

Chemistry 2300

Principles of Organic Chemistry, Fall 2015

Instructor: Dr. Tom Chang
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Meeting Time/Place: MWF 1:30 - 2:20 pm, Engineering 103

Office Hour: M-F 12:00 pm to 1:00 pm, or email to setup an appointment

Textbook "Essential Organic Chemistry" 2nd Ed., Paula Y. Bruice, Pearson, ISBN-10: 1256081833 (required)
Earlier edition or other version of Organic Chemistry textbook should work.

Model Kit: Available in Chem Store (1st Floor of Widtsoe). (required)

Course Outline and Exam Schedule:

Week	Dates	Chapter(s)
1	8/31 – 9/4	Introduction, Chapter 1
2	9/9 – 9/11 (9/7 Labor Day)	Chapter 2
3	9/14 – 9/18	Chapter 3
4	9/21 – 9/25	Chapter 4 Exam 1 (9/25)
5	9/28 – 10/2	Chapter 5
6	10/5 – 10/9	Chapter 5
7	10/12 – 10/14 (10/16 fall break)	Chapter 6
8	10/19 – 10/23	Chapter 7, Exam 2 (10/23)
9	10/26 – 10/30	Chapter 8,
10	11/2 – 11/7	Chapter 9
11	11/9 - 11/13	Chapter 10
12	11/16 – 11/20	Chapter 11, Exam 3 (11/20)
13	11/17 - 11/21	Chapter 11
14	11/24 (11/25 - 11/27 Thanksgiving)	Chapter 12
15	11/30 – 12/4	Chapter 12 (12/4 Bonus Quiz)
16	12/14	Final Exam (Mon., 1:30 pm – 3:20 pm)

Online Links to Chemistry Materials:

Organic chemistry: www.jpup.com/organic-online/webhome.htm

Periodic Table: pearl1.lanl.gov/periodic

Organic reactions: www.towson.edu/~sweeting/orgrxs/reactsum.htm

Also check the links from the on-line course material of Chem2300:

http://ion.chem.usu.edu/~tchang/chem2300/previous_exams_2300_01.htm

General Learning Objectives:

1. Apply electronegativity and VESPR to draw the Lewis structure and predict chemical properties for various functional groups.
2. Use electronegativity, octet rule, and electron(s)-moving to write the resonance structures and judge the order of stability for these structures.
3. Apply the concepts of acid/base and nucleophile/electrophile to predict a chemical reaction.
4. Recognize constitution (structural) isomers, configuration isomers, conformation isomers, and stereoisomers, and explain the difference in chemical and physical properties among these compounds.
5. Write correct electron-pushing mechanisms for the topic reactions in each chapter.
6. Apply the concepts of resonance and inductive effects to predict the chemical and physical properties for different functional groups and the molecule to which these functional groups are attached.
7. Explain the reaction mechanisms by using the concepts of steric hindrance, stability of carbocation, and leaving group capability.
8. Use the pK_a values to explain or define the roles of a molecule with lone-pair electron ($:Z$) as base, nucleophile, or leaving group in a chemical reaction.
9. Explain aromaticity and recognize aromatic compounds.
10. Perform all of the detailed learning objectives for every chapter posted online or distributed as hard copy.

Broad Objectives (for IDEA evaluation):

1. Gaining factual knowledge (terminology, classifications, methods, trends)

- a. Apply electronegativity and hybridization concept to draw the Lewis structure and predict chemical properties for various functional groups.
- b. Use electronegativity, octet rule, and electron(s)-moving to write the resonance structures and judge the order of stability for these structures.
- c. Use the pK_a values to explain or define the roles of a molecule with lone-pair electron ($:Z$) as base, nucleophile, or leaving group in a chemical reaction.

2. Learning fundamental principles, generalizations, or theories

- a. Apply the concepts of acid/base and nucleophile/electrophile to predict a chemical reaction.
- b. Recognize constitution (structural) isomers, configuration isomers, conformation isomers, and stereoisomers, and explain the difference in chemical and physical properties among these compounds.

