# Chemistry 190: Organic Chemistry

## Spring 2004

MWF 9 AM, Root 202

**Instructor** Ian J. Rosenstein

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**Office Hours** Mon. 12-2 PM, Tues. 12-1 PM, Thursday 12-3 PM and by appointment

**Required Texts** T. W. G Solomons and C. B. Fryhle, 2004, *Organic Chemistry*, 8th Edition, John Wiley & Sons

J. W. Zubrick, 2004, *The Organic Chem Lab Survival Manual* 6th Edition, John Wiley & Sons

Freeman Laboratory Notebook

**Suggested Text** T. W. G Solomons, C. B. Fryhle, and R. G. Johnson, 2004, *Study Guide and Solutions Manual for Organic Chemistry*, John Wiley & Sons

Prentice Hall Molecular Model Kit

**Grading** Exams: 45% (three exams worth 15% each)
Homework: 10%
Lab: 25%
Final Exam: 20%

Class attendance is mandatory. In borderline cases I will take into account class participation to determine a final letter grade.

**Exams** Dates for the exams are: Tuesday, February 17
Wednesday, March 10
Thursday, April 22

All three exams will be in the Chemistry Auditorium beginning at 7:30 PM and will last for two hours. If you have a conflict with any of these dates, please arrange with me at least a week in advance to take the exam at some other time.

**Homework** Homework will be assigned in three different forms: problem sets, homework sets and practice problems. *Problem sets* will make up 80% of your homework grade. A problem set will be distributed approximately two weeks before each exam (including the final) to be turned in one week later. Problem sets are to be treated like open book take home exams; you may not discuss the problems with one another before they are turned in. *Homework sets* will comprise the remaining 20% of your homework grade and will be handed out at frequent intervals. The homework sets will be turned in and graded on a plus/minus/zero scale, based on effort not accuracy. You may work together on the homework sets. *Practice problems* are problems that I will assign from the text that I think are especially relevant. A list of practice

problems is included with this syllabus. I strongly urge you to do these problems to help you learn the material, but they will not be collected.

**Lab**

All students should come to lab with a Freeman Laboratory Notebook and a pair of safety glasses. You should also wear appropriate clothing, *i.e.* no shorts and no open-toed shoes. Laboratory is an essential part of the course. If you have a failing grade in the laboratory, you will fail the course. *Failure to turn in two or more lab reports will constitute an automatic failure of the course!*

**Final Exam**

The final exam has been scheduled by the registrar for Wednesday May 12 from 9-12 AM. The final exam will be cumulative but it will emphasize the material covered in lecture after the third hour exam.

**Help Sessions**

Weekly help sessions will be held by me on Wednesday nights, by Prof. Waratuke on Monday nights and by senior chemistry majors on Thursday nights all at 7:30 PM in Chemistry Room 112. These will give you a chance to ask questions and to work extra problems in small groups. Attendance is not required but is strongly recommended.

**Honor Code**

As with all courses at Hamilton, you are expected to abide by the honor code. Discussion of the problem sets is strictly forbidden and all exams are to be done individually. However, you are encouraged to discuss lecture notes, textbook readings, practice problems and homework sets. In lab, when students work together, only the data is shared; all reports must be your own work. Any prior discussion must be acknowledged in the report.

**Study Hints**

First of all, relax! I know it's easy for me to say, but organic chemistry is not as bad as everyone makes it out to be. It is definitely a challenge, but with the right approach to learning it, you might actually find that you enjoy it. The two most important things that you can do to help yourself are:

1) keep up with the reading (maybe even get ahead)
2) work lots of problems (and work some problems every day)

You will be exposed to a great deal of information in a very short time. If you let it build up until just before the exam, it will be impossible for you to assimilate all of the information well enough to apply it. Read the chapter in the textbook before you come to class. What we talk about in lecture will make a lot more sense if you come prepared, and reading the chapter in advance will allow you to come armed with questions about things that you don't quite understand. Working problems is the best way to prepare for the exams because it forces you to apply concepts and not just memorize facts. In addition to the problem sets and homework sets to be turned in, do all of the assigned practice problems. Write out full answers to these problems before you consult the Study Guide. Use the Study Guide only to check your answers. If you are really stuck on a practice problem talk to a classmate or come to me for help before you consult the Study Guide. You will learn much more this way. Several other organic chemistry texts will be on reserve in the Science Library. Do problems from these books as additional practice. (These other texts may also be helpful for understanding topics you are struggling with; sometimes a different point of view can clarify things immensely.) Finally, if you are having trouble, get help! Come see me, get help from your classmates or enlist the aid of a tutor. Whatever you do, do it right away because the more you get behind in your understanding of the class material, the bigger the hole you are going to have to climb out of to be successful.

## Approximate Lecture Schedule

| Date | Topic | Chapter in Solomons |
|---|---|---|
| 1/19 | Introduction | -- |
| 1/21, 23 | Structure and Bonding; Resonance | 1 |
| 1/26, 28, 30 | Intermolecular Forces and Infrared Spectroscopy | 2 |
| 2/2, 4, 6 | Acids and Bases | 3 |
| 2/9, 11, 13, 16 | Conformational Analysis | 4 |
| **2/17** | **EXAM 1** covering Chapters 1-4 | |
| 2/18, 20, 23, 25 | Stereochemistry | 5 |
| 2/27, 3/1, 3, 5, 8 | Nucleophilic Substitution and Elimination Reactions | 6 |
| **3/10** | **EXAM 2** covering Chapters 5-6 | |
| 3/10, 12, 29, 31, 4/2 | Mass Spectrometry and NMR Spectroscopy | 9 |
| 4/5, 7, 9 | Synthesis of Alkenes | 7 |
| 4/12, 14, 16, 19, 21 | Reactions of Alkenes | 8 |
| **4/22** | **EXAM 3** covering Chapters 9, 7-8.14 | |
| 4/23, 26 | Radical Reactions | 10 |
| 4/28, 30 | Alcohols and Ethers | 11 |
| 5/3, 5, 7 | Alcohols, Part 2 | 12 |
| **5/12 at 9 AM** | Cumulative **FINAL EXAM** with emphasis on Chapters 8.15-8.21, 10-12 | |

You will find extensive information on the Blackboard web site for Chem 190. The site is organized into several sections where you will find the following information:

*Course Information*

Syllabus
Calendar

*Course Documents*

Lecture Notes, one file for each chapter
Exams from 2003 and Exam Keys
Practice Problems and Keys to help prepare for each exam

*Assignments*

List of Suggested Practice Problems
Homework Assignments and Keys
Problem Sets and Keys
This semester's Exams and Keys

*External Links*

Link to Acrobat Reader Free Download (All of the above files are saved as PDF Files. Acrobat Reader is the program necessary to read them.)
Link to the Solomons text website
Other helpful links