

## Syllabus for Chemistry 6938

**Course title:** Advanced Organic Chemistry II: Synthesis  
**Course meetings:** MW, 11:00 am--12:15 pm  
ISA 3050  
**Instructor:** Dr. Xiaodong Michael Shi, Associate Professor  
**Office:** BSF 310  
**Office Hours:** 12:30 pm-1:30 pm MW, or by appointment  
**Email:** [xmshi@usf.edu](mailto:xmshi@usf.edu)  
**Phone:** 813-974-7249

**Course Objectives:** This course is the continuation of **CHEM 6250** as graduate level organic chemistry class. The objective of this course is to build a solid knowledge base of current methods and applications in organic synthesis and develop literature research skills. Understanding and illustrating the mechanisms for a given organic reaction is crucial for this course.

**Prerequisites:** The course is directed toward senior undergraduates and first year graduate students who have had a one-year course in organic chemistry and finished CHEM 6250. It will be assumed that students are familiar with fundamental aspects of organic chemistry including nomenclature, structure and bonding, the arrow pushing formalism, NMR spectroscopy, and stereochemistry.

### Required Textbooks:

- 1) F. A. Carey and R. J. Sundberg "Advanced Organic Chemistry Part B"
- 2) M. B. Smith and J. March "Advanced Organic Chemistry"

### Recommended References:

- 1) K. C. Nicolaou and E. J. Sorensen "Classics in Total Synthesis"
- 2) T. H. Lowry and K. S. Richardson "Mechanism and Theory in Organic Chemistry"
- 3) E. J. Corey and X. M. Cheng "The Logic of Chemical Synthesis"

**Problem Sets:** Problems from the book and from outside sources will be assigned and collected periodically. These problem sets are critical; if you do not master the material on the problem sets, you will not perform well on the exams. One problem on each examination will be taken directly from the problem sets. The problem sets will be graded on a  $\sqrt{+}$  /  $\sqrt{}$  /  $\sqrt{-}$  system and will be used to adjust borderline cases when final grades are determined.

**Grading and Examinations:** There will be six 15 minutes in class quizzes (6 quizzes in total and 15 points each, 90 total points). There will be two exams (100 points each) and one final exam (200 points). Grades will be based on the number of points accumulated throughout the semester (490 points total).

Letter grade assignment:

A	410 or above
B	360-409
C	310-359
D	280-309
F	279 or less

**Tentative Schedule of Lectures and Examinations (May change):**

	<u>Material</u>	<u>Reading</u>
Module-1	Introduction: Stereochemistry, molecular orbital	U-O-Chem
Module-2	Conformation control review	C&S A, Ch.3
Module-3	Modern Enolate Chemistry	Ch. 1 & 2
Module-4	Organometallic Carbanion	Ch. 7 & 9
Module-5	Functional Group Interconversion by Oxidation/Reduction	Ch. 5 & 12
Module-6	Functional Group Interconversion by Nucleophilic Substitution	Ch. 3
Module-7	Electrophilic/Nucleophilic Addition to C-C multiple Bonds.	Ch. 4
Module-8	Pericyclic Reactions	Ch. 6
Module-9	Carbene chemistry	Ch. 10
Module-10	Aromatic Substitution	Ch. 11

Important Dates (time is subject to change, see in-class announcement)

1/17	MLK	no class
3/13-3/18	Spring Break	no class
1/18	Quiz #1 (15 pts)	
1/30	Quiz #2, (15 pts)	
2/10	Exam I (100 pts,)	
2/27	Quiz #3, (15 pts)	
3/13	Quiz #4, (15 pts)	
3/24	Exam II (100 pts)	
4/3	Quiz #5, (15 pts)	
4/17	Quiz #6, (15 pts)	
12/7	Final (200 pts)	