Professors:  Ned B. Bowden

Class Times:  The class is online. I will post the lectures for each week by Sunday night. You should view each week’s lectures the week they are posted. Please note that we do not have class on Tuesday, March 2nd and Wednesday, April 14th. We also do not have a Spring Break.

Final Exam:  The date of the final exam will be announced during the semester. Note: I do not have a make-up final. If you miss the final, you have to either take a zero or take the final at the end of the Summer or Fall 2021 semesters.

Contact Info:  Ned Bowden  
W425 Chemistry Building  
335-1198  
Ned-bowden@uiowa.edu

Course Website:  ICON, http://icon.uiowa.edu

IMPORTANT:  To reach me or set an appointment please send an email and I will try to respond quickly.

Office Hours  
Ned’s office hours are on Tuesdays from 10:00-11:30 AM and Wednesdays from 9:30-11:00 AM on zoom. The zoom link will be posted on ICON.

I run my office hours as question and answer sessions. Please come with questions about what you are having trouble understanding. We can work through problems to help you understand the material. Since the office hours will be over zoom, we will have to alter things slightly. I have a tablet PC that I will use to draw structures, you can expect to draw structures too and you can
either draw on your computer or on a piece of paper and hold it up to share. We will have to be creative about how we collaborate during office hours.

I reserved these times for you and am happy to meet and discuss problems you are having. If these times do not work for you, we will set an appointment by email to meet another time.

**Discussion Sections**
The course TA’s will lead these discussions. This time is reserved for problem solving, discussion of lecture material, and explanations of exam answers. I strongly encourage you to attend these sections as the TAs are excellent and can help you learn the material. Their email addresses and office hours are given below. All TA office hours are on line and links will be posted on ICON.

<table>
<thead>
<tr>
<th>TA</th>
<th>email</th>
<th>office hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jay Bell</td>
<td><a href="mailto:jay-bell@uiowa.edu">jay-bell@uiowa.edu</a></td>
<td>Thursday 1130-1220</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Friday 1130-1220</td>
</tr>
<tr>
<td>Grant Forsythe</td>
<td><a href="mailto:grant-forsythe@uiowa.edu">grant-forsythe@uiowa.edu</a></td>
<td>Tuesday 230-320</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wednesday 230-320</td>
</tr>
</tbody>
</table>

**Why Are You in This Class?**
Organic chemistry is a beautiful subject! I have taught this class before and know that most of you are “pre” students. By this statement I mean that you are premed, prenursing, prepharmacy, prelaw, or another variant. This class is required for entrance into a professional school or is needed to prepare you for a nationwide test. These are all fine reasons for taking this class and I am glad you are here. My goal is to teach you some of the most beautiful parts of organic chemistry in hopes that it can help you learn the material in other, closely related courses.

In this class you are going to learn how to think critically. Organic chemistry is more than the memorization of a bunch of facts and it is certainly more than applying a few simple rules to get the right answer. **Organic chemistry is 90% science and 10% art;** I can teach you the right rules and how to think about problems in organic chemistry, but you must learn how to apply these rules. This class is considered tough because it is unlike others that you have taken before. You will not have a series of equations from which you may derive answers. You will have a bunch of facts and you must learn how to think critically to solve problems. Therefore, you must learn to think like a detective and piece answers together with everything that you know. I will help you as much as I can to learn these skills.

**How to Study for This Class**
This class is not one where you can look over the material right before the exam and expect to do well. This class requires constant and diligent effort in order to do well. We compiled a list of suggestions to help you succeed. These are only suggestions; some of you may be naturals at organic chemistry and can get by with less work, but for the other 99% of the class this list will help you get the grade that you want.

1. Study for this class at least one hour a day. Organic chemistry is hard to learn but with consistent effort you can do it. Some of you will spend more time; others will spend less time depending on your abilities, motivation, and expectations for a grade.

2. Do all of the homework and suggested problems. You will learn from doing the homework, you will learn by struggling with the homework! Learning occurs when you are forming questions in your mind and seeking the answers; learning does not happen when you are copying
someone else’s work. Your grade in this class depends on your test taking skills so use the homeworks to learn the material.