- c. Apply the concepts of resonance and inductive effects to predict the chemical and physical properties for different functional groups and the molecule to which these functional groups are attached.
- d. Explain the reaction mechanisms by using the concepts of steric hindrance, stability of carbocation, and leaving group capability.
- e. Explain aromaticity and recognize aromatic compounds.

3. Learning to apply course material (to improve thinking, problem solving, and decisions)

- a. Write correct electron-pushing mechanisms for the topic reactions in each chapter.
- b. Perform all of the detailed learning objectives for every chapter posted online or distributed as hard copy.

Academic Integrity Violation

1. Any form of extra assistance or media are not allowed for all the exams and bonus quiz. These include, but not limited to, books, class notes, handouts, information sheets or cards, and electronic devices, such as cell phone, computer, ipad, and calculator.
2. Any violation during the exams and bonus quiz is subjected to disciplinary actions.
3. More information can be found at: <http://www.usu.edu/studentconduct/aiv/index.cfm>

Grading Scheme:

1. Point Distribution: (1) Three one-hour exams (100 pts each). 30 multiple choice questions for 90 points and one written question for 10 points.
(2) Final (200 pts). 60 multiple choice questions for 180 points and two written question for 20 points
(3) Bonus Points from Quiz (20 pts). 10 multiple choice questions.

Total Points: 500 pts

2. Bonus Quiz:

There will be 10 multiple choice questions for the bonus quiz with a total of twenty points. Nine of these questions will come from previous exams. One question comes from the new material. These points will be bonus points and will be added to your total point. Your total point will be divided by **500** to yield your percentile for determining your final grade. The date for quiz is **December 5. There will be no change on the time and no make-up for the bonus quiz.**

3. Grade Correction:

Any grading mistake or dispute need to be discussed with me within **one week** after the return of the exam. Email or come to Dr. Chang's office for the changes.

4. Grade Breakdown:

The grade received in the course is based on your performance on the exams and homework problems. Grades are guaranteed as given below for overall percentage score on all exams. However, it is **subjected to be changed** when abnormal distribution occurs, for example >50% of the class score A or >50% of the class score D. Your actual grade when located below the borderline may be upgraded, if you have shown a steady improvement on your scores. The final grade will be normalized if more than 20% of the students receive F or have total points lower than 250. Except for the final exam, any grading error needs to be corrected **within a week** after the exams or quiz are returned. The final exam can be picked up in my office on December 11. Any grading error of final exam needs to be corrected by 12:00 pm of Friday, December 13. Your final grade will be posted by the end of December 13.

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F
% Scores	≥90%	≥85%	≥80%	≥76%	≥72%	≥68%	≥64%	≥60%	≥56%	≥50%	<50%
Total	≥450	≥425	≥400	≥380	≥360	≥340	≥320	≥300	≥280	≥250	<250

5. Tips for preparing for the exams:

- Be able to understand and answer correctly for the questions from "Learning Check".
- Be able to understand and answer correctly for the questions from previous exams.
- Attend the reviewing sections held by Undergraduate Teaching Fellow (UTF) or SI.
- Email or come to me for question.

Procedures:

1. There will be no regular make-up exams. Persons who miss an examination date due to sudden illness or family situation must contact me within **one week** in order to discuss appropriate arrangements. After one week, no credit will be given for a missed exam. It is possible to take an exam in advance, but only with a valid excuse and prearrangement with me.
2. It is an official University policy that unless you have three exams on the same day, you must take the final exam in the course at the officially scheduled time. Permission to take a final at any other time for any other reason can only be obtained from Dean of Science.
3. The main function of office hours is to discuss and solve problems that you may be having with the course materials, problems in the textbook, and concepts presented during lecture. Try to formulate questions in advance. **Do not expect a mini review session.** On the other hand, **do not hesitate to ask me question.**