Chemistry 4:122
Organic Chemistry
Fall 2010

Professor: Ned B. Bowden

Class Times: MWF 9:30-10:20 in 100 PH
Tests are scheduled on Wednesdays from 5:30-7:00 PM
Final exam is scheduled for Thursday, December 16\textsuperscript{th} at 9:45 AM
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 Spring 2011 session.

Contact Info: W425 Chemistry Building
335-1198
chemistry121@yahoo.com

IMPORTANT: To reach me or set an appointment, please send an email and I will try to respond quickly. I set up a special email account exclusively for this class, please use the Yahoo address. I get numerous emails sent to my uiowa account, and I often take a day or two to respond to these email messages. Your education is critical to me, so I set up a special email account on Yahoo so that I know which emails to respond to ASAP. At the conclusion of the semester you may reach me at my U of IA email account.

Office Hours and Problem Solving Tuesdays
I reserved these time 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.

My office hours are Tuesdays from 4:30 to 5:50 P.M. and Mondays from 10:20-11:50 A.M. The office hours on Monday morning are in my office.
We will have “Problem Solving Tuesdays” beginning on August 31\textsuperscript{st}. They will be held every Tuesday from 4:30 to 5:50 PM. I will bring other organic chemistry books so that we may work through questions that are not in your textbook but cover the same material. I strongly encourage you to come with questions, we can tailor these meetings to cover what you are struggling with.

This time period is specifically designed to give you a chance to work problems with some assistance or to clarify a concept that you are struggling with. You will get the most out of these sessions if you have done the homework, read the chapters, and applied yourself towards learning the material prior to each session. I am holding these sessions in a large lecture hall so that everyone may come and partake. \textit{I want everyone to do well in this class and learn to appreciate some of the depth of organic chemistry}. It is a tough subject for many, but there are unifying concepts that greatly simplify the learning process and allow one to organize their thinking.

These problem solving sessions will also be review sessions for exams.

The full room assignments are not set yet, I will post them on the syllabus as soon as they are available. Please check back here for the room assignments.

August 31\textsuperscript{st}: Seaman Center 1505

**Discussion Sections**
A TA 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 TA’s are excellent and can help you learn the material.

I am often asked if by students if they can attend a discussion section they are not registered for. I understand that nearly every discussion section is filled to capacity, so some of you had to register for a discussion section you may not be able to attend. That stinks! If you were forced to register for a discussion section that you could not attend, feel free to attend one that fits into your schedule. If we have too many people attending a discussion section, we will have to move the room or limit attendance to those already attending.

**Teaching Assistants**
The TAs are listed below. Their office hours will be posted to the syllabus as soon as that information is available. All office hours are in the TA room on the second floor of chemistry.

Tyler Long (tyler-long@uiowa.edu)
Office hours: Monday and Friday 10:30-11:30.
Joe Sumrak (joseph-sumrak@uiowa.edu)

**Where to Find Course Notes and Tegrity**
I will lecture using a Tablet PC and an outline of the notes will be posted on ICON. These notes are incomplete, but they serve as a starting point for lecture. You should print them out and bring them to class.
The lectures and problem solving sessions will be recorded using Tegrity. They will be posted to Tegrity by the end of the day on which they were recorded. The problem solving sessions will take longer to load onto Tegrity, but I hope they can be posted by the end of the day on which they were recorded.

Although Tegrity works very well, glitches may occur that may prevent a lecture or problem solving session from being posted. I hope none of these glitches will occur, but if they do the lecture will be “lost”.

**Why Are You in This Class?**

Organic chemistry is a beautiful subject! I 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 you may remember it down the road when I am one of your patients in an emergency room, dental office, or pharmacy.

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. I 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.

If you need extra tutoring, it is available through the University Housing Tutoring Program at http://housing.uiowa.edu/departments/reslife/academic_initiatives.html. I am not affiliated with this program, I am passing the information to you nonetheless.

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. This is a three semester hour class so you should spend six hours a week outside of class learning this material. 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 happens 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.

8. Read the book. Reread the book. Rereread the book. The class is based on the material in the book so if you are happy with the material in the book you will do well in the class.

9. Study regularly!

**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 5:30-7:00 P.M.

Wednesday, Sept. 22nd
Wednesday, Oct. 20th
Wednesday, Nov. 17th

The room assignments for the exams will be posted on ICON and the syllabus before the exam. The exams will be C20 PC and W128 CB, but this is subject to change. Please check ICON or this syllabus prior to an exam. I will also make announcements in class as to the room location.