3. Form study groups.

4. Skim the text before coming to class.

5. Go to the discussion sections and ask questions.

6. Rewrite your lecture notes. You will be surprised as to how much this will help you learn the material.

7. Study with a pencil and paper nearby! You will learn the material best by writing it down in your notebook as you are studying. Most people don’t learn well by sight alone, you must use your hands when you study.

What You Should Take Away From This Class
1. The ability to draw mechanisms for simple organic reactions
2. Knowledge of common reactions
3. Understand functional groups and how to convert from one to another
4. Understand how to apply organic chemistry to a variety of fields including most things biological.
5. The ability to name molecules and recognize key functional groups
6. Understand some of the how and why of organic chemistry.

Exams
There will be three hourly exams on the following days from 8:45-10:15 PM.

Exam 1: Wednesday, February 24: This test will cover Chapters 1-5
Exam 2: Wednesday, March 31: This test will emphasize Chapters 6-10, and it will cover Chapters 1-10
Exam 3: Wednesday, April 28: This test will emphasize Chapters 11 and 12 as well as Spectroscopy A, B, and C. This test will cover Chapters 1-12 as well as Spectroscopy A, B, and C.

Each test is comprehensive over the whole semester. This means that although Test 2 will emphasize chapters 6-10, material from chapters 1-5 may appear on the exam. You should be prepared to answer questions from chapters 1-5 on Test 2. This is unavoidable as organic chemistry builds on itself so material from chapters 6-10 relies on the material presented in chapters 1-5.

I will make announcements about the exams a week prior to the date of the exam. I will clarify the format of the exam, what you will need to do for the exam, and what will be expected.

We will grade the exams as fairly and rapidly as possible. Your grade will be posted on ICON as soon as it is available.

Final Exam
The final exam will be comprehensive over the whole semester. The date and time of the final exam will be announced by the registrar during the semester.

On-line Homework
There is on-line homework on Aleks for a brief review of key concepts from Principles of Chemistry and the first three chapters of your organic chemistry textbook. Students who struggle in organic chemistry often start that struggle in the first three chapters where we discuss many of the key, fundamental concepts in organic chemistry. Failure to master these concepts can lead to many challenges later and prevent a student from doing well. Poor performance in the first three chapters correlates strongly with a student getting a grade of D or F or having to withdraw from the course.

The Aleks homework is to set up to help you get off to a strong start this semester. The assignments are due on different days, but you should complete an assignment for a chapter as we cover that chapter.

You should check Aleks to ensure that you are completing the assignments on time.

**Suggested Problems**
The Aleks problems are an excellent starting point to learning the material, but to excel in this course you need to work on problems in the book too. These problems are not collected or graded, but it is clear from how students do on the exams who did them and who did not do them.

I strongly encourage you to work the problems at the end of each chapter as we finish discussing the chapter in class. These problems are broken up into different topics; you should attempt a few of the problems from each topic until you are comfortable that you understand it.

A poor, but common way, to do the book problems to look at the problem and answer key. Many students will look at a problem in the book, write nothing down, and then look at the answer key. Is this how I will test you? Will I ask you a question, give you the answer, and then ask you if the answer is correct? The best way to do the book problems is to look at the problem, write down your best answer, and then look at the answer key. It is O.K. to struggle with the material, that is how you learn! You are expected to not know all of the answers immediately, you will learn quite a bit by determining the correct answer without the answer key.

**Grading**
This course will be graded on an absolute scale based on hourly exams, homework, and a final exam. At the end of the semester I will calculate your score out of 100% and assign grades as shown below. I will not raise these standards.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>100-97</td>
</tr>
<tr>
<td>A</td>
<td>96.99-82</td>
</tr>
<tr>
<td>A-</td>
<td>81.99-78</td>
</tr>
<tr>
<td>B+</td>
<td>77.99-72</td>
</tr>
<tr>
<td>B</td>
<td>71.99-67</td>
</tr>
<tr>
<td>B-</td>
<td>66.99-61</td>
</tr>
<tr>
<td>C+</td>
<td>60.99-57</td>
</tr>
<tr>
<td>C</td>
<td>56.99-51</td>
</tr>
<tr>
<td>C-</td>
<td>50.99-47</td>
</tr>
<tr>
<td>D+</td>
<td>46.99-45</td>
</tr>
<tr>
<td>D</td>
<td>44.99-42</td>
</tr>
<tr>
<td>D-</td>
<td>41.99-40.01</td>
</tr>
<tr>
<td>F</td>
<td>40-0</td>
</tr>
</tbody>
</table>
You will be graded on the three hourly exams, homework, and a final exam. Your final grade will be calculated as follows.

