

Chemistry 422 Organic Reaction Mechanisms Wed 6:00 Fall 2006 Professor Krow
GRKROW@temple.edu or grantkrow@aol.com BE 448 Phone: 204-7154 Office
Hours Wed. 3-5:00 and by appointment Text: F. A. Carey and R. J. Sundberg,
Advanced Organic Chemistry, Part A, "Structure and Mechanisms," 4th Edition 2000.

Prerequisite: Organic Chemistry 121-122 or equivalent (A grade of B or better is recommended). Optional Reading, J. A. March, Advanced Organic Chemistry. This book is in the Chemistry library.

Class Goals, Structure, Readings. This advanced organic chemistry course deals with the relationship between structures of organic molecules and mechanisms of organic reactions. The *class is built around the assigned problems*, which serve to clarify and to test your understanding of the material in the text. Other inputs come from your peers- you will be part of groups during the semester- and primary literature references. You will be asked to solve and/or research problems prior to the class discussion. You can divide the effort involved in researching problems among members of your group. Each member of the class will be asked to work problems at the board. The order of topics below is subject to change as voted upon by the class.

Recommended Problems.

Ch. 1: Introduction and Bonding: 2-6, 11, 15,18, 21.

Ch. 11: Pericyclic Reactions: 2a-c, e; 4d; 5b,d,e,g; 7c,g, 12c, 14a,b; 16c (Opt. 5h,7e; 16a,b,f, 17, 19a,e,q) 20 pts

Ch. 2: Stereochemistry: 1,3,4c,5e,6,9, 11a-d, 12,13,14g,j, 16-19, 23. 30 pts

Ch. 3: Conformational analysis: 1,4,5a,6,7(omit f),8a,c,e,h; 11a,b,d, 18, 21 (pick 1), 22 30 pts.

Ch. 4: Rxtn. Mechanisms: 3,4,9,18,23 15 pts.

Ch. 5: Nucleophilic Substitution: 1,2 (omit h, i), 3a-k, 8, 10, 12, 13, 17a,b,d,g,j(2) (opt. 5,20,22) 35 pts.

Ch. 6: Polar Addition and Elimination: 1 (Omit d,e), 2 (Omit a,e), 3, 6a, 8, 9, 10a-d, 11b,c, 12 (Opt. 13) 25 pts.

Ch. 7: Carbanions: 1a,b, 2a,c-g, 4a,b, 9c,d,e, 12, 13b (Opt. 10,14c, 17) 15 pts

Ch. 8: Carbonyl Compounds: 8,9,10,18,24, 30c,d (10 pts)

Grading: You are responsible for assigned problems and problem sets. You will be assigned to a group to help you. There will be short classroom quizzes based upon the assigned problems. Together these will count 200 pts.

There will be a midterm exam(s) (300-400 pts): date and inclusive chapters decided upon by the class, and a final (400-500 pts). Total = 1000 pts. A = 85%, A- = 80%, B+ = 77%, B = 73%, B- 70%, C+ = 65%, C = 55%, C- = 50%, D = 47%.

Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at 215-204-1280 in Ritter Annex to coordinate reasonable accommodations for students with documented disabilities. Sept. 12 (drop with refund), Oct. 31 (last drop day), Nov. 24 (Thanksgiving holiday), Dec. 7 (last class). Final Exam Dec.14. Failure to take the final without prior permission will result in a failing grade.

Key problems

- Ch. 1: Introduction and Bonding: 2a, 3b-d, 5, 6a,c, 15, 18, 21.
Ch. 11: Pericyclic Reactions: 2a,b,c,e, 4d,e, 5b,d,e, g, 7c,g, 12a,c,d, 14a-e, 16a-c,f, 17,19e
Ch. 2: Stereochemistry: 1,5e,6, 11,12,13,16,17,19
Ch. 3: Conformational analysis: 6a,b,c,d,e,f,g, 7a,c,d,e,f,g, 8e, 11a,b,d,22
Ch. 4: Rxtn. Mechanisms: 9, 3
Ch. 5: Nucleophilic Substitution: 1a, 2a-h, j-l, 3d,f,g,h,j, 8 (class), 17a,b,j
Ch. 6: Polar Addition and Elimination: 1a,b,c,e,g, 2b,c,d,f, 9a,b,c, 10b,c,d, 11b
Ch. 7: Carbanions: 1a,b, 2a,c-g, 4a,b, 9c,d,e, 12, 13b (Opt. 10,14c, 17) 15 pts
Ch. 8: Carbonyl Compounds: 8,9,10,18,24, 30c,d (10 pts)