

Chemistry 2300

Principles of Organic Chemistry, Fall 2019

Instructor: Dr. Tom Chang
Office: Widtsoe 337
Phone: 797-3545
Email: tom.chang@usu.edu

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	Chapter(s)
1	Introduction, Chapter 1
2	Chapter 2
3	Chapter 3
4	Chapter 3
5	Chapter 4, Exam 1 (9/27)
6	Chapter 5
7	Chapter 6
8	Chapter 7
9	Chapter 8, Exam 2 (10/25)
10	Chapter 9
11	Chapter 9
12	Chapter 10
13	Chapter 10, Exam 3 (11/18)
14	Chapter 11
15	Chapter 12 (12/6 Bonus Quiz)
16	Final Exam (12/9, 1:30 pm – 3:20 pm)

Note: 9/2 Labor Day, 10/18 Fall break, 11/27 - 11/29 Thanksgiving

Online Links to Chemistry Materials:

Organic chemistry: www.jbpub.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. 9 questions come from previous three exams and 1 question comes from new material.
 - (4) Extra Points (4 points maximum): will only be awarded to those who are less than 1% from a better grade **and** have shown steady progress on their scores.

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 6. 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:

Your total points from three exams, final and bonus quiz will be divided by **500** to calculate your score percentage. Your final grades are determined according to your score percentage as shown in the table below.

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

However, the final grade may 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

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.**