

Fall 2007  
CHEMISTRY 152/252  
Synthetic Methods in Organic Chemistry  
PCYNH 120

**Office Hours:** By appointment

<b>Grading:</b>	<i>Chem 252</i>	<i>Chem 152</i>
Midterm	25%	25%
Report (see below)	25%	25%
Proposal/presentation (see below)	25%	NA
Final exam	25%	50%

**Prerequisites:** The students of this class are expected to know how to work (or become familiar during the quarter) with ChemDraw and Microsoft Word for PC or Mac. They will also need to have access to online scientific databases such as Beilstein and SciFinder in order to retrieve any appropriate information. General knowledge of undergraduate Organic chemistry (140 series) or an equivalent class is necessary. Completion of undergraduate Organic Chemistry laboratories (143 series) is recommended.

**Books:** The class notes for this class are available from Soft Reserves. These notes cover a variety of topics in organic chemistry. Background information on these topics can be found in any standard undergraduate level Organic Chemistry book.

**Additional reading and reference books:**

1. J. March "Advanced Organic Chemistry; Reactions, Mechanisms and Structure" 1992, 4th edition Wiley-Interscience. (*Very complete reference book*)
2. T.W. Greene, P.G.M. Wuts "Protective groups in Organic Synthesis" 1999, 3rd edition Wiley Interscience (*for very good coverage of protecting groups*).
3. Fieser & Fieser's "Reagents for organic synthesis" over 15 volumes Wiley (*for background information on a particular reagent*).
4. "Comprehensive Organic Synthesis" Ed. B.M. Trost Pergamon Press 1991 9 volumes (*for extensive information on a particular transformation*).
5. "Organic Reactions", Wiley and Sons. Over 40 volumes (*Several well referenced reviews*).
6. "Organic Syntheses", Collective Volumes I-VIII, and volumes I-72. (*Collection of experimental procedures that have been independently checked*).
7. "The Merck Index", Merck and Co., 11th Ed. (*Excellent coverage of wide array of chemicals, drugs and "name reactions"*).

### **Class Assignments:**

**Report (all students):** Each student will prepare a short overview of a synthetic method published between 2007-present in one of the following journals: *J. Am. Chem. Soc.*, *Angewandte Chemie*, *J. Org. Chem.*, *Organic Lett.*, *Tetrahedron Lett.*). *Please consult with me before you decide which manuscript to review.* This overview should be about 2-3 pages long, and formatted using the Org. Lett. template (available online). This overview should not be a repetition of the selected manuscript but a concise presentation of the work that should highlight the following issues: what is the topic that the authors decided to study; what is the general background information on this topic; what are the limitations of the background information; what have the authors reported; how this work advances our knowledge in this topic; what is the scope and limitations of this work? **The selection of the appropriate manuscript should be completed by October 16 and the review should be ready by November 11.** *Note: Use of the Org. Lett. template and knowledge of Chemdraw are essential.*

**Midterm exam (all students):** 25% of your total grade will be based on one paper that you will write and submit anytime before **November 11**. The subject of this paper will be an overview of one of the seminars presented by our visiting speakers of the Chemistry Department. The speakers could be from any area of Chemistry. This overview should be about 3-4 pages long, and formatted using the Org. Lett. template. *Note: Use of the Org. Lett. template and knowledge of Chemdraw are essential.*

**Proposal (only for 252 students-graduate level class):** The submitted proposal will describe in a comprehensive manner any research topic you like to work during your graduate studies, have worked as undergraduates or would be interested to present. The research described should be new and worth pursuing but not simply a review of a published project. *Please consult with me before you decide on the proposal.* The proposal should be about 2-4 pages long, formatted using the Org. Lett. template. Depending on the available time, the students may present this proposal in the last 2 weeks of the class. **The proposal should be ready by November 11.** *Note: Use of the Org. Lett. template and knowledge of Chemdraw are essential.*

### **Lecture outline (tentative):**

Using the class notes as a guide, the following topics will be discussed: Oxidation (3-4 classes), Reduction (3-4 classes), use of protecting groups (2 classes), construction of C-C bonds (4-5 classes) and special topics (3-4 classes). **Note that a substantial amount of new material will be presented in each class. It is strongly recommended that you review the chapters before each presentation, so that you feel somewhat familiar with the content of the lectures.**

### **Exams (all students):**

**Wednesday December 12: Final exam** (11:30-2:30pm) place TBA

During the final exam the students will be asked to propose and evaluate synthetic methods for the synthesis of a molecule.

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