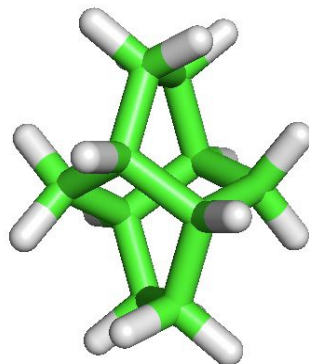


Advanced Organic Chemistry I

Chem 5431



Dirk Trauner

UPenn • Fall 2023

Syllabus

UPenn CHEM 5431: Advanced Organic Chemistry I

Monday and Wednesday, 10:15-11:44 AM, room CHEM 109.

Instructor:	Dirk Trauner
Office:	4001 Vagelos Laboratories
Phone:	(917) 207-7677
Email:	dtrauner@upenn.edu
Office Hours:	Friday, 1-2 PM in 4001 Vagelos Laboratories
 Co-Instructor:	 Michael Zott, zott@sas.upenn.edu

Overview

This course focuses on organic reactions, reaction mechanisms, and the strategic applications of these reactions in organic synthesis. Topics include symmetry, stereochemistry, stereoselectivity, olefinations, olefin metathesis, transition-metal catalyzed cross couplings, cycloadditions, electrocyclizations, sigmatropic rearrangements, and other pericyclic reactions. The material will be illustrated by applications in multistep chemical synthesis. Based on this course, students should be able to read the modern literature, develop independent research proposals in organic chemistry, and succeed in graduate school.

Syllabus

Handouts, Molecular Models, Molecular Modeling Software, and Databases

There is no required textbook. Teaching notes (handouts) will be issued via Canvas.

We recommend that you obtain a molecular visualization software, such **Avogadro** or **Pymol**. **Avogadro** is a molecule editor that is free of charge: <http://avogadro.cc>. **Pymol** is free for college students, following online registration: <https://pymol.org>. We recommend that you familiarize yourself with the **Reaxys Database**, available to Penn students: <https://www-reaxys-com.proxy.library.nyu.edu/#/>.

Exams and Grading

We will issue five problem sets (5 x 10 pts), one project (50 pts), and one final exam (100 pts). The final exam will take place in class on **October 18, 2023**. Problem sets and project will be graded based on participation.

Syllabus

Course Schedule

1)	08/30/23	Introduction, Review of Basic Concepts
2)	09/06/23	Stereochemistry I: Symmetry and Chirality
3)	09/11/23	Stereochemistry II: Molecular Point Groups, Topicity
4)	09/13/23	Selectivity in Synthesis
5)	09/18/23	Olefination I
6)	09/20/23	Olefination II
7)	09/25/23	Cross Couplings
8)	09/27/23	Olefin Metathesis
9)	10/02/23	Pericyclic Reactions, Cycloadditions I
10)	10/04/23	Cycloadditions II
11)	10/09/23	Cycloadditions III
12)	10/11/23	Electrocyclizations
13)	10/13/23	Review
14)	10/18/23	In-Class Exam