Three hourly exams: 60%
On-line homework: 10%
Final exam: 30%

Your test scores will be posted on ICON.

Regrades
If you feel that your test has been graded unfairly you can ask for a regrade. To get a regrade you must send an email to ned-bowden@uiowa.edu and state which question you want regraded and why. You must have a good reason for a regrade or your answer will not be regraded. Make a case in your email why your answer is correct or deserves more points. Please refrain from submitting half of your exam for a regrade, those who do this are often surprised to find that they lost rather than gained points. You must have a good reason for a regrade. You have one week after each exam has been graded to request a regrade on that exam.

Supplemental Instruction
There will be supplemental instruction for this course. The SI leader is an undergraduate who took organic chemistry and did excellent. She will hold weekly sessions to help you better learn organic chemistry. SI has worked well in the past and helped many students, if you are struggling, they are an additional resource.

The SI instructor is Sydney Stork and her sessions will start on week two and be online. Here is the link: https://apps.its.uiowa.edu/swipe2/site/arc/signin/virtual/orgchem1

Sundays: 4:00-4:50 PM
Tuesdays: 1:00-1:50 PM
Thursdays: 11:00-11:50 AM

Cheating
Our scientific environment is maintained through the actions of its members and the trust we place in one another. Scientists are expected to remain honest in their words and actions. When this trust is broken the results are often severe and career threatening. One should not cheat on the false assumptions that 1) no one is harmed if no one is aware of the cheating or 2) it is alright to cheat if you aren’t caught. A good scientist will hold themselves to a higher standard where cheating, even if it isn’t discovered, is wrong.

With this important responsibility comes the privilege of being a member of a community that values openness and truth. As you are all scientists in training we will expect you to act accordingly and with an upright manner. Anyone caught cheating will flunk and will be reported to the administration.

Discussion Sections
The TAs will run the discussion sections. These times are reserved for you to work problems with the TAs and to ask questions. The TAs are an excellent resource and can help you to understand the important points in each chapter. I urge you to attend the discussion sections and to work with the TAs to improve your understanding of the material.

If you cannot attend your discussion section, feel free to attend a different one.
**Make-up Exams**
Make-up exams will only be provided under exceptional circumstances. A valid, written excuse must be provided prior to a missed exam to the instructor. If you anticipate having a conflict with an exam, please email me ahead of time. If you miss an exam for unforeseen reasons and have not provided a valid, written excuse to the instructor prior to the exam, you have one week after the exam to provide me with a valid, written excuse.

The make-up exam will be held on Friday, May 7th in the evening. There is only one make-up exam for the three hourly exams, everyone will take the same make-up exam. If you miss two of the hourly exams, the make-up exam will count double. The make-up exam is comprehensive for the semester.

**Course Objective**
Organic chemistry books are written such that someone can earn money from their sale, to sell a book it must cover more material than is reasonable for a one year course. We will try to cover as much of the book as possible without going too fast. We will cover the chapters 1-14, chapter 21, and Spectroscopy A, B, and C of the textbook.

**Required Textbook**
Janice Smith “Organ Chemistry with Biological Topics”, sixth edition, McGraw Hill publishing

**Suggested Textbook**
David R. Klein, Organic Chemistry 1 as a second language, 2nd edition, John Wiley and Sons. This book is an excellent vehicle to help you learn organic chemistry and would be wise to purchase.

**Suggested Model Kit**
The bookstore offers model kits and I strongly suggest purchasing one. It will greatly help you to “see” organic molecules in three-dimensions.

You can also order model kits from Duluth Labs (https://duluthlabs.com/collections/molecular-sets). The model kits from Duluth Labs are also sold on Amazon (https://amzn.to/2KMdcYQ). I like their model kits.

