



Course CHEM 5331 Advanced Organic Chemistry I
Professor Michael Biewer
Term Fall 2016
Meetings T/R 4:00-5:15 PM, SLC 2.304

Professor's Contact Information

Office Phone 972-883-2811
Office Location BE 3.326
Email Address biewerm@utdallas.edu
Office Hours T/R 1-2

General Course Information

Pre-requisites, Co-requisites, & other restrictions	Undergraduate organic chemistry
Course Description	<p>Chemistry 5331 is intended to explain why organic molecules react as they do. The course is roughly divided into two broad topics: bonding (basis for bonds, where electrons are located, strength of bonds, etc.) and physical organic tools (linear free energy relationships, kinetics, isotope effects, etc.). By the end of the semester it is expected that the student can explain relative stability of molecules and be able to test how a reaction mechanism proceeds.</p> <p>There is no assigned text for the class. The course material may be downloaded from the webpage for this course [www.utdallas.edu/~biewerm, under teaching section click on CHEM 5331 link for access to material]. If anyone desires additional material to read a useful textbook option is Francis A. Carey and Richard J. Sundberg, "Advanced Organic Chemistry, part A", (recommend either 4th or 5th edition). The examinations will cover the material presented in class and the weekly packets handed out in class.</p> <p>I will periodically give packets containing suitable problems. These packets will not count against your grade. They are intended to give you a guide to what I expect and will be similar to problems on the tests. Therefore I strongly encourage you to work through the packets to point out difficult areas before the tests. Two examinations will be given in this course along with a final examination.</p> <p>This course is a graduate course in chemistry and therefore a general knowledge of undergraduate organic chemistry is expected. Most topics traditionally covered in undergraduate organic chemistry will be only briefly reviewed. Students are encouraged to review selected topics in undergraduate books to understand the lectures for this course.</p>
Learning Outcomes	<p>Upon completing this course, students will:</p> <ul style="list-style-type: none">• Be able to construct and apply both valence bond and molecular orbital bonding theories to predict properties and reactivity of organic molecules.• Be able to apply physical-organic techniques to predict the course of an organic reaction.
Required Texts & Materials	None
Suggested Texts, Readings, & Materials	Francis A. Carey and Richard J. Sundberg, "Advanced Organic Chemistry, part A", (recommend either the 4 th or 5 th edition)

Assignments & Academic Calendar

[Topics, Reading Assignments, Due Dates, Exam Dates]

Date		Topic	Group #*	Pages*
AUG 23	25	Valence Bond Theory	1	1-42
30	SEP 1	Valence Bond Theory, X-ray diffraction	1,2	43-66
6	8	Molecular Orbital Theory	3	67-96
13	15	Hückel Theory	4,5	97-129
20		Applications	5	130-139
	SEP 22	EXAM #1		
SEP 27	29	Stereochemistry	6	140-170
OCT 4	6	Thermochemistry/Conformation Analysis	7,8	171-221
11	13	Linear Free Energy Relationships	9	222-238
18	20	Kinetics	10	239-260
25	27	Kinetic Isotope Effects	11	261-287
NOV 1		Kinetic Isotope Effects	11	
	NOV 3	EXAM #2		
NOV 8	10	Nucleophilic Reactions	12	288-311
15	17	Nucleophilic Reactions/Cationic Rearrangements	12,13	312-337
29	DEC 1	Pericyclic Reactions	14	338-358
DEC 6		Review		
FINAL (Time and Date TBD)				

* Group # and pages refer to the uploaded presentation number and the associated pages in those uploaded presentations for each topic located on the course website

Course Policies

Grading (credit) Criteria	Grades are based on the exams and final grades Tests (2 x 30%) = 60% Final = 40%
Make-up Exams	No make-up exams will be given
Comet Creed	<i>This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:</i> <i>"As a Comet, I pledge honesty, integrity, and service in all that I do."</i>
UT Dallas Syllabus Policies and Procedures	<i>The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.</i> <i>Please go to http://go.utdallas.edu/syllabus-policies for these policies.</i>

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.