

Instructor- C. J. Abelt **E-mail-** cjabel@wm.edu **Office-** ISC1 2049 **Phone-** 12677

Required Text: B. Miller, *Advanced Organic Chemistry*, 2nd Ed. (ISBN 978-0130655882) A molecular model kit is recommended. Handouts will supplement the text.

Topics:

- Chapter 1. Introduction; Strain and Reactivity (3 classes)
Handouts – writing mechanisms, molecular mechanics
- Chapter 2. Electrocyclic Reactions (4 classes)
Handouts – MO theory, Huckel MO theory, Stereochemistry
- Chapter 3. Cycloaddition and Cycloreversion Reactions (3 classes)
Handout – Kinetic Isotope Effects

Test 1: Tuesday, October 11, Chapters 1-3 [Fall break Oct. 13-16]

- Chapter 4. Sigmatropic Reactions (2 classes)
- Chapter 5. Linear Free-Energy Relationships; Solvent Effects (2 classes)
Handout – Transition State Theory
- Chapter 6. Migrations to Electron-Deficient Centers (2 classes)
- Chapter 7. Neighboring Group Effects and “Nonclassical” Cations (2 classes)
[Election day Oct. 8]

Test 2: Tuesday, November 15, Chapters 4-7

- Chapter 8. Rearrangements of Carbanions and Free Radicals; ESR; CIDNP (4 classes)
Handouts – Baldwin’s Rules, ESR of Organic Radicals, CIDNP
- Chapter 9. Carbenes, Carbenoids, and Nitrenes (2 classes)
Handouts – Singlet and Triplet Carbenes, ESR of Triplet Carbenes
- Chapter 10. Photochemistry (1 class)

Final Exam (Test 3): Friday, December 16, 2:00 - 5:00, Chapters 8-10

Problem Sets: Assignments will include some problems from the book and some from other sources. ***Working problems is the best way to learn the material.*** You may work on assignments with classmates, so long as you work together on each problem.

Exams: Exams will focus on problem solving and will be similar to problem sets.

Grading:	Problem sets	8@25 points
	Midterm exams	2@250 points
	Final exam, not cumulative	<u>1@300 points</u>
		1000 pts total

Office Hours: By appointment or just drop by.

Chem 403W: Students who plan to satisfy the chemistry major writing requirement should meet with me and agree on a topic before Fall Break. The outline is due by the end of October, and a rough draft is due before the end of classes.