**Disabilities**
I would like to hear from anyone who has a disability which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made. Please contact me during office hours.
Absences and Attendance
Students are responsible for attending class and for contributing to the learning environment of a course. Students are also responsible for knowing course absence policies, which vary by instructor. All absence policies, however, must uphold the UI policy related to student illness, mandatory religious obligations, including Holy Day obligations, unavoidable circumstances, and University authorized activities (https://clas.uiowa.edu/students/handbook/attendance-absences). Students may use the CLAS absence form to aid communication with the instructor who will decide if the absence is excused or unexcused; the form is located on ICON within the top banner under “Student Tools.”

Academic Integrity
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 related grade and is reported to the College which applies an additional sanction including suspension. Outcomes about misconduct are communicated through UI email (https://clas.uiowa.edu/students/handbook/academic-fraud-honor-code).

Accommodations for Disabilities
UI is committed to 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) by registering with Student Disability Services (SDS). The student is then responsible for discussing specific accommodations with the instructor. More information is at https://sds.studentlife.uiowa.edu/.

Administrative Home of the Course
The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs its add/drop deadlines, the second-grade-only option, and related policies. Other UI colleges may have different policies for courses offered by that college. CLAS policies may be found here: https://clas.uiowa.edu/students/handbook.

Classroom Expectations
Students are expected to comply with University policies regarding appropriate classroom behavior as outlined in the Code of Student Life (https://dos.uiowa.edu/policies/code-of-student-life/). This includes related UI policies and procedures that all students have agreed to regarding the COVID-19 pandemic. Particularly, each student must wear a face mask when in a UI building, including a classroom. The density of seats in classrooms has been reduced, and in some instances, this will allow 6 feet or more of distance while other cases, it may be less. Regardless, wearing a face mask and maintaining as much distance as is possible are vital to slowing the spread of COVID-19. In the event that a student disrupts the classroom environment through the failure to comply with a reasonable directive of an instructor or of the University, the instructor has the authority to ask that the student to leave the space immediately for the remainder of the class period. Additionally, the instructor is asked to report the incident to the UI Office of Student Accountability, with the possibility of additional follow-up with the student. Students who need temporary alternative learning arrangements (TALA) for a future semester related to COVID-19 should visit this website for more information: https://coronavirus.uiowa.edu/temporary-alternative-learning-arrangements-tala.

Class Recordings: Privacy and Sharing
Some sessions of a course could be recorded or live-streamed. Such a recording or streaming will only be available to students registered for the course. These recordings are the intellectual property of the faculty, and they may not be shared or reproduced without the explicit written consent of the faculty member. Students may not share these sessions 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 in some cases is a violation of the Federal Education Rights and Privacy Act (FERPA).

Communication and the Required Use of UI Email
Students are responsible for official correspondences sent to the UI email address (uiowa.edu) and must use this address for all communication within or with UI (Operations Manual, III.15.2).

Complaints
Students with a complaint about an academic issue should first visit with the instructor or course supervisor and then with the Chair of the department or program offering the course; students may next bring the issue to the College of Liberal Arts and Sciences. See this page for more information: https://clas.uiowa.edu/students/handbook/student-rights-responsibilities.

Final Examination Policies
The final exam schedule is announced around the fifth week of classes; students are responsible for knowing the date, time, and place of a final exam. Students should not make travel plans until knowing this information. No exams of any kind are allowed the week before finals with a few exceptions made for particular types of courses such as labs or off-cycle courses: https://registrar.uiowa.edu/final-examination-scheduling-policies.

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 on the basis of race, class, gender, sexual orientation, national origin, and other identity categories set forth in the University’s Human Rights policy. For more information, contact the Office of Equal Opportunity and Diversity (https://diversity.uiowa.edu/eod; +1 319 335-0705 or diversity.uiowa.edu)

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 must uphold the UI mission and contribute to a safe environment that enhances learning. Incidents of sexual harassment must be reported immediately. For assistance, please see https://osmrc.uiowa.edu/.
Outline of semester

