

CHEM 2353 Fundamentals of Organic Chemistry - Spring, 2019

CHEM 2353 Lecture Classes

Sec	Day	Time	Instructor	Location
010	MWF	11:00 am - 11:50 am	Mr. Boudreaux	CAV 200

Faculty Information

Mr. Kevin Boudreaux

Office: CAV 207B

Phone: 486-6623

E-mail: Kevin.Boudreaux@angelo.edu

Office Hours: M-F 9:30-11, or by appointment

Organic chemistry nowadays almost drives me mad. To me it appears like a primeval tropical forest full of the most remarkable things, a dreadful endless jungle into which one does not dare enter, for there seems to be no way out.

Friederich Wöhler

Textbook

S. L. Seager & M. R. Slabaugh, *Organic and Biochemistry for Today*, 8th ed (2014)

Prerequisite

You **MUST** have passed CHEM 1405 or 1411 to receive credit for this course!

Course Description

In this class, you will study the fundamentals of organic chemistry, including the nomenclature of organic compounds, the influence of structure on the properties of organic compounds, and some of the major types of reactions of organic compounds.

Grading:

Exams (4)	100 pts. each*
Quizzes	100 pts.*
<u>Final Exam</u>	<u>150 pts.</u>
<i>Total</i>	<i>550 pts.</i>

Grading Scale:

A 90 - 100

B 80 - 89

C 70 - 79

D 60 - 69

F below 60

* The lowest grade from among the four hour exams and the total quiz score will be dropped.

Attendance

Class roll will be taken regularly, and the attendance policy described in the Undergraduate-Graduate catalog will be followed. Make-ups for exams or quizzes which have been missed for valid reasons must be taken **no later than one week following the absence**. No makeup assignments will be given unless a valid excuse can be furnished. If you miss a class, it is your responsibility to find out what you missed.

Lab Course

The lab course (CHEM 2153) is a *separate course* from the lecture. You will need lab goggles for the course.

Reserve Material

Most of the slides which are projected on the LCD/overhead projector will be available on my [faculty web page](#)¹, . Keys to quizzes and exams will be posted on the bulletin board outside my office.

Homework

Suggested homework problems from the textbook will be assigned regularly. These problems will not be graded, but they are a good preparation for the quizzes and exams.

Quizzes

Quizzes will be given every week (usually at the end of class on Friday). They will be based on material presented since the previous quiz, and will be taken primarily from the problems in the textbook. There will be approximately 12 to 15 quizzes, worth 100 points each; the lowest two quiz grades will be dropped from the total; and the remaining quiz grades will be averaged together to obtain a 100 point grade. (The management reserves the right to have occasional pop quizzes as well.)

Exams

Four hour-long exams, each worth 100 pts., will be given on **February 8, March 1, March 25, and April 26**. (The problems from the textbook and the quizzes will be a good preparation for these exams.)

Final Exam

The comprehensive (but not, I hope, incomprehensible) Final Exam for this course, worth 150 points, will be on **Wednesday, May 8 from 10:30 am to 12:30 pm**. About half of the questions on the final will be taken from the three hour exams and the previous quizzes. **THE FINAL EXAM WILL NOT BE DROPPED FROM THE FINAL GRADE**. Students who must unavoidably miss the final exam at its regularly scheduled time must notify the instructor by noon of the day of the exam, otherwise no make-up provisions will be provided.

Academic Honesty

Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are expected to work independently on homework assignment,

quizzes, and exams. Cheating and/or plagiarism will not be tolerated. Students are responsible for understanding the Academic Honor Code, which is to be found in the [Student Handbook](#).²

Withdrawal from the course

Anyone dropping this class by **Thursday, March 28, 2019** will receive a grade of W. **No drops are allowed after this date.** If you need to drop the class, it is your responsibility to obtain the instructor's signature on any drop slip prior to that date.

Student Learning Outcomes

By the end of the semester the student should be able to:

- Understand the differences between organic molecules and inorganic compounds.
- Recognize and understand the differences among different organic functional groups.
- Be able to name simple organic compounds and draw their structural formulas.
- Be able to predict the shape and hybridization of carbon-containing compounds.
- Be able to correlate the structure, shape, and polarity of an organic molecule with its physical properties, such as boiling point and solubility.
- Be able to predict the products of some simple organic reactions.

