Chemistry 190: Organic Chemistry

Spring 2015

MWF 9 AM SCCT 3021

**Instructor**
Ian J. Rosenstein, Science Center 1074

**Contacts**
irosenst@hamilton.edu; 859-4730 (office); 859-1037 (home)

**Office Hours**
Mon. 1:30-4 PM, Wednesday 3-5 PM, Thurs. 3-5 PM, Friday 1:30-3 PM and by appointment

**Required Texts**
Freeman Laboratory Notebook

**Suggested Items**
Molecular Model Kit

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

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

**Exams**

Dates for the exams are:
- Tuesday, February 17, 7:00 PM in SCCT 3024
- Thursday, March 12, 7:00 PM in SCCT 3024
- Wednesday, April 22, 7:00 PM in SCCT G042

Exams will last for approximately two and a half hours. If you have a conflict with any of these dates and times, please arrange with me at least three days in advance to take the exam at some other time.

**Final Exam**

The final exam is scheduled for Friday May 15 from 2-5 PM. The final exam will be cumulative but it will emphasize the material covered in lecture after the third exam.
Homework

Homework will be assigned in four different forms: practice problems, drill problems, homework sets and problem sets.

- **Practice problems** are problems that I will suggest from the textbook that I think are especially relevant. A list of practice problems from the textbook is included with this syllabus. I urge you to do these problems to help you learn the basic material but they will not be collected.

- **Drill problems** will be assigned for each lecture for which another assignment is not due. These will be short assignments with simple problems that are intended to reinforce the concepts covered in the previous lecture. These will not be handed out in class; it will be your responsibility to download the assignments from Blackboard. The drill problem assignments will be collected and full answer keys will be posted on Blackboard but they will not be graded for accuracy so it will be up to you to check the key to see if you have done the problems correctly. Drill problems will count for 20% of the homework grade.

- **Homework sets** will also count for 20% of your homework grade and will be due on Fridays in weeks where there is not a problem set due or an exam. Homework set problems will be a little bit more difficult than drill problems and are designed to help you start to see the material in a broader context. The homework sets will be corrected but will be graded on a plus/minus/zero scale based on effort not accuracy.

- **Problem sets** will make up 60% of your homework grade. A problem set will be distributed approximately ten days before each exam (including the final) to be turned in one week later. The difficulty of the problem sets approximates the difficulty of the exams and the problems are designed to give you practice in connecting different course concepts. The problem sets will be graded on a 15 point scale.

Homework and problem set assignments will be handed out in class and will also be available on Blackboard. You may work together on any of these assignments. However, the more independent you are in working problems, the better prepared you will be for the exams.

Lab

All students should come to lab with a Freeman Laboratory Notebook a lab coat 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!*

Help Sessions

I will hold weekly help sessions on Wednesday nights at 7:30 PM in SCCT G042. 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. Additional help sessions will be offered by Prof. Majireck on Thursdays at 6:00 PM in SCCT 2048, by Prof. Griffith on Thursdays at 7:00 PM in SCCT G042 and by John Bennett ’16 on Sundays at 7:00 PM in SCCT G042.
**Blackboard Resources**

Many course resources will be posted on Blackboard. The Blackboard sites for all three lecture sections have been combined so that all students have access to the materials provided by each professor. Within the folder for the Rosenstein section, the “Course Documents” folder contains a folder with all of the handouts that will be distributed in class, a folder with the complete course lecture notes and a folder with partial lecture notes that contain the text from the notes but not the figures. Within the main folder for the Rosenstein section, there is also a folder with all of the assigned work for the semester which will include both assignments and detailed answer keys. In addition to the formally assigned work, this folder has a folder for practice problems which will include problems used at some of the help sessions (usually assignments from previous years) and extra sets of problems posted about a week before each of the exams. Also available are copies of the exams and answer keys from last year that can be used as practice before each exam. Answer keys from this year’s exams will also be posted once all students have completed the exam. If you would like additional practice problems beyond what is available in the folder for the Rosenstein section, you are also encouraged to use assignments from the Griffith or Majireck sections.

The Blackboard page also has a folder for “Lab Materials”. As the name implies, this folder will have all of the documents needed for the lab portion of the course including general information (the lab syllabus, lab report checklist, etc.), the weekly lab handouts and any lab data that is posted for class use. Please note that the weekly lab handouts will not be distributed in class; you will need to download them from Blackboard.

