Syllabus for Chemistry CHEM 647

Course title: Organic Synthesis
Course meetings: MWF, 9:00 AM-- 9:50 AM
CHM 2201
Instructor: Dr. Xiaodong Michael Shi, Professor
Office: CHM 3355
Office Hours: 4:45 pm-5:45 pm W, or by appointment
Email: xmshi@umd.edu

Course Objectives: This course is the continuation of Advanced Organic Chemistry I (Physical Organic Chemistry) as a 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 resection is crucial for this course.

Prerequisites: The course in directed toward senior undergraduates and first year graduate students who have had a one-year course in organic chemistry and finished Advanced Organic Chemistry I. 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) E. V. Anslyn and D. A. Dougherty "Modern Physical Organic Chemistry"
3) 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 are recommended. These problem sets are critical; if you do not master the material on the problem sets, you will not perform well on the exams.

Grading and Examinations: There will be five in class quizzes (5X15=75 total points); two exams (100 points each) and one final exam (200 points). Grades will be based on the number of points accumulated throughout the semester (475 points total).

Letter grade assignment:

A 400 or above
B 350-399
C 290-349
D 270-289
F 269 or less

Tentative Schedule of Lectures and Examinations (May change):

Module	Material	Reading	
I	Course preparation (undergraduate O-Chem, Stereochemistry, Redox state, MO introduction etc.)	U-O Chem. Phy. Org I.	2 w
II	Conformation Analysis-review	C&S A, Ch. 3	2 w
III	Enolate Chemistry	C&S B, Ch.1 & 2	2 w
IV	Carbanion	Ch. 7 & 9	1 w
V	Functional Group Interconversion (Nucleophilic, Electrophilic and Redox)	Ch. 3, 4, 5 & 12	3 w
VI	Aromatic Chemistry	Ch. 11	1 w
VII	Pericyclic Reactions	Ch. 6	1 w
VIII	Carbene Chemistry	Ch. 10	1 w
IX	Introduction of Organometallic Chemistry in Synthesis	handout	2 w

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

1/24 First Day of Class
2/9 Quiz #1 (15 pts)
2/23 Quiz #2, (15 pts)
3/15 Exam I (100 pts,)
3/17-3/23 Spring Break no class
4/5 Quiz #3, (15 pts)
4/19 Quiz #4, (15 pts)
4/26 Exam II (100 pts)
5/3 Quiz #5, (15 pts)
5/11 Final (200 pts)