CHEMISTRY 1310/2370

9:00-9:50 AM, MW, 228 Eberly

SYNTHETIC ORGANIC CHEMISTRY

ADVANCED METHODS IN ORGANIC SYNTHETIC (AMOS)

This combined undergraduate/early graduate level course presents the basic principles of synthetic methodology, retrosynthesis, and the tactics and strategies of organic synthesis. ***A sound knowledge of the material covered in the sophomore organic courses 0310 and 0320 (or equivalent) is highly desirable for this course***. The material covered fills in the gap between the fundamentals of undergraduate organic chemistry and the graduate school level mechanistic and synthetic chemistry.

Organic Synthesis is the spinal cord of organic chemistry. Although often neglected in the undergraduate curriculum due to their high level of sophistication, synthetic tactics and strategy are among the most creative and useful expressions of scientific excellence.

The class is both a refresher course as well as a focused treatment of selected topics in Organic Chemistry. Therefore, "old" reactions from the sophomore organic I & II sequence will be reviewed briefly when they appear in the discussions of fundamental functional group interconversions, and new reactions and mechanisms will be introduced when required for the comprehension of new synthetic sequences. Discussions of important stereochemical analyses, organometallic chemistry and asymmetric catalysis are covered, as well as historically important areas such as aldol reactions and the basics of reduction/oxidation. As much as possible, we use examples where the methodology is seen as part of a strategic plan. The current chemical literature will be discussed and presented on a regular basis. Students will also gain hands-on experience in the use of computer programs such as THERESA for synthesis planning and route analysis. Some, but not all, of the course materials will be available on-line.

Class Topics & Partial Lecture Notes: See our course web page at http://ccc.chem.pitt.edu/wipf/Courses/1310_2370_09.html.

Texts: Organic Synthetic Methods [OSM] by James R. Hanson. Wiley, RSC, 2002; ISBN-10: 047154910X. Much of the course will follow the outline of this book, which serves as our major textbook. A large number of problems for homework and quizzes will be taken from this text.

Organic Chemistry, 5th Ed. (2007) by Vollhardt & Schore. This text is recommended especially to refresh memories of basic organic chemistry transformations. A smaller number of problems for homework and quizzes will be taken from this text. http://bcs.whfreeman.com/vollhardtschore5e/

Software: A link to an on-line version of THERESA will be provided.

Homework: Weekly assignments.

Recitations: As announced; on Fridays from 3-4 PM in CHVRN 132. Some recitations may also be used to make up for class time.

Ofc. Hrs: Tuesdays 5:00-6:15 PM, Room 1301A.

Exams: The two graded midterms will last 50 minutes (100 points each) and the final exam will last two hours (200 points). The final exam will be cumulative. Homework problems will be distributed at various intervals during the term and the answers collected and graded. Performance in the homework problems will contribute ca. 100 points to the assignment of the final letter grade. Questions in the exams are taken from textbooks, lecture materials, and reading/homework assignments.

There will be no make-up exams. You will have one (1) week from the time your exams are handed back to submit them for regrade or comments. Please note that the test will be reconsidered in its entirety. When you resubmit your test, clearly mark what should be regraded; it is not allowed to make any changes or additions on the exam if you intend to submit it for regrading. Cheating in any form before, during or after an exam will result in an F grade for the course. All lecture materials, cell phones and PDAs must be turned off and stowed away during all lectures and exams. For general academic integrity guidelines, see: http://www.provost.pitt.edu/info/ai1.html.

Results for exams, quizzes as well as copies of handouts, selected slides and other course-related information will be posted at http://ccc.chem.pitt.edu/wipf/Courses/1310_2370_09/Homework.html.

Please check the exam scores for accuracy (I will use your student ID

number as identification; if you object to this, or would like me to use another code, please let me know).

Students with Disabilities: If you have a disability for which you are requesting an accommodation, please contact me as well as Disability Resources and Services, 216 WPU (http://www.drs.pitt.edu/), as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

Key to Success: Attend the lectures and use every opportunity to ask questions and participate in discussions; be conscientious about homework and literature readings. Discuss the course materials with your colleagues.