

Chem. 206-03: Organic Chemistry I
Spring 2012 Syllabus (as of 18 January 2012)*

Instructor:

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***Email is generally the best way to contact me outside of class. Be sure to include "Chem. 206" in the subject line so I don't delete your message as spam!*

*All postings in this class, including notes, are only to be used within the W&M community. Each of you has bought a legitimate copy of the required book, and copyrighted images from that book are used in lectures/notes. **Due to copyright laws, no files from this course should be posted on any website, distributed to friends, relatives, or anyone else who is not taking Chemistry 206 at The College of William & Mary.***

Class Meetings:

T/H 09:30-10:50 p.m. in ISC 1127.

Required Course Materials:

- *Organic Chemistry, 6th Edition*, Brown, Foote, Iverson, & Anslyn
- *Student Study Guide and Solutions Manual for Organic Chemistry, 6th Edition*, Iverson and Iverson
- Darling Organic, Organometallic, Inorganic Model Set. **You may use the model set during exams.**

Regular Problem Sessions:

Regular problem-working sessions will be held 5:30-7:00 p.m. on Mondays in Small 111. Attendance is optional but strongly encouraged, *especially if this material is difficult for you.*

Office Hours:

3:30 – 5:00 pm Tuesdays – and by appointment (subject to change based on student availability).

Website:

Course information, documents, and problem sets will be posted on Blackboard.

Course Structure:

Material. We will cover Chapters 1 – 9 and 12 – 13, which together, form the foundation of Organic Chemistry.

Problem Sets. You should plan regular problem-working as part of your study schedule. To encourage you in this direction, 10 problem sets will be assigned throughout the semester to be completed on SaplingLearning's website. Each problem set will be worth 10 points: You will have 5 chances to get the correct answer for each problem, but each subsequent try will reduce your maximum score by 5%. Your best 9 problem sets will be counted towards your final grade. Suggested end-of-chapter problems for you to work on your own are listed on p.4 of this syllabus. These problems will neither be collected nor graded, but working them *is vital to your success in Orgo.*

**Syllabus as of 18 January 2012. This document is subject to change in writing based on software/hardware problems, weather, or other unforeseen circumstance.*

Exams. Test problems will be drawn from the lecture, online problems and the text. Each test will include different types of problems, including but not limited to short answer, fill-in, and multiple choice. Drawing organic structures will be important, especially in Chapter 2! The final exam will be cumulative but weighted toward material learned in the second half of the course.

Grading Policy:

A total of 1090 points may be earned in this course by completing problem sets and exams as shown below:

| Graded Item | Points | Date |
|--------------|--------|--------------------|
| Exam 1 | 200 | Tues., Feb. 22 |
| Exam 2 | 200 | Tues., March 29 |
| Exam 3 | 200 | Tues April 19 |
| Problem Sets | 90 | see schedule |
| Final Exam | 400 | Fri., May 6 (2 pm) |
| 1090 pts. | | |

Given that anyone can get sick or have too many things due in one week, we will be using a “bad exam day” policy in which the lowest, *mean-relative 200 points* – either a midterm or one-half of your final exam – will be dropped. *Approximate* grade distributions for each exam will be announced in class.

Absence Policy

You are expected to be present for all class exams, and **NO MAKE-UPS WILL BE GIVEN**. If you know that you will have a conflict with an exam due to an officially recognized College function such as varsity sports, choir, etc., **you must notify me in advance of your absence**. In case of illness or death in the family, please notify the appropriate campus office (Health Center or Dean of Students, respectively) and bring documentation from that office upon your return to class. A medically excused absence is granted for significant illness or injury and requires healthcare attention *at the time of* the illness or injury, not a week after you are sick. Late returns from weekends/spring break, social events, family reunions, etc. do not count as excused absences.

General Considerations and Final Grades

Since there really isn't any “plug and chug” using mathematical equations, organic chemistry is a very challenging topic for many students. You should plan your semester schedule so that you have time to devote to study and working problems for this course. *In the past, some students who took on an excessive number of credits or were involved in too many extracurricular activities often struggled in this course.* Unfortunately, the extent of their struggles did not show up until later in the semester.

The final class scores and grades will be scaled with the following considerations:

****A** = Excellent performance and *mastery* of the material presented

B = Very good understanding of the material

C = Adequate performance

D = Poor performance

F = Unsatisfactory performance

****Mastery** means that you can apply what you've learned to new, and *different problems* than those you have already seen. Exams will contain problems/questions of varying difficulty.

