Chemistry 212, Organic Chemistry II Lecture
Fall 2010

Course Times: Monday, Wednesday, and Friday, 11:15 a.m. – 12:05 p.m.
Semester Length: Aug 23, 2010 to Dec 10, 2010 (44 lectures)
Course Location: 105 Forum

Lecturer:
Dr. Gong Chen
Office: 433 Chemistry Building
Phone: 867-2590
E-mail: guc11@psu.edu
Office Hours: Friday, 3:00 p.m. – 5:00 p.m.

TA Information:
TA: James Fields
Office hours: Monday & Wednesday, 3:00 p.m. - 4:30 p.m.
Location: Chemistry Building 423
E-mail: jbf5034@psu.edu

Website: ANGEL, Chem 212, Section 001 Fall 10

Texts:

Other Materials:
- A molecular model kit is optional (Chem-Tutor molecular modeling system #Z22.249-6, $15.30)

Registrar Dates:
Late Drop Deadline: Nov 12, 2010

Course Content

For the purpose of exams, the course content is defined by (a) the lectures, (b) the relevant chapters and problems in the text, and (c) group questions. The outline and order of the topics covered is presented at the end of this handout. Please note that not all chapters will be covered in the order they are in the book. Some sections have been omitted. The sections that have been indicated as excluded will not be covered in the lectures, and that excluded material will not be a part of the exams. It is recommended that students in pre-medicine, chemistry, or related programs study the excluded sections independently.
Course Objectives:

• To interpret spectral data.
• To name carbonyl-containing compounds and amines.
• To understand the reactivities and properties of organic compounds, including carbonyl-containing compounds and how they are synthesized.
• To understand the electron-pushing mechanisms of selected reactions.
• To survey bioorganic molecules.

Grades

You will be graded on a curve. Approximate grade cut-off lines from previous years are: A, 85-100%; B, 70-84%; C, 55-69%; D, 45-54%, F, 0-44%. The average is about B-. The distribution of points for Chem 212 is detailed below.

• Graded homework 50 (assigned in class, due next class period)
• Exams (100 pts. Each) 300
• Final 150
• Total 500

The average in the class corresponds to a B– grade, and grade lines will be set accordingly. Please note that once grade lines are set, there is no granting percentage points to bring up your final percentage to the next grade line.

Mid-Semester Exams

Exams 1, 2, and 3 will be offered as two-hour exams on Wednesday evenings. All exams are written. Please bring a pen and your student I.D. to all exams since you will be asked to sign the exam in link during the examination period in the presence of a teaching assistant. You cannot use books, scratch paper other than furnished, calculators, etc. You may, however, use a molecular model kit, providing it does not contain any written materials.

There are no make-up exams. However, your lowest exam score will be replaced with (100/150) x (your final exam score) if the latter is higher.

The exam schedule is:
• Exam 1: Wednesday, 9/22 at 8:15 pm in 101 Thomas
• Exam 2: Wednesday, 10/20 at 8:15 pm in 101 Thomas
• Exam 3: Wednesday, 11/10 at 8:15 pm in 101 Thomas
• Comprehensive Final Exam: to be announced

Exam Regrade Policy

Graded exams are handed back so that students can (a) see what kinds of mistakes they made and thus better prepare for future exams, and (b) determine if serious errors were made in grading, adding up points, etc. The purpose of regarding a question on an exam is not specifically to raise a student’s grade, although sometimes that may be the result. Instead, the purpose is to be certain that, within reason, the same grading standards were applied to all exams.

Grade lines must be drawn somewhere. It is unfortunate but inevitable that some students will miss a
grade by only a few points, sometimes even just one point. It is the policy in this course to give partial credit for answers that are not completely correct but that have significant merit. By comparison to grading simply right or wrong, assigning partial credit is less precise.

With these considerations in mind, the following regrade policy will apply:

A. Regrade requests must be submitted in writing within three lecture days of the exam being returned.
B. A regrade request must include: (1) the exam, (2) the answer key’s answer, copied on a separate piece of paper, and (3) an explanation in writing of why your answer deserves more credit.
C. If your request involves an arithmetic error in calculating your score, don’t bother with B(2).
D. Failure to follow these directions will automatically result in regrade requests being returned without any consideration.

Late-drop students will receive WN designations on their transcripts. Students who have taken at least two exams may request a WP designation, if their class average is higher than the final grade line for a C. Requests for WP designation must be submitted in writing no later than the last day of class.

Letters of Recommendation: I am willing to write letters for students who (a) get to know me through regular office hour visits and (b) obtain a final grade of B- or better. Please give me at least six (6) month’s notice to write the letter.

Academic Integrity: Instructors are now asked (Senate Rule 49-20) to provide at the beginning of a course a statement to “clarify the application of academic integrity criteria to that course”. The Senate Rule includes the following:

Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabrication of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. (You should also be aware of the extensive parts of this Rule that describe procedures for handling alleged instances of academic dishonesty.) Specific instances of academic dishonesty in this course would include (but not limited to) copying or helping someone else copy during an examination, using unauthorized materials during an examination, stealing or destroying course materials or another student’s examination paper, altering answers or grades on graded examinations, having someone take an examination for you, and attempting to do any of the above. Such infractions are considered cause, at the least, for awarding a grade of “0” on the exam in question (and not allowing the student to drop the class).

General Considerations: Chemistry 212 is a continuation of Chemistry 210 and, as such, builds on the foundations introduced in the first semester. If you did well in Chem 210, then you should be well prepared for Chem 212. If you were below average, then the second semester may be somewhat difficult for the problems are more mechanistic and a greater emphasis is placed on the synthetic aspects of organic chemistry. Owing to the hierarchical nature of the material, it is important to not fall behind or leave studying for the exams until the last few days. The material is not inherently difficult, but you must understand some concepts before you can go on to new ones. Therefore, be sure to allow yourself sufficient time for absorbing the material. Observations made over the past
few years suggest some generally useful strategies that help to improve student performance. These are summarized below.

• Read the chapter material before the lecture.
• Study everyday, do reviews weekly.
• Solve as many end-of-chapter problems as possible (resort to answer book only after you have attempted the problem).
• Study with a friend; if you can explain a concept to your study mate, you understand it.
• Just reading and understanding the material (passive understanding) is insufficient; you should be able to use the just learned concepts in situations not previously encountered, and make logical connections with concepts learned previously (active understanding).
• Constantly probe your understanding by asking (and answering) question “why?” in relation to all statements and logical constructions.
• Do not fall behind in your study; especially when there is new material every day; it is virtually impossible to prepare well for the exam in just a couple of days before it.

Once you feel that you’re up-to-date with lecture material (by doing the above), you’ll be ready to prepare for an exam. Here are some different techniques that I have used as a student and other techniques that I’ve heard students use. I would encourage doing two or more of the techniques to find which one works best for you.

• **Rewrite your notes!** Especially when you’re studying the reaction mechanisms. You’ll be required to write out the mechanisms from lecture; they are NOT given in PowerPoint notes, and this is for a reason. Writing mechanisms will help you remember them and UNDERSTAND them. If you have questions about your notes, come to office hours and ask!
• **Outline the reaction mechanism in words.** Most reaction mechanisms involve several parts. If you can outline the mechanism in WORDS (step-by-step), then you have an understanding of what’s happening in that mechanism.
• **Talk through the mechanisms.** (This is somewhat similar to outlining mechanisms.) If you can explain in WORDS verbally what’s happening, then you’ll understand the mechanism better. It’d be best to talk through them with a study partner.
• **Flashcards.** I’ve seen a lot of students use flashcards as study tools. Although it takes time, it may work well for you. Again, writing out flashcards should reinforce concepts and may bring up questions about those concepts that you can ask during office hours.
• **Associate key words with specific reactions.** For example, you will learn a lot of “name reactions”. These name reactions are reactions that are named after the chemists who discovered them. Each of these reactions uses specific starting materials to make specific products (functional groups). Generate a table to make the associations; make a column for name of the reaction, main starting material (functional group), and the product made (functional group). For instance, a Claisen condensation starts with two equivalents of an ester to make a β-keto ester. Of course, you’ll need to know what the structures of these functional groups look like.
• **Come to office hours** to get things cleared up as soon as possible...no matter how small it may be!
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**Outlines of lectures** (44 in total)

1. Structure determination: lecture 1-6
2. Aldehydes and ketones: lecture 7-13 (Exam 1)
3. Carboxylic acids and derivatives: lecture 14-18
4. Carbonyl α–substitution reactions: lecture 19-23
5. Carbonyl condensation reactions: lecture 24-26 (Exam 2)
6. Amines: lecture 27-30
7. Amino acids, peptide and proteins 31-34(Exam 3)
8. Carbohydrates: 35-37
9. Lipids: lecture 38
10. Nucleic acids 39-40
11. Flexible topics 41-44 (Final)
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NC: no class
HM: home work