Draft Syllabus for Chemistry 232 (O-Chem) (v 2.0)
San Diego State University, Fall 2012

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CLASS:  10:00 to 10:50 am, MWF in NH100.

CRASHING, ETC.:
come to class the first day for full details. If you have taken and passed 232L, bring proof. If you have taken
General Chemistry elsewhere and want me to evaluate whether you have satisfied the pre-requisite (see below),
bring written proof of what you have taken and written documentation of what the class entailed.

ATTENDANCE:
Unlike some subjects, teaching O-chem does not lend itself well to Powerpoint slides, so if you miss class, you
miss material which is neither in the book nor online. I don’t take attendance or use it in making a grade, but
your performance will probably suffer if you regularly miss class. Come to class! There will be class
participation points, see below.

PRE-REQUISITES (quoting from the General Catalog):
(the lecture) CHEM 232 - Chemistry 201 with a grade of C or better and credit or concurrent registration in
Chem 232L.   (the lab) CHEM 232L - Chemistry 201 with a grade of C or better and credit or concurrent
registration in Chem 232.

OFFICE HOURS:  11:05 to 12:00 MWF (in CSL 205 unless otherwise posted)

EXAMS AND QUIZZES:
Quizzes  will be assigned about once a week, taken (with a time limit) and graded through WileyPlus. You are
responsible for checking WileyPlus to find out when quizzes (and homework) are due.
Midterms  - Monday evenings at 17:00 to 18:50.  You MUST be able to attend the exams to take the class. No
make-up exams will be given under any circumstances – you get to drop one midterm score (see below). If
you miss a midterm, your zero score will be automatically dropped.
Final exam  will be on Saturday, Dec. 8 from 10:30 to 12:30. NOTE: Chem 232 final exam schedule is under
Group Finals. In 2009, two people mis-read the schedule and missed the final exam – and got zero points!
There will be no make-up final!

REQUIRED:

Recognizing the costs of textbooks, I have worked with the publisher to provide the cheapest option. We will
use WileyPlus for study guide and homework functions. Older editions or used copies of the text without the
access code for the 10th edition will not give you access to WileyPlus, which we will use in this course to handle
homework assignments.

Logging in to WileyPlus: www.wileyplus.com  or this URL:
http://edugen.wileyplus.com/edugen/class/cls289679/
Information and introduction to getting started in WileyPLUS:

2. For lab portion of course, see your 232L TA or coordinator Dr. Somanathan.  Chem 232 Lab Supplemental
Materials, by Somanathan, and Microscale and Macroscale Techniques, by Pavia et al.

Highly recommended:
3. Three-dimensional molecular models. Seems like every organic professor has them -- there must be a reason!
It is incredibly helpful to have a 3-D model to visualize the actual structure and bonding of organic molecules,
just as globes or architectural models are used in addition to flat maps or plans to help visualize those three-
dimensional objects. Computer versions are useful but still limited compared with real-life “toys.”

Course Requirements:
The prerequisite for Chemistry 232 is one year of General Chemistry. You will need to have a good
understanding of general chemistry to do well in this class (especially orbitals, electronic configurations,
bonding theory, acidity and electronegativity). We will go over these but as a matter of review, applying the
concepts to organic chemistry.

Purpose:
The goal of this class is to give you a thorough understanding of organic chemistry. This course will lay the
foundation for future studies in biology, biochemistry and more advanced chemistry courses.

Expected Student Learning Outcomes for Chem 232:
1. Understand physical properties of organic compounds and fundamental chemical reactions in organic
chemistry.
2. Determine bonding, hybridization, Lewis structures, and / or stereochemistry of simple organic molecules.
3. Show chemical mechanisms for basic organic reactions using the curved arrow formalism (“arrow-pushing”).
4. Determine and differentiate various types of simple organic reactions, for example S_N1, S_N2, E1 and E2
pathways, radical chain reactions, or additions to double bonds.
5. Understand the relationship between different functional groups and organic chemical reactions.
6. Identify examples of organic chemistry in common “daily life” situations or biochemical processes.
7. Be able to apply and use the outcomes above in more advanced courses such as upper division organic
chemistry (Chem 432), biochemistry, and more advanced organic chemistry courses.

What? Sometimes No Lecture?
Required for the course is a source of Bound Optimally Organized Knowledge – that is, a BOOK (electronic or
otherwise). It makes little sense to me and I hope to you who are paying your or someone else’s hard-earned
dollars to be here that I should lecture day after day, simply following a textbook.
So what are we going to do in class? I will lecture about 75-85% of the time. The rest of the time is your chance
to ask questions and really, really learn. I will assign reading material along the way, mostly from the textbook
but occasionally from other sources (e.g. handouts). Even more importantly, I will also often assign one or two
problems for you to think about and do before the next class. Using WileyPlus, you will be given points for
solving these problems. Do the assigned reading and the problems before the next class. Then in class or office
hours, ask me questions about what you don’t understand! The purpose of the class time is to clarify the
material in the book and probably not all topics can be covered in the class periods, but I expect you to cover
what is assigned. This will require you to learn from the book through reading and self study, along with
asking those questions.

Will I Look or Feel Stupid Asking a Stupid Question?
One of the greatest fears for most people (adults anyway). Solution? Ask the questions. Don’t worry if they’re
“stupid.” If you doubt the validity of this approach, go talk to an elementary-school class sometime and see how
eager they are to ask questions. They don’t have to look cool. Why should we?