Spring 2012 Chem. 206 Schedule

| <i>Week beginning</i> | <i>Topics</i> | <i>Chapter</i> | <i>Sections</i> | <i>Problem sets Due</i> |
|-----------------------|---|----------------|------------------------------|-------------------------|
| Jan 16 | Structure and Bonding, Functional Groups | 1 | 1.1 – 1.3 | |
| Jan 23 | Polarity, Resonance, Molecular Orbital Theory Acids and Bases | 1 4 | 1.4 – 1.8 4.1 – 4.7 | PS 1, 1/27 (F) |
| Jan 30 | Acids and Bases Alkanes and Cycloalkanes: Isomerism | 4 2 | 4.1 – 4.7 2.1 – 2.2 | PS 2, 2/3 (F) |
| Feb 6 | Alkanes and Cycloalkanes: Conformations, Nomenclature, Geometrical Isomers, Properties and Reactions | 2 | 2.3 – 2.9 | PS 3, 2/10 (F) |
| Feb 13 | Alkanes and Cycloalkanes Stereochemistry | 2 3 | 2.3 – 2.9 3.1 – 3.9 | PS 4, 2/17 (F) |
| Feb 20 | Stereochemistry <i>Help/Review: Mon., Feb. 20, 5:30-7:00 pm</i> Tues., Feb. 21: Test 1 | 3 | 3.1 – 3.9 | |
| Feb 27 | Alkenes: Structure, Nomenclature and Properties Alkenes: Reactions | 5 6 | 5.1 - 5.4 6.1 – 6.4 | |
| Mar 12 | Alkenes: Reactions | 6 | 6.5 – 6.7 | PS 5, 3/16 (F) |
| Mar 19 | Alkenes: Reactions and Stereoselectivity NMR Spectroscopy | 6 13 | 6.5 – 6.7 13.1 – 13.8 | PS 6, 3/23 (F) |
| Mar 26 | NMR Spectroscopy, IR Spectroscopy <i>Help/Review: Mon., March 26, 5:30-7:00 pm</i> Tues., March 27: Test 2 | 13, 12 | 13.9 – 13.12, 12.1 - 12.5 | |
| Apr 2 | Finish Spectroscopy, Alkyl Halides and Radicals | 8 | 8.1-8.6, 8.8 | PS 7, 4/4 (W) |
| Apr 9 | Substitution and Elimination | 9 | 9.1 - 9.2 | PS 8, 4/11 (W) |
| Apr 16 | Substitution and Elimination <i>Help/Review: Mon., April 16, 5:30-7:00 pm</i> Tues., April 17: Test 3 | 9 | 9.3 – 9.8 | PS 9, 4/16 (M) |
| Apr 23 | Alkynes & Exam Review | 7 | 7.1 – 7.9 | PS 10, 4/27 (F) |

Final Exam Review Session: Monday, April 30 from 6-8 pm

*****Final Exam: Wednesday, May 2 from 9 a.m. to 12 p.m.**

***Please note that only the Dean of Students or the Dean of Undergraduate Studies can approve a change in your final exam date.

Suggested Problems (subject to change—you'll be notified ahead of time)

Solving problems is essential to learning organic chemistry! There is a huge gap between “following” a concept in class, and really understanding it. Solving the following selected problems from the end of each chapter in your book is invaluable. These problems will neither be collected nor graded, but solving them in addition to the Sapling Learning® problem sets is very strongly suggested.

**** For all chapters—you should do ALL of the in-chapter problems!**

| | |
|---------------|---|
| Ch. 1 | 32a-c, e, 35a, c, e, 41, 45, 46, 47, 48, 49, 52, 53, 55, b, d, 56a-c, e, h, i, 57a-c, h, 58, 70, 74, 75 |
| Ch. 2 | 16, 22, 24, 25, 26, 29, 30, 33, 43, 48, 49, 50, 63b, 65 |
| Ch. 3 | 16, 17, 18, 20, 21, 26, 30, 31, 39 |
| Ch. 4 | 15, 16, 22, 30, 36, 41, 42, 44, 45, 48 |
| Ch. 5 | 14, 15, 20, 23, 24, 34-a,b,d |
| Ch. 6 | 15, 17, 18, 21, 23, 24, 26, 28, 30, 33, 35, 37, 38, 39, 44, 46, 48, 49, 51, 54 |
| Ch. 7 | 8, 10, 11, 12, 16, 17, 20, 23, 25, 30, 31, 33, 35 |
| Ch. 8 | 8, 9, 10, 14, 15, 23, 25, 26, 28, 30 |
| Ch. 9 | 11, 12, 13, 14, 17, 20, 22, 23, 25, 28, 34, 37, 38, 40, 43, 44, 45, 47, 51 |
| Ch. 12 | 5, 6, 7, 11 |
| Ch. 13 | 9, 15, 16, 17, 18, 20, 21, 24 |

Reminder--WEEKLY PROBLEM SESSIONS: Mondays, 5:30-7:00 pm, Small 111.

Study Strategies**USE YOUR MODELS!!**

Assembly and use: <http://www.youtube.com/watch?v=gHHhjkTSYNQ&feature=related>

The early part of this course focuses on the conceptual foundations of organic chemistry including structure, bonding, conformation, and stereochemistry. It is important to master these concepts early so that you will be able to apply them in the later portion of the course, which emphasizes spectroscopy and the reactions of organic molecules. Success in organic chemistry requires an *active* study strategy. Passive studying (simply reading the textbook and your lecture notes) can be a good first step, but will only take you so far. Repetition is the real key to learning the material. Study actively for this class by doing:

- Highlight and/or take notes as you **ACTIVELY read** the textbook.
- Recopy your lecture notes when studying for exams and ask yourself if they make sense (if they don't, you need to understand why!).
- Make flashcards on reactions and mechanisms (e.g., draw a starting material and reagents on the front of the card and the reagents and the product on the back).
- *The most highly recommended strategy for learning this material: work the assigned homework problems (listed in this syllabus) and complete the problem sets.*
 - For problems in the book, work all of the problems as best you can WITHOUT looking at the answers. If you have to look back in the book or your notes the first time through for help, that's fine, but only after you've given it a legitimate attempt. For problems involving stereochemistry or conformations, use your model kit. You're less likely to make a mistake than if you try to visualize the molecule without making a model. You'll be able to use your model kit on exams, so using it for homework problems is great practice.
 - After you've completed the problem set, check your answers with the answer manual. For the ones you miss (or even ones you got right but weren't really sure of), write down the correct answer rather than simply looking at it. Keep a list of the problems you missed.
 - After a few days, re-work the same problem set, and pay close attention to the problems you originally missed. Follow the same procedure for checking the answers and writing down the correct answers. Repeat this entire procedure until you really understand the material and can do all the problems.