Time and place: M W F 14:05-14:55, Room EERC-226

Instructor: Dr. Shiyue Fang
Tel: 487-2023, Email: shifang@mtu.edu
Course documents: http://www.chemistry.mtu.edu/pages/courses/class.php?class=CH4430&section=0A&sem=20061
Office hours: By appointment

Primary text book (Required):
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. Hybridization, Electron flow curved-arrow notation and Resonance theory—Reviews
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. Carbones, carbenoids and nitrenes (Miller) (Depending on time availability)

Home Work: Home work will be announced in class. They are not going to be graded and you are not required to turn them in. However, many of them will be included in quizzes and exams; as a result, completing home works timely is important to get good grade for the class.

Grading:
Quizzes: 480
Mid-term exam: 220
Final exam: 300
Quizzes of 1 to 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 mid-term and final exams will be comprehensive. A total of 850 points will guarantee an “A” and 750 a “B”.

Tentative quiz and exam schedule: 17/09 Q1 (80 points), 01/10 Q2 (80), 15/10 Q3 (80), 29/10 Middle term (220), 12/11 Q4 (80), 26/11 Q5 (80), 10/12 Q6 (80), 17/12 Final (300)

Study Suggestions: Make sure to come to class every time, take detailed notes in class. After several classes, if you find difficult to follow, you need to preview relative sections of the book before each class; otherwise, you do not need to. Review your note no later than two days after the class; if you find some thing difficult to understand, read book or ask classmates or me; never let questions to build up! Finish your home work timely, keep the answers and mark questions that you feel difficult. Before each quiz or exam, review your note and the home work (especially the questions you marked difficult). Most questions will be selected from them with little modification.