an exam conflict exists or if a student has more than two exams in one day (see the policy here).

Phones and electronic communication devices of any type are prohibited during exams.

Grading Style: Each problem will have a set number of points associated with it, which will be annotated and clear. Students will be awarded partial credit, at the discretion of the grader, if parts of the problem are answered correctly and parts of the problem are not. While the annotation of the problem may show negative or deducted points, it is not possible to have less than zero points for a particular problem. The student only earns positive points or none overall for each question. This style is used for both the problem sets and the exams.

Presentations: Roughly every two-three weeks you will be tasked to present a topic to your classmates to walk them through an explanation or rationale. You will be given the topic in a previous class, and will have your assigned group. You will make slides (can be powerpoint, drawn and take a picture, etc) for your short (~10 min) presentation to the class. These presentations should be interactive and educational, and you are encouraged to ask questions of other people’s presentations.

Participation/Problem sets Credit: You are expected to participate in class on a regular (biweekly) basis. During our class time, I will often pose questions that you can volunteer to answer, or I may call on students specifically if they have not participated recently. If you display a clear lack of
preparation (did not do the reading) or refuse to participate, this can result in a deduction of your participation credit. However, if you simply answer a question incorrectly but have clearly done the requisite reading, this will not impact your participation score.

There will be three problem sets this fall semester. You may return the problem sets in class, deliver the problem sets to my office (there will be a place near my door), or you can scan them, or take a picture and send me the pictures. I will grade them and provide a score based on your work, along with feedback on what you might focus your attention on moving forward.

Return and Re-grading of term Exams: Any requests for a re-grade must be made in writing. When making a request for a re-grade, please note that I will often re-grade the entire exam, not just the questions that you feel were graded incorrectly.

Final Grade Calculations:
Weighted totals for each student will be computed (sum of each assessment multiplied by its weight) and all students will be ranked based on their overall total.

- The instructor will look at the overall totals to assess variations in achievement (i.e. excellent, good, satisfactory, poor and failure performances) and convert the numeric scores into letter grades.
- Where possible, the instructor will use natural breaks in the grade distribution to set grade boundaries.
- There is no preset grade distribution (i.e. no policy is in place that the top 10% of class receives an A and so on). Performance and demonstration of mastery of the topic will determine absolute grades.
- After the midterm, I will show a histogram of the overall grade distribution of the class including all evaluated assessments to that point. I will outline the letter grades that I would assign to each section of the histogram as if the class ended that day to provide further insight into how performance is converted to letter grade.

6 Academic Honesty

All students in CLAS courses are expected to abide by the CLAS Code of Academic Honesty. Graduate academic misconduct must be reported to the Graduate College according to Section F of the Graduate College Manual.

University Policy: We are bound by the Code of Academic Honesty, in which each of us agreed to do, “My own academic work and to excel to the best of my abilities, upholding the IOWA Challenge (http://thechallenge.uiowa.edu/meet/index.html). 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.”

Students are expected to follow the Code of Student Life; academic dishonesty will be reported to University College and the student may be placed on disciplinary probation for the remainder of his or her undergraduate work at the University of Iowa. If I determine that any assignment was not written solely by the student, the student will receive a zero (0) on the assignment. In general, the
decision of the Instructor may be appealed to the Associate Dean of University College, and then to the Provost, and so on in accordance with University Policy.

**Examples:** Plagiarism and cheating include *but are not limited to* the following:

- Copying from another student’s exam or report
- Copying from primary published literature
- Altering a graded exam and handing it back for regrade

**Plagiarism:** I define plagiarism of written documents as using 7 or more consecutive words from the primary source, or using small “chunks” of wording (3-6 words) frequently (3 or more times within a 3 sentence sequence). Technical phrases that are generically used are not considered plagiarism and are acceptable. If you are unsure, don't hesitate to ask about any specific situations in office hours.

There are several methods used to monitor academic dishonesty, including online writing comparison/search software and photocopying of graded exams before they are passed back.

*I have a zero tolerance policy for cheating and plagiarism in my class*

### 7 Problem Sets

Problem set assignments will be available on ICON up to one week prior to the due date. They will be graded within two weeks and sent back to you digitally or through a pickup location.

### 8 Drop Deadline

You may drop an individual course before the deadline; after this deadline you will need collegiate approval. You can look up the drop deadline for this course [here](#). When you drop a course, a “W” will appear on your transcript. The mark of “W” is a neutral mark that does not affect your GPA. Directions for adding or dropping a course and other registration changes can be found on the Registrar’s website. Undergraduate students can find policies on dropping and withdrawing [here](#). Graduate students should adhere to the academic deadlines and policies set by the Graduate College.

### 9 Special Accommodations

Due to unusual circumstances in 2021 (Covid-19, inclement weather effects, economic changes, etc), there may be sudden changes to your living and educational environment that will have or may have already created barriers to your learning. Please communicate with me early and often regarding any changes to your situation that would affect your performance or participation in this class. It is my intent to make this class as equitable and accessible as possible.

I want to hear from anyone who has a disability that may require some modification of class requirements. Please contact me by e-mail. Special academic arrangements for students with disabilities are handled in cooperation with Student Disability Services ([www.uiowa.edu/~sds](http://www.uiowa.edu/~sds)). Students who feel they need special accommodations for any aspect of the course are encouraged to contact SDS and to speak with the instructor early in the semester, so that accommodation can be
made as soon as possible. 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/)

10 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. USC 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.

11 SEVERE WEATHER

In severe weather, class members should seek appropriate shelter immediately. The class will continue, if possible, when the event is over. For more information on Hawk Alert and the siren warning system, visit http://hawkalert.uiowa.edu or http://police.uiowa.edu.

12 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/).

13 NON-DISCRIMINATION 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.
14 **CONCERNS ABOUT THE INSTRUCTOR**

Students with a complaint about a grade or a related matter should first discuss the situation with me (if requested by either party, in a recorded zoom session), and finally with the Director or Chair of the school, department, or program offering the course. Complaints should be made within six months of the incident.

Undergraduate students should contact [CLAS Undergraduate Programs](#) for support when the matter is not resolved at the previous level. Graduate students should contact the [CLAS Associate Dean for Graduate Education and Outreach and Engagement](#) when additional support is needed.

15 **CLASS BEHAVIOR EXPECTATIONS**

Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the Code of Student Life.

In the event that a student disrupts the classroom environment through the failure to comply with the reasonable directive of an instructor or the University, the instructor has the authority to ask that the student immediately leave the space for the remainder of the class period. Additionally, the instructor is asked to report the incident to the Office of Student Accountability for the possibility of additional follow-up.

16 **ABSENCES**

See Special Accommodations section 9 for long term or recurring absences. Students are encouraged to use the CLAS absence form on ICON under Student Tools. University regulations require that students be allowed to make up examinations which have been missed due to illness or other unavoidable circumstances. Students with mandatory religious obligations or UI authorized activities must discuss their absences with me as soon as possible. Religious obligations must be communicated within the first three weeks of classes.

17 **UNIVERSITY POLICIES**

- [Accommodations for Students with Disabilities](#)
- [Basic Needs and Support for Students](#)
- [Classroom Expectations](#)
- [Exam Make-up Owing to Absence](#)
- [Free Speech and Expression](#)
- [Mental Health](#)
- [Military Service Obligations](#)
- [Non-discrimination](#)
- [Religious Holy Days](#)
- [Sexual Harassment/Misconduct and Supportive Measures](#)
- [Sharing of Class Recordings](#)