**Honor Code**

As with all courses at Hamilton, you are expected to abide by the honor code. You may collaborate on practice problems, drill problems, homework sets and problem sets; all exams are to be done individually. In lab, when students work together, only the data is shared; all reports must be done individually. Any prior discussion must be acknowledged in the report and work based on existing written material (the textbook, journal sources, online sources) must be properly cited.

**Disability Policy**

In compliance with Hamilton College policy and equal access laws, I am available to discuss appropriate academic accommodations that may be required for students with disabilities. Requests for academic accommodations are best made during the first two weeks of the semester, except for unusual circumstances, so arrangements can be implemented. Students should contact Allen Harrison in the Office of the Dean of Students (Elihu Root House; ext. 4021) to verify their eligibility for appropriate accommodations.
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 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 and/or look over the lecture notes (posted on Blackboard) before you come to class. On average, we will cover about four pages in the notes per lecture. What we talk about in lecture will make a lot more sense if you come prepared, and doing some work 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. The homework assignments are structured so that within a section of the course, they build on one another in a way that is designed to best help you learn. The suggested practice problems and drill problem assignments are intended to reinforce the basic skills in a very narrow context. Doing these helps to prepare you to do the homework sets, which provide problems that should not be too difficult but are given in a broader context. All this, in turn, should be good preparation for doing the problem sets, which feature much more difficult problems that force you to think deeply and connect ideas from different aspects of the course. Doing all of this work regularly should prepare you for the exams.

It's not enough to just do all of the work, though - it must be done wisely. It may seem obvious, but work problems to learn, not just to get them done. As you are working problems, think about what you are learning by doing those specific problems. You will not see a problem on an exam that you have previously seen as a practice problem so learning the answers to the problems is not important. Learning how to approach a problem and how to think through a solution is what matters. When you do practice problems from the book, write out full answers before you consult the Solutions Manual. If you are really stuck on a practice problem talk to a classmate or come to me for help before you consult the Solutions Manual. You will learn much more this way. You are encouraged to work with classmates but do it intelligently. Do not come to rely too much on classmates when doing practice problems or homework assignments because they will not be there to help you when you are taking an exam. Finally, if you are having trouble, get help! Come see me, attend help sessions (!), get help from a classmate 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

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<tr>
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<th>Topic</th>
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<td>1/21</td>
<td>Introduction</td>
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<td>1/23, 26, 28</td>
<td>Review of Fundamental Topics</td>
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<td>1/30, 2/2, 4</td>
<td>Bonding, Intermolecular Forces and Functional Groups</td>
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<td>Infrared Spectroscopy and Mass Spectrometry</td>
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<td>2/13, 16, 18, 20</td>
<td>Conformational Analysis of Alkanes</td>
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<td>2/17</td>
<td><strong>EXAM 1</strong> covering Chapters 1, 2, 12, 3.1-3.12</td>
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<td>2/23, 25, 27</td>
<td>Reaction Mechanisms, Thermodynamics and Kinetics</td>
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<tr>
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<td>Nuclear Magnetic Resonance Spectroscopy</td>
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<td><strong>EXAM 2</strong> covering Chapters 3.13-3.15, 4, 13</td>
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<td>3/13, 30, 4/1</td>
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<td>Nucleophilic Substitution and Elimination Reactions</td>
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<td>Structure and Synthesis of Alkenes</td>
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<td>4/20, 22, 24, 27</td>
<td>Reactions of Alkenes</td>
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<td>4/22</td>
<td><strong>EXAM 3</strong> covering Chapters 5, 6, 7, 8.1-8.7</td>
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<td>Reactions of Alkynes</td>
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<td>5/4, 6</td>
<td>Structure and Synthesis of Alcohols</td>
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<tr>
<td>5/8, 11</td>
<td>Reactions of Alcohols</td>
<td>11</td>
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<tr>
<td>5/15</td>
<td><strong>Cumulative FINAL EXAM</strong> with emphasis on Ch. 8.8-8.15, 9, 10, 11</td>
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Chemistry 190: Organic Chemistry

List of Suggested Practice Problems for Wade’s Organic Chemistry

Seventh Edition

Chapter 1: 3, 5-11, 14-19, 23, 25-27, 29, 31, 34-52

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List of Suggested Practice Problems from Wade’s Organic Chemistry

Eighth Edition

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Chapter 11: 1-6, 9-13, 15-17, 19-23, 25-29, 31, 33-49, 51-58, 60, 61, 63