Leave all textbooks, models, notes, etc. at home or you will be required to leave them in the front of the classroom during the exam. The tests will be written to require short answers; I have yet to give a multiple choice question on any exam. The exams will be closed book and the answers should be written in blue or black ink. Exams written in pencil will not eligible for a regrade. Exams will be returned on the first Friday following the exam and will be available at the

Syllabus-4
chemistry center on the second floor of the chemistry building (E225 CB) immediately after that class. Your grades will be posted on ICON as soon as possible.

Each exam is comprehensive but will emphasize material since the previous exam. Organic chemistry builds on what was learned before, it is important to continually add to your fountain of knowledge. Exams must touch on material that was learned earlier in the semester, but in most instances I will use concepts that we covered since the previous exam. It is wise to review all of the material since Day 1 for each exam.

Also, the exams are on Wednesdays. Anything that is covered before the exam is fair game for the exam. I more or less follow the book, so you will be able to determine where I stopped before the exam. If you have any doubt, study for the whole chapter that we are working on.

I will put old exams and their answer keys on line. Old exams are a poor method to determine what material will be covered on your exam. The reason for this statement is that I may emphasize different material from semester to semester, so the questions and material will differ from year to year. Do not feel that if you did well on an old exam you will do well on the regular exam. Before an exam, I will typically tell you what types of questions to prepare for, but I will not tell you what will or will not be on the exam. If it is in the book or was covered in class, it is fair game.

The final exam will be comprehensive.

Homework
Homework is critical to help you learn the material. You should expect to work all of the problems in each chapter. Unfortunately, we do not have the ability to fairly grade homework so it will be up to each individual to complete it. To provide motivation to do the homework, each exam will have at least 1/3 of the points taken from questions pulled directly from the suggested problems found at the end of the syllabus.

Grading
The College of Liberal Arts and Sciences strongly suggests the following grade distribution.
18% A
36% B
39% C
5% D
2% F

The grade distribution will be close to these values, but it may vary based on class performance. Plus and minus grades will be given, they are left to the discretion of the instructor at the end of the semester.

You will be graded on the four hourly exams, quizzes, and a final exam. Your final grade will be calculated as follows.

Three hourly exams: 70%
Final Exam: 30%
Your test scores will be posted on ICON. I will post the grade distributions for each exam on line so that you know how you did on each exam.

**Regrades**
If you feel that your test has been graded unfairly you can ask for a regrade. Write the reason for your regrade on the front of the test and submit it to me or the chemistry center after class within one week after the exam was available to be returned. The whole exam may be regraded. Regrades are not possible on tests written in pencil or erasable ink.

**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 are ill, you must provide a written excuse signed by a doctor. If you anticipate having a conflict with an exam, please see 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. There will only be one make-up exam for each hourly exam and it will fall on the second Friday after the exam from 5:30 to 7:00 P.M.

**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 I will expect you to act accordingly and with an upright manner. Anyone caught cheating will flunk this class and will be reported to the administration.

**Surveys**
I will post a periodic survey on ICON to gauge how things are going such that I can alter things if necessary. These surveys will be anonymous and I will appreciate it if you take the time to complete them. I will try to figure out how to give an extra point or two to those who complete a survey. I will announce in class when a new survey is up, and I will also post a notice on ICON.

**Attendance**
Attendance is not mandatory but encouraged. I may introduce material outside of the book, you are responsible for learning that material as it may appear on an exam.

**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 finish chapter 25 and then pick selected chapters to cover based on how much time is available.
**Required Textbook**

**Suggested Textbook**
David R. Klein, Organic Chemistry II 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.

**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 my office hours.

**Classroom Cleanliness**
We meet in a large lecture hall that is used for class meetings most of the week. This room often becomes cluttered with trash such that classes that meet late in the day have to climb over trash to get to their seats. It costs over $110,000 to keep some of these large classrooms clean, so the money invested in cleaning could pay for the education of numerous students. Please remember to keep this room clean and to throw out your trash as you leave. It is the courteous thing to do.
**Required Announcements**

**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 Student Academic 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. Scroll down to k.11.)

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

**Academic Fraud**
Plagiarism and any other activities when students present work that is not their own are academic fraud. Academic fraud is a serious matter and is reported to the departmental DEO and to the Associate Dean for Undergraduate Programs and Curriculum. Instructors and DEOs decide on appropriate consequences at the departmental level while the Associate Dean enforces additional consequences at the collegiate level. See the CLAS Academic Fraud section of the *Student Academic Handbook*.