Lecture Schedule — Spring 2019

The table below shows the approximate schedule of topics for the class.

	Week of	Topics
1	1/14	Introduction, syllabus. Chapter 1: Alkanes. What is Organic Chemistry?. "What's So Great About Carbon?" Organic vs. inorganic compounds. Covalent bonding. sp^3 hybridization. Isomers. Structural isomers. Functional groups. Drawing organic molecules. Hydrocarbons. Some common alkanes. Conformations of alkanes. Structural isomers. Rules of IUPAC nomenclature. Nomenclature of alkanes. Cycloalkanes and nomenclature Geometric isomers. Physical properties of alkanes. Combustion. Alkyl halides. Petroleum.
2	1/21	Chapter 1, cont. Monday, January 14: Martin Luther King Day; classes don't meet
3	1/28	Chapter 2: Unsaturated Hydrocarbons. Alkenes. Nomenclature of alkenes. Hybridization in alkenes. Geometric isomers. Common alkenes. Physical properties of alkenes. Addition reactions: Halogenation, Hydrogenation, Addition of acids, Hydration. Markonikov's rule. Addition polymers. Alkyne nomenclature. Alkyne reactions. Hybridization in alkynes. Aromatic compounds. Resonance structures in benzene. Nomenclature of aromatic compounds. Physical and chemical properties of aromatic compounds. Important aromatics.
4	2/04	Chapter 2, cont. Friday, February 8: Exam 1 (Chapter 1, 2)
5	2/11	Chapter 2, cont.

	Week of	Topics
6	2/18	Chapter 3: Alcohols, Phenols, and Ethers. Alcohols, phenols and ethers. Nomenclature and classification of alcohols. Physical properties and hydrogen bonding. Boiling points. Dehydration reactions that produce alkenes. Dehydrations that produce ethers. Oxidation of primary, secondary, and tertiary alcohols. Multi-step reactions. Some important alcohols. Phenols. Nomenclature of ethers. Properties of ethers. Polyfunctional compounds. Thiols.
7	2/25	Chapter 3, cont. Friday, March 1: Exam 2 (Chapter 2, 3)
8	3/04	Chapter 3, cont.
	3/11	SPRING BREAK
9	3/18	Chapter 4: Aldehydes and Ketones. The carbonyl group. Nomenclature of aldehydes & ketones. Physical properties of aldehydes and ketones. Common aldehydes and ketones. Oxidation of aldehydes and ketones. Hydrogenation. Addition of alcohols. Acetals, hemiacetals, ketals, and hemiketals. Hydrolysis of acetals and ketals.
10	3/25	Chapter 4, cont. Chapter 5: Carboxylic Acids and Esters. Nomenclature of carboxylic acids. Physical properties of carboxylic acids. Important carboxylic acids. Acidity of carboxylic acids. Carboxylate salts. Reactions of carboxylic acids. Esters. Nomenclature of esters. Important esters. Synthesis of esters. Polyesters. Hydrolysis and saponification of esters. Triglycerides and soaps. Phosphate esters. Monday, March 25: Exam 3 (Chapter 4, 5)
11	4/1	Chapter 5, cont.
12	4/8	Chapter 5, cont. Chapter 6: Amines and Amides. Classification and nomenclature of amines. Physical properties of amines. Important alkaloids. Basicity of amines. Alkylammonium salts. Quaternary ammonium salts. Reactions of amines. Nomenclature of amides. Physical properties of amides. Important amides. Formation of amides. Reactions of amides. Polyamides. Neurotransmitters. Amino acids and proteins.
13	4/15	Chapter 6, cont.
14	4/22	Chapter 6, cont. Friday, April 26: Exam 4 (Chapter 5, 6)
15	4/29	Chapter 6, cont.
	5/8	Final Exam: CHEM 2353, Section 010, Wednesday, May 9, 10:30 am - 12:30 pm

¹ <http://www.angelo.edu/faculty/kboudrea>

² www.angelo.edu/cstudent/