

**CHEM 542 Advanced Organic Chemistry
Fall 2016**

Instructors:

Dr. Rob Ronald, Fulmer 415A (enter through 417 lab), 335-3364, rcr@wsu.edu
Dr. Amy Nielsen, Fulmer 313, 335-1923, amy.nielsen@wsu.edu

Class Meeting: MWF 10:10-11:00 PM, Fulmer 432

Study Room: TBD

Required Textbook:

Intermediate Organic Chemistry, Third Edition, Fabirkiewicz, A. M., Stowell, J. C. John Wiley & Sons 2015 (ISBN: 978-1-118-66220-5).

Recommended Texts:

The Art of Writing Reasonable Reaction Mechanisms, Grossman, R. B., Springer-Verlag New York 2003 (ISBN: 978-0-387-95468-4).

Strategic Applications of Named Reactions in Organic Synthesis, Kurti, L., Czako, B., Academic Press 2005 (ISBN: 978-0-124-29785-2).

Course Description: This course is designed to provide students with foundational knowledge of advanced organic chemistry and prepare students for more advanced coursework and research needs. The course is taught as alternating weeks of lecture and problem solving/special topics. Graded quizzes will be given at the end of a week of problem solving. When possible, relevant papers from the literature will be used to illustrate specific concepts. A room (TBD) will be reserved for several hours a week exclusively for 542 students to gather and work on problems together outside of class. These study sessions will on occasion be attended by Prof. Ronald or Prof. Nielsen.

Course Objective:

To provide advanced undergraduates and first-year graduate students with a working knowledge of graduate level organic chemistry

Learning Outcomes

1. Describe chemical reactivity in terms of organic functional group chemistry, including functional group transformation.
2. Interpret structural changes within a chemical framework considering bond making and bond breaking.
3. Propose reasonable mechanisms that convert starting materials to product, including both polar and radical pathways
4. Interpret stereochemical data that informs a mechanistic hypothesis.
5. Plan an organic synthesis using a retrosynthetic approach based on known chemical reactions.

Grading Scheme: This course will be graded on the basis of the two halves of the course, each worth 50% of your grade. Your grade will be based on **6 biweekly quizzes (50%) and 2 exams (50%)**. Homework is a non-graded element of this class. However, the biweekly quizzes will cover material from the homework assignments, so students are VERY STRONGLY encouraged to complete the homework in a timely manner in order to prepare for the quizzes. The scores on the quizzes and exams will be used to assign letter grades based on the following scale:

A	90-100	B	80-83	C	70-73	D	60-63
A-	87-89	B-	77-79	C-	67-69	F	<60
B+	84-86	C+	74-76	D+	64-66		

Lecture Schedule

Week	Starting	Monday	Wednesday	Friday
Week 1	August 22	Lecture 1	Lecture 2	Lecture 3
Week 2	August 29	Lecture 4	Lecture 5	Problem Solving (Q)
Week 3	September 5	Labor Day	Lecture 6	Lecture 7
Week 4	September 12	Problem Solving	Problem Solving	Problem Solving (Q)
