

CHE 501, Fall 2003

Mechanistic and Synthetic Organic Chemistry: Fundament concepts for organic chemistry structure, reactivity, reactions and reaction mechanisms.

Time: M, W, F, 8-8:50 AM

Place: NSC Rm. 218

Total Classes: 32

Instructors

Part I. Richard Cheng

e-mail: rcheng2@buffalo.edu

office hours: TBA, NSC Rm.515

phone: 645-6800 ext. 2158

Part II. Sherry Chemler

e-mail: schemler@buffalo.edu

office hours: TBA NSC Rm. 618

phone: 645-6800 ext. 2136

Textbooks:

Advanced Organic Chemistry, Parts A and B (required)

Carey & Sundberg

Advanced Organic Chemistry (optional)

March

Mechanism and Theory in Organic Chemistry (optional)

Lowry & Richardson

Transition Metals in the Synthesis of Complex Organic Molecules (optional) Hegedus

Organic Chemistry Lecture Notes (optional, available from Scripps) Boger

If not in the bookstore, check out Amazon.com

Computational Aids:

Everyone should learn how to use Beilstein, SciFinder and the Science Citation Index.

Get familiar with electronic journals. Use the library's website.

Grading and Assignments

First Test (20%), Midterm (25%), Second test (20%) and Final (comprehensive, 25%) and Final report (10%). Homework problems (assigned weekly) will be discussed during

Final Report: see attachment.

Topics Covered. Part I (Richard Cheng) 16 lectures

Conformational Analysis

Stereochemistry

Acid/Base (Pka)

Isotope Effects

Aromatic Substitution

SN2/SN1/E1/E2
Solvent Effects
Orbital Alignment/Group Fragmentation

Part II (Sherry Chemler), 16 lectures

Reductions/Oxidations (2 lectures)

Carbonyl Additions: Stereochemistry, Catalysis, Aldol, Allylation, Glycosylation (4 lectures)

Olefin Additions, Elimination Reactions: Allylic Strain, Hydroboration (2 lectures)

Cross-Coupling Reactions, transition metal catalysis (2 lectures)

Pericyclic Reactions (1 lecture)

Sigmatropic Rearrangements (1 lecture)

Diels-Alder Reactions (2 lectures)

Free Radical Reactions (1 lecture)

Photochemical Reactions (1 lecture)