Chemistry 3153 Section 3-- Organic Chemistry Biological Emphasis I (Honors)
Spring Semester 2014 Syllabus
Class Meetings: 1:30-2:20 pm  MWF in Carson 119

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Course Web Page: http://learn.ou.edu/ under Chemistry 3153 Sec 3

Course Goals. The purpose of this course is to complete the second half of a one year problem-solving coverage of the underlying theory, basic reaction mechanisms, spectroscopy and fundamental synthetic transformations of organic chemistry. A list of topics is given as an appendix to this syllabus. The course will be structured to spend most class time in group discussions and as such, it is expected that students will read provided lecture notes, text readings and short lecture videos prior to the class meetings.

Office Hours: Action center meetings will be Wed 4:00-5:30 in Wagner 245. Additional office hours may be announced the first week of class and other meetings may be made by arrangement. The instructor will attempt to respond to email questions by the next day.

Recommended Course Text: Vollhardt and Shore, "Organic Chemistry", 6th Ed. and Study Guide/Solutions or David Klein, "Organic Chemistry", 1st Ed. and Study Guide/Solutions Manual. Other texts such as earlier editions or by P. Bruice would be fine. Students should consult the posted study guides for each unit to find the corresponding reading in their text. The instructor can also identify suitable sections in your text as the course proceeds.

Required preparation before class meetings. Students are expected to download and study provided Lecture Notes, posted video lectures and assigned reading prior to each course meeting.

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 exam problems will be available on the course web page.

Email. You have the responsibility to read and respond to any email messages sent by the instructor. Messages will only be sent to OU accounts. Please use direct email to the instructor (good permanent record of message and response). Use CH3153 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 Schedule. See attached sheet for planned lecture, group problem sets and exam schedule. The exams are scheduled for: Feb 17, Mar 26, Apr 21, and the final on Tues, May 6 (8 am - 10 am) (plan your travel schedules appropriately for these EXAMS).

Class Meetings. Lectures will begin at 1:30. Coverage will be based on provided “complete” lecture notes, assigned reading topics and video segments. You are expected to cover the material before each lecture in this “flipped” course organization. During lecture we will highlight only selected topics and spend most time working problems interactively with the class. Class participation will be 7% of the problem set grade. You will be responsible for topics in the notes even though they will not be covered in lecture.

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. The instructor will go through 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 8% of the problem set grade. An in-class set of problems covering highlights from O-Chem I will be given the first week of class 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. The instructor will re-grade exams on request and reserves 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 exams (lowest of 3 grades will be replaced by average of the 3 exam grades) 51%
- Problem Sets (70% individual, 15% O-Chem I review, 8% group, 7% 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: 85-100% A, 70-64% B, 50-69% C, 40-49% D, below 40% F.

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

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

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 ©2014 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:
See D. Klein Organic Chemistry 1st Ed Chapters 17-27. (Vollhardt Shore chapts also given)

“0”. Review of Org I concepts
Review Quiz over Org I concepts
17. (V/S 14) Conjugated pi-systems and addition reactions
18. (V/S 15) Benzene and Aromatic Compounds
19. (V/S 16, 22) Aromatic Substitution Reactions
Exam 1 emphasizing Units 17-19
20. (V/S 17) Carbonyl Chemistry I—Aldehydes and Ketones
21. (V/S 19, 20) Carbonyl Chemistry II—Carboxylic Acids, Esters and related derivatives
22. (V/S 18, 23) Carbonyl Chemistry III—Reactions at position alpha to carbonyl--enolates
Exam 2 emphasizing Units 20-22
23. (V/S 21) Amines--properties, preparation and reactivity
24. (V/S 24) Carbohydrates—properties and reactivity
25. (V/S 26) Amino Acides, Peptides, Proteins—overview of properties, preparation and reactivity
27. Polymers
Exam 3 emphasizing Units 23, 24, 25, 27
26. Lipids—overview of properties and reactivity
28. Metabolism (from P. Bruice Chpt 25-28)
Final Exam
What is expected of you to enjoy success in this course:

- You need to work effectively and with traction to learn the material rather than just trying to remember the material. **Passive learning**—listening to lecture/watching someone explain problems/reading material or listening to podcasts—is not going to do it no matter how often it is repeated. **Active/Reflective learning**—will enable you to immerse yourself into the material and learn it. Organic Chemistry is very much a **Problem/Process-based course**. You must write out the details of your work and list key tags to provide strong scaffolding for your answers. Since the mind very much wants to purge what it may consider unimportant details encountered along the way to a goal, you **MUST** take time to review your answers and reflect on the details of what the question was asking, how the details of your answer address the question and whether your final conclusion supported strongly enough. It is during this reflection time that the long-term synapses are best formed and you will have stable, persisting change in your knowledge. **Allocate 20% of your study time for reflecting/reviewing your work.**

- It is strongly encouraged that you **correct or otherwise mark up your original answers in a different color ink rather than erasing and rewriting**. In this way, you can review your work later and notice the insufficient answer as well as the better one. If you erase and rewrite just the better answer, you will not notice your original wrong path and you will be more likely to fall back to the less sufficient answer later.

- **Key concepts and connections** are covered in lecture. To maximize your ability to focus on these, you should be familiar with the material prior to the lecture time. All of the class notes and the text reading assignments are posted in advance of lecture. You should “preview” the material so as to recognize terminology and to have particular questions about the material in mind as you enter lecture prepared to work developmental problems.

- Work the problems systematically. **Frame** the question in terms you can address (this helps you notice where to bite into the problem—much of the challenge is to identify one key feature in a complex structure or to identify just the changed bonds). **Identify and evaluate the factors** needed to address your framed question. Reach a **conclusion** and **reflect** on your answer. Iterate the process as needed. Exercises are not a race to get through, but rather an opportunity to build those synapses. Take your time and reflect on the path taken.

- **When in doubt always be able to address the question, “What would an electron do?”** (what factors contribute to its (in)stability in its environment or as it changes environments?)

- **Attend and participate in the group problem solving sessions.** Again, problems are not a race to get through. Working in groups allows time to discuss, elaborate and reflect on the responses. The process of working through these exercises with timely feedback is long term more useful than just seeing the “correct” answer. The problems have been developed to encourage discussion and many do not have clear up/down yes/no answer. The purpose of working such “gray” problems is for you to build up an ability to quickly recognize the ragged edge of your knowledge and evaluate the factors to make the best assessment possible, even if it only narrows the possibilities supported by the evidence. Posting “correct” answers will thus not be done.

Reread the chapter in light of the connections made in lecture. **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.

- **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.

- Much of organic chemistry requires visualization in 3D. To aid you in this visualization, you are expected to **use a molecular model kit.** You must also be able to clearly draw the chemical structures. Remember that "precision in drawing leads to precision in thinking" (and this often requires that you include the hydrogen atoms and show non-bonded electron lone pairs when needed for clarity).

- **And finally,— You must keep up.** This material is hard and you are not expected to master every bit without difficulty. Please get help when you are confused. It is easier to patch small gaps. If you wait it will often only result in a deep hole.