Tentative Syllabus

Time and place: M W F 13:05-13:55, Room 19-106

Instructor: Dr. Shiyue Fang
Tel: 487-2023, Email: shifang@mtu.edu
Course documents: http://www.chemistry.mtu.edu/pages/courses/class.php?class=CH4430&sem=20051
Office hours: By appointment

Primary text book:
Advanced Organic Chemistry, Reactions and Mechanisms, 2nd edition by Bernard Miller

Useful reference books:
Organic Chemistry, by Marc Loudon
Organic Chemistry, an Intermediate Text, by Robert V. Hoffman
Advanced Organic Chemistry, Reaction Mechanisms, by Reinhard Bruckner

Prerequisite: CH2420 or the equivalent

Course Description: Through study of new types of organic reactions and more in depth examination of reactions learned in introductory organic chemistry classes, this course is intended to develop student’s chemical intuition necessary for advanced work in organic chemistry. To do so, theory and mechanism are largely taught during the description of various types of reactions, except that certain theoretic aspects have to be treated separately.
Specific topics include:

1. Electron delocalization and resonance, a review (Miller)
2. Reactions of aromatic heterocyclic molecules (Miller)
   a. Six-membered heterocyclic rings
   b. Five-membered heterocyclic rings
3. Pericyclic reactions (Miller)
   a. Electrocyclic reactions
   b. Cycloaddition and cycloreversion reactions
   c. Sigmatropic reactions
4. Hammett equation and structure-activity relationships (Miller)
5. Organic photochemical reactions (Miller)
6. Carbenes, carbenoids and nitrenes (Miller) (Depending on time availability)

Grading:
Quizzes: 450
Mid-term exam: 250
Final exam: 300

Quizzes of 2 or 3 simple information type questions will be given in every other week at the beginning of Monday’s class. The questions are covered by materials taught in the latest two weeks before the quiz. There will be no make-up quizzes; if you can not be in class on time, you must inform me by email in advance. The final exam will be comprehensive. A total of 850 points will guarantee an ‘A’.