Studying the Subject:
Many people find organic chemistry to be very difficult. But difficult does not mean boring! In the past I’ve
advised people that this class may require a minimum of 15 hours of time outside of class each week (although
your mileage may vary). There is a lot of material to be covered and trying to memorize all of it is unnecessary
since the point of the course is to develop an understanding of the subject. To understand organic chemistry you
must think about it, read about it, struggle with problems, go down the wrong path (often). But do the reading
and assigned problems before the next class and it will make the discussion easier to follow and will help to
clarify concepts that you may have found difficult in the reading. Repeat as needed. Let me know how it goes.
HOMEWORK:
Working problems is essential to understanding organic chemistry. Do, and try to understand, as many problems as you can, not just the ones I assign. The exam problems will use the concepts covered in the homework problems - a few will be almost identical, but most different enough that you will need to understand the principles rather than memorize. The quiz and exam problems will be designed to test your understanding of the reading, homework and lectures. You are expected to keep up with the homework. Organic chemistry cannot be learned the night before the exam. Some homework problems will be assigned to go along with the reading assignments.
Quizzes will be assigned and done through WileyPlus, not in class. You are responsible for checking WileyPlus to keep track of when quizzes will be due. Same with homework.

CLASS PARTICIPATION:
Each student must have the I-clicker system. This will allow students to answer questions during class. There will be two to four questions per lecture beginning with the third lecture on 31 August. These questions are presented in multiple choice format and the student typically has 1 - 2 minutes to respond using the Clicker. A histogram of responses is displayed at the end of each exercise. The purpose of this exercise is to identify any misunderstandings with the material and encourage active learning.

A maximum of 50 grade points can be earned from class participation. Each student receives one clicker point for each question answered correctly and one clicker point for attempting all of the questions in a lecture. Clicker exercises will be randomly selected for scoring; you have no way of knowing which ones are being selected for scoring, or not. At the end of the semester, a student’s clicker points are added and then increased by 20% to allow for absences, malfunctioning clickers, and all other possible problems. These clicker points are then normalized to the maximum of 50 grade points. For example, if there are 100 possible clicker points in a semester and a student earns 50 clicker points, the student will receive a total of 30 grade points after the 20% increase.

Register your i-clicker remote on our Blackboard course menu, NOT the i-clicker company site. It is your responsibility to have a functioning and fully registered device. The clicker points collected during the first few weeks of class will serve as a test period to deal with any clicker bugs. Starting on 17 September, the clicker points will be used for grading purposes. If you have clicker problems, please contact the SDSU clicker support team at http://clicker.sdsu.edu. Clicking for other students who cannot attend class is considered cheating.

MIDTERM EXAMS AND FINAL:
Midterms are worth 150 points each, the final 250. The lowest score will be dropped for each person. Midterms 1-4 will be given on Monday evenings. The final will be comprehensive, covering all the topics addressed by the course. If you miss a midterm, that exam will be dropped automatically. No make-up exams will be given under any circumstances.

Exam Schedule:
Midterm 1  5:00 – 6:30 PM Monday, September 10 (yes, only two weeks away)
Midterm 2  5:00 – 6:30 PM Monday, October 1
Midterm 3  5:00 – 6:30 PM Monday, October 22
Midterm 4  5:00 – 6:30 PM Monday, November 19
Final Exam  Saturday Dec. 8, 10:30 am to 12:30 pm

Locations to be arranged and announced. Exam rooms will be assigned by lab sections in the lecture class.

WANT TO HELP WRITE THE MIDTERM?
If you want a chance at writing one of the midterm questions yourself, here is your chance! Up until the end of class the Friday before each midterm, I will accept up to two midterm questions written by you, with the solution given. I will look over what I get and may put one or more of the submissions on the midterm the following Monday. My goal is to help you study the material. Asking your own questions is a great way to study!
SUMMARY OF GRADING:

- homework (on WileyPlus) 150 points*
- quizzes (on WileyPlus) total 150 points*
- 4 midterm exams (1 lowest score dropped) 3 midterms x 150 points each = 450 points
- comprehensive final exam 250 points
- class participation 50 points
- total 1050 points*

The course final grade will be based on the final point total.

*Note! Depending on how use of class participation and homework and quizzes and WileyPlus goes, the number of points assigned to class participation, homework or quizzes may be adjusted up or down, and with it, the point total may be changed. In addition, some additional assignment(s) may be included, also changing the final point total.

CHEATING:

There is a zero-tolerance policy for cheating in this class. I expect the highest integrity from you, as you expect of me.

CHAPTER TOPICS AND PROPOSED COVERAGE OF MIDTERMS (THE LATTER MAY CHANGE):

MT 1 will cover material discussed in Chapters 1, 2, and 3
MT 2 will emphasize material discussed in chapters 4, 5, 6

1 – bonding, Lewis structures, octet rule, resonance, orbitals
2 – functional groups, intermolecular forces, IR spectroscopy
3 – acids and bases, pK_a, free energy changes, mechanisms
4 – alkanes
5 – stereochemistry and chiral molecules
6 – nucleophilic substitution and elimination
7 – alkenes and alkynes – properties and synthesis
8 – alkenes and alkynes – reactions
9 – NMR and mass spectrosopies – how to identify compounds
10 – radical reactions
11 – alcohols and ethers
12 – alcohols from carbonyl compounds

We may get into chapters 13 and 14 (conjugated unsaturated systems and aromatic compounds) if time allows.