Week one (January 24\textsuperscript{th}): Syllabus and Chapter 1
Week two (January 31\textsuperscript{st}): Chapter 2 and begin Chapter 3
Week three (February 7\textsuperscript{th}): Finish Chapter 3 and all of Chapter 4
Week four (February 14\textsuperscript{th}): Chapter 5
Week five (February 21\textsuperscript{st}): Chapter 6 and Test 1
Week six (February 28\textsuperscript{th}): Chapter 7
Week seven (March 7\textsuperscript{th}): Finish Chapter 7 and Part of Chapter 8
Week eight (March 14\textsuperscript{th}): Finish Chapter 8 and all of Chapter 9
Week nine (March 21\textsuperscript{st}): Chapter 10
Week ten (March 28\textsuperscript{th}): Chapter 11 and Test 2
Week eleven (April 4\textsuperscript{th}): Chapter 12
Week twelve (April 11\textsuperscript{th}): Spectroscopy A and B
Week thirteen (April 18\textsuperscript{th}): Spectroscopy C
Week fourteen (April 25\textsuperscript{th}): Chapter 21 and Test 3
Week fifteen (May 2\textsuperscript{nd}): Chapter 13
Dear all,

I know that organic chemistry is not an easy class and it will get harder as the semester progresses. Learning how to study is very important as this course may be very different from what you have taken before.

Two years ago I asked some of the top students in Organic Chemistry for Majors what they did to prepare for the exams. I hope their responses help provide motivation/insight/suggestions that you need for success too. Their unedited comments are below.

You can learn this material. It may not be easy for most of you, but you can do it. It requires time, effort, practice, and an engaged brain.

Best, Ned

**Student 1**

To study for the exams, I make sure I am prepared by watching every lecture AND taking notes on the print outs as I watch. Doing the homeworks is good preparation as well. I do most of it/all that I can individually, but then I meet and study with a group in order to get help and help others. Working in a group is really helpful. I also take the practice exams before each actual exam along with looking over my notes several times.

**Student 2**

The homework is the most helpful thing for me - it forces me to sit down and review the concepts each chapter covers. I try to start the homework about a week before it is due so I am not rushed through it. I also have a group that gets together to work through the problem sets about twice each week. Within the whole group, at least one of us usually has a good idea of the correct answer for challenging problems. We disagree frequently on how to approach a problem, but that's good because it forces us to analyze the material more closely. Working on homework in a group has been a major part of being able to learn these concepts.

I also make sure to watch each lecture online and take notes on the provided slides as well. Watching the lectures online before lecture makes working problems during lecture time more beneficial because I actually have an idea of what is going on.

Before the second exam I read chapter 7 of Jones/Fleming. I also skimmed through each practice problem in the book to get an idea of what I should be able to do for the test. I did not work out every single one, but I worked out the ones that dealt with concepts I found more difficult. Taking the practice exam was helpful as well - it gave me an idea of what I needed to spend more time on and helped to guide my studying.

The day before the exam I went through all of the notes from online lectures and from lectures in Van Allen and noted anything I was confused by. I then went over that material plus the material from exam 1 (briefly) to complete my preparation for exam 2.

**Student 3**

I always try to watch the online lectures before class so I know what's going on with the practice problems in class. For the Sn2, E2, etc chapter in particular, I made sure to start the homework early and do little chunks each night. The biggest thing I did that was helpful was to make charts
or study guides summarizing the general trends, and make notes about things I tended to mess up so I don't do it again. I also study in a group a lot.

Student 4

What works for organic chemistry is exactly what you recommended at the beginning of the semester: listen to the lectures before class, make sure to understand the problems from class, do the homework before the night before it is due to really understand it, go over the practice exam, go through the problems in the back of the book, and come into office hours with any questions. I try to make sure that I understand the concepts behind the problems, and not just look at the answer to the question. The "Organic Chemistry as a Second Language" book also really helped me understand the different kinds of reactions for this exam. Another thing that really helps me is going over my homework after it is graded so that I understand the types of mistakes that I make so I know what to watch out for on the exam.

Student 5

I usually read the chapters in the book before we discuss them in class, so I have a solid background with which to approach class problems. I pay special attention to the "worked problems" in the book and try to understand how the writers are approaching these problems and coming to the answers. When we have problems in class that I can't solve, I try to go back after class to figure out what I was doing wrong and how I should have approached the problem.

Practice problems. Lots and lots of practice problems. I also went back and listened to the online lectures for Chapter 7, since that was the most difficult chapter on this test for me.