**CLAS Final Examination Policies**
Final exams may be offered only during finals week. No exams of any kind are allowed during the last week of classes. Students should not ask their instructor to reschedule a final exam since the College does not permit rescheduling of a final exam once the semester has begun. Questions should be addressed to the Associate Dean for Undergraduate Programs and Curriculum.

**Making a Suggestion or a Complaint**
Students with a suggestion or complaint should first visit the instructor, then the course supervisor, and then the departmental DEO. Complaints must be made within six months of the incident. See the CLAS Student Academic Handbook.

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

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

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

Syllabus-8
Suggested problems
Although you have an answer key, you should not use it until you are convinced that you have the right answer. Struggling with a problem is great, you will learn something by struggling with it until you have the correct answer. If you struggle, give up, and look at the answer key, you will have learned nothing.

These are some of the most interesting problems, feel free to do more of them.

**Suggested problems for Chapter 13**
Problems 1-16: These problems are integrated with the text
Problems 17, 18, 21, 23, 26, 27, 28, 29, 30, 31, 32, 34, 36, 37, 38, 40

**Suggested problems for Chapter 14**
Problems 1-32: These problems are integrated with the text
Problems 33, 35, 36, 38, 40, 42, 43, 44, 45, 47, 48, 50, 51, 52, 54, 55, 57, 59, 60, 61, 63

**Suggested problems for Chapter 16**
Problems 1-27: These problems are integrated with the text
Problems 28, 30, 31, 32, 34, 35, 38, 39, 40, 41, 43, 44, 46, 47, 48, 50, 51, 53, 55, 56, 57, 58, 59, 60

**Suggested problems for Chapter 17**
Problems 1-23: These problems are integrated with the text
Problems 24, 26, 27, 28, 29, 30, 32, 33, 35, 36, 39, 40, 41, 43, 45, 46, 48, 49, 50, 53

**Suggested problems for Chapter 18**
Problems 1-31: These problems are integrated with the text
Problems 32, 34, 35, 36, 38, 40, 44, 45, 47, 48, 50, 52, 53, 54, 56, 60, 61, 62, 64

**Suggested problems for Chapter 19**
Problems 1-27: These problems are integrated with the text
Problems 29, 31, 32, 33, 34, 36, 37, 39, 40, 43, 45, 46, 47, 48, 51, 52, 54, 55, 57, 59, 60, 61, 62

**Suggested problems for Chapter 20**
Problems 1-36: These problems are integrated with the text
Problems 37, 39, 40, 43, 45, 47, 48, 49, 51, 52, 53, 54, 55, 57, 60, 62, 64, 67, 68, 69, 71

**Suggested problems for Chapter 21**
Problems 1-43: These problems are integrated with the text
Problems 44, 46, 47, 48, 49, 51, 53, 54, 55, 58, 59, 61, 63, 65, 66, 67, 72, 73, 74, 75, 76, 78, 79, 81, 82, 83, 84, 86, 89

**Suggested problems for Chapter 22**
Problems 1-41: These problems are integrated with the text
Problems 43, 44, 45, 48, 49, 50, 52, 53, 54, 55, 56, 58, 59, 61, 62, 63, 66, 68, 69, 72, 74, 76, 77, 78, 79, 80, 81, 82, 83, 85
Suggested problems for Chapter 23
Problems 1-28: These problems are integrated with the text
Problems 29, 31, 33, 35, 36, 38, 40, 42, 43, 46, 47, 48, 50, 51, 53, 55, 56, 57, 59, 61, 62, 63

Suggested problems for Chapter 24
Problems 1-25: These problems are integrated with the text
Problems 26, 28, 30, 32, 34, 35, 36, 38, 40, 41, 42, 43, 44, 45, 47, 48, 49, 50, 52, 53, 54, 55, 57, 58, 60

Suggested problems for Chapter 25
Problems 1-43: These problems are integrated with the text
Problems 45, 46, 47, 48, 52, 54, 55, 56, 58, 60, 61, 63, 64, 65, 66, 67, 69, 70, 71, 72, 74, 75, 77, 79, 80, 81, 82, 83

Suggested problems for Chapter 26
Problems 1-15: These problems are integrated with the text
Problems 16, 18, 19, 20, 22, 23, 24, 25, 28, 29, 30, 32, 33, 34, 35, 37, 39, 40, 41, 44