Objective
To develop an understanding of fundamental factors underlying organic reactions. At the end of the semester, students should be able to provide reasonable reaction mechanisms for many organic reactions.

Prerequisite
Because of the advanced nature of this topic, one year of organic chemistry and advanced study in organic chemistry (such as research) is necessary. If you have not had advanced courses, permission of the instructor is required; remedial material will need to be learned on one’s own.

Textbook
We will not be using a textbook because most of the books I have examined either cover too much material or cover older, less relevant material. If you would like a reference book for use in the class and beyond (although not necessary), consider either Carey and Sundberg or Anslyn and Dougherty. If you need a more remedial book, I recommend Grossman. Older editions of books are suitable, too, considering that much of the material has not changed.


Problem Sets
There will be problem sets. These assignments will be graded and they represent a significant portion of the course grade. Although discussions with classmates is permitted, communal problem solving is not. The solutions you turn in should be your own work, and it is obvious to me when you submit someone else’s work. In my experience, if you do not work on the problem sets on your own, you will not do well on the examinations.

Closed-Book Exams
Mid-term exams will be: Tuesday, October 15 and Tuesday, November 19
Cumulative final examination: Thursday, December 12

Grading and Grades
Problem Sets: ~20%
Midterm and Final Examinations: ~27% each
Please familiarize yourself with the grade requirements necessary to maintain good standing in the Ph.D. program.

Lecture Schedule
I will miss only a few classes because of my travel schedule. I will give you sufficient material in problem sets so that you can learn the material on your own.
Schedules of Assignments
In the case of religious holidays conflicting with assignments, please contact Professor Woerpel; NYU’s policies will be followed (http://www.nyu.edu/about/policies-guidelines-compliance/policies-and-guidelines/university-calendar-policy-on-religious-holidays.html). The best policy in all cases is to let Professor Woerpel know as soon as possible before the date of the assignment to make arrangements.

Course Content
We will plan to cover the following topics in this order:

I. Basic Concepts of Physical Organic Chemistry
II. Molecular Orbital Theory
III. How to Propose a Mechanism
IV. Nucleophilic Substitution and Related Reactions
V. Reactions of C=C and Related Reactions
VI. Acidity and Generation of Carbanions
VII. Reactions of Carbonyl Compounds
VIII. Radicals
IX. Carbenes
X. Pericyclic Reactions
XI. If we have time, which is not likely: Stereochemistry and Conformation Analysis