Chemistry 3053 Section 2-- Organic Chemistry I (Honors)
Spring Semester 2010  Syllabus
Lectures:  9:00-10:15 AM   Tues and Thurs in Physical Sciences 117

Instructor: Professor Ronald L. Halterman     Assistant/Grader: Nathan Green
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Course Web Page: http://learn.ou.edu/ under Chemistry 3053 Sec 2

Office Hours:
Will be announced the first week of class and will include one Action Center Meeting per week.
Additional hours may be made available depending upon need or other meetings may be made by
arrangement. The instructor will attempt to respond to email questions by the next office hour.

Course Text:  P Bruice, "Organic Chemistry", 5th Ed. and Study Guide/Solutions. Students are expected
to bring printed Lecture Notes to each lecture.

Other Materials:
1) Access to web-posted material is necessary.
2) A molecular model kit is necessary.
3) A spiral bound notebook is needed for writing out answers to assigned problems.
4) Handouts will be posted for each chapter summarizing the important concepts you will be responsible
   for learning and indicate appropriate problems for you to work.
5) Selected prior exams will be available on the web page.
6) Freeware chemistry drawing programs are available at http://www.acdlabs.com/download/ or at
   http://www.mdl.com/downloads/. You can use these programs to draw out questions to send to me.

Email. You have the responsibility to read and respond to any email messages sent by the instructor to
your OU email account within 24 hours. Messages will only be sent to OU accounts. Please use direct
e-mail to the instructor (good permanent record of message and response). Use CH3053 in the subject
line of your emails to enable proper filtering. The instructor will attempt to respond to emails with specific
questions by the following weekday. More general questions will be addressed the following lecture.
Grade-related matters will not be discussed by phone or email.

Course Goals. The purpose of this course is to complete the first half of a one year problem-solving
coverage of the underlying theory, basic reaction mechanisms, spectroscopy and fundamental synthetic
transformations of organic chemistry. We will cover in order chapters 1-12 in Bruice’s Organic Chemistry
text book. A list of topics is given as an appendix to this syllabus.

Course Schedule. See attached sheet for planned lecture, group problem sets and exam schedule. The
exams are scheduled for: Feb 18, Mar 30, Apr 28 and the final on Friday. May 14 (8 am - 10 am) (plan
your travel schedules appropriately for these EXAMS).

Lectures. Lectures will begin promptly at 9:00. Lectures will be based on provided “complete” lecture
notes. You are expected to print and read the posted lecture notes before each lecture. During lecture I
will highlight only selected topics and spend as much time as possible addressing questions and working
problems interactively with the class. Class participation will be 5% of the problem set grade. You will be
responsible for topics in the notes even though they will not be covered in lecture. I will also periodically
cover organic chemistry topics of more general interest in short “Society and Chemistry” discussions.

Assigned Problems– The instructor will include assigned problems along with each lecture (and
summarized in the chapter handouts). You are responsible for working all of the assigned problems and
checking their accuracy using the study guide/solutions manual. Questions remaining after checking the
solutions manual should be discussed with the instructor. These problems will NOT be graded by the
instructor.
Graded Problem Sets – Several individual and group graded problem sets are scheduled. These must be completed and handed in by the posted due date/time for full credit. You may discuss these problems with others, but you must write the final answers by yourself—copied answers will be penalized. I plan on going over these problem sets and need to see firsthand how you are doing with the material. Particularly problematic topics will be reviewed/discussed in class. Group problems will also be assigned for discussion outside of lecture and presentation during lecture. The group problems will be graded on individual participation and will be worth 15% of the problem set grade.

Exams - You will be responsible for all material covered in class, on the provided notes or in the assigned chapters of the book unless specifically told by the instructor that the material will not be on the exam. The mid-term exams are entirely free response and will consist of several short response questions and some longer response questions. I will re-grade exams on request, but reserve the right to recheck the entire exam. Addition and recording errors will be corrected without re-grading the exam.

Grading - Grades will be determined by your results on the exams and problem sets as follows:

- 3 in class 100 pt. exams (lowest of 3 scores will be replaced by average of the 3 exams) 51%
- Problem Sets (80% individual, 15% group and 5% class participation) 15%
- Final exam** 34%

**The final exam must be taken or an F will be assigned.

Each in-class, the final exam and the problem set grade will be graded approximately according to the following absolute scale: 80-100 A, 65-79 B, 50-64 C, 40-49 D, below 40 F. Grades from F to A+ and grade points ranging from F=0, D- =1 up to A=11 and A+=12 pts will be assigned for each graded work.

Final course grades will be assigned according to the following firm formula:

\[ 0.51(\text{average test grade}) + 0.15(\text{problem set grade}) + 0.34(\text{final exam grade}) \]

Course grades will be assigned according to the following ranges:

- A: above 9.2 grade pts
- B: 7 to 9.2 grade pts
- C: 4 to 6 grade pts
- D: 1.0 to 3 grade pts
- F: below 1.0 grade pt.

e.g., average exam point = 7.8, ps points = 9 and final exam = 10 would give

\[ 0.51(7.8) + 0.15(9) + 0.34(10) = 8.71 \] would be in the B range for the course grade.

No accommodation (beyond averaging out the lowest exam) will be made for non-excused absences. For excusable absences you must provide me with timely (within one week of missed exam) documentation and see me to make individual accommodations.

Grades are confidential information and grade issues are not to be discussed by email or phone. Grades will be posted to the course d2l site. Grade discussions should be carried out during office hours.

Academic Misconduct. For the purposes of this course, any instance of a student receiving any type of help on an exam, problem set or quiz from another person or any source (notes, etc) not authorized by the instructor shall be considered academic misconduct and as a result will be penalized to the fullest extent possible. Students are to refer to the Provost's pages on academic integrity (http://www.ou.edu/provost/pronew/content/integritymenu.html) for university policies and regulations related to your rights and obligations as students.

Disruptive Behavior. Please be considerate of your fellow students and the concentration of the lecturer—especially when arriving late or leaving early. Any student engaging in behavior deemed by the instructor to be disruptive will be asked to leave the classroom for the remainder of the lecture or exam. Disruptive behavior includes receiving phone calls or texting during class—please turn your phones off before entering the class or exam and do not have them out during lecture. No computers should be open during lecture without prior permission from the instructor. Students are to visit the Provost's website on classroom behavior: http://www.ou.edu/judicial/index.htm
**Special Accommodations:** The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the instructor as early in the semester as possible. Students with disabilities must be registered with the Disability Resource Center prior to receiving accommodations in this course. The Disability Resource Center is located in Goddard Health Center, Suite 166, phone 405/325-3852 or TDD only 405/325-4173.

Students are encouraged to refer to the Spring Class schedule for university policies and regulations related to your rights and obligations as students.

**Changes.** The instructor reserves the right to change by addition and/or subtraction any and/or all materials contained in this syllabus. This includes, but is not limited to, course content, assignments, due dates, and portion(s) of the grade assigned to individual items within the course.

**Copyright.** All handouts, quizzes, exams and lecture material are ©2010 by RL Halterman. Free (no-cost) copying and distribution of these materials among OU students is allowed. Any other distribution, including distribution for a fee (e.g., commercial note services) is not allowed without my written consent.

**Tutors.** Please contact one of the following places if you want to arrange for tutoring. Tutoring Services x6873, OMU200; Chemistry Department List of Tutors, CHB208; Project Threshold, x6261. It is departmental policy not to recommend specific tutors as we cannot bear responsibility for their performance. (Before paying extra for a tutor, try putting your tuition dollars to work by coming to office hours...)}
Topics:

1. Electronic Structure and Bonding; Structural effects on acidity

2. Functional Group definitions, alkane nomenclature, physical properties based on intermolecular interactions, conformations of acyclic and cyclic alkanes.

3. Alkene structure and nomenclature; concepts of kinetics and thermodynamic energetics

Exam 1

4. Reactivity of alkenes towards electrophiles: cation stability; initial oxidation and reduction reactions

5. Stereochemistry—nomenclature; introduction to stereoselectivity in reactions

6. Reactions of alkynes and introduction to multiple-step synthesis

7. Development of electron delocalization concept and effects on acidity and reactivity

Exam 2

8. Substitution reactions of alkyl halides

9. Elimination reactions

10. Reactions of alcohols, ethers and epoxides; use of organometallic reagents

Exam 3

11. Radical reactions of alkanes and addition to alkenes.

Final Exam (about 25% emphasizing final chapter, 75% comprehensive)

What is expected of you to enjoy success in this course:

• You are expected to know already the material covered in general chemistry.
• Always be able to address the question, “What would an electron do?”
• You are expected to keep up with the readings and assigned problems. Allocate up to 20% for reworking problems.
To master the material in organic chemistry you must "do it to a level of firm understanding." You must work the problems as the topics are covered and put in the time (12 hours/week study time for this course is not unusual). (keep a log of your study time)

Do the assigned reading and read the lecture notes at least once before the corresponding lecture. You are going to need to read the material sometime, but it is a lot more efficient to be ahead on the reading.

Take notes on the provided lecture outlines. Although the "complete" notes are pre-printed, you should concentrate on recording any new information or structures given during lecture.

After the lecture, review your notes within 24 hours. Rewrite them if they are messy and add material you remember, but did not manage to write down during the lecture.

The lecture is intended to clarify the reading and make connections in the material. Give yourself quiet thinking time in review to allow the connections to come together.

Reread the chapter in light of the connections made in lecture and work the assigned problems in your homework notebook. If you don't write the answers down first, or if you always "check your thinking" in the guide as you look at the problems—you will deceive yourself and will not know whether there is still any confusion.

Correct your answers in your notebook using a different color of ink. For troublesome areas, reread the appropriate sections of the text and review the lecture notes then recheck your comprehension by reworking the problems on a new page of your notebook.

When solving problems, identify the relevant factors, evaluate them and reach your conclusions.

Study for the exams by reviewing/rewriting the problems, paying particular attention to the areas you had to correct previously.

Work in a study group. You may also meet with a small group of fellow students to review the lecture material, reading and problems.

If after rereading the sections, you are still having trouble with the material, send an Email or come in and talk with me. Do not assume you will magically "get it" later on your own. Often a couple minutes of help will save a lot of confusion. Part of your tuition is paying for office hours, don't be shy about getting your money's worth. You should bring your homework notebook to office hours.

Bring written questions to lecture. I will try to answer these as time permits.

You are not encouraged to "memorize" all of the material. There are underlying reasons for the effects, structures, reactions etc. If you understand the reasons behind the evidence, you will do much better in this course.

On the other hand, you will need to recall many reactions. I will post flash cards for the reactions we cover. These are generally an excellent way to acquire and retain needed information.

Much of organic chemistry requires visualization in 3D. To aid you in this visualization, you are expected to acquire a molecular model kit. A very good (and cost-effective) kit is available through PLU (the chemistry graduate student organization).

You must also be able to clearly draw the chemical structures. Remember that "precision in drawing leads to precision in thinking."

In this course, when you draw the chemical structures, you must know how to include the hydrogen atoms (and show lone pairs when needed for clarity).

And finally, most importantly. This material can be hard and you are not expected to master every bit without difficulty. Please get help when you are confused. If you wait it will often only result in a deep hole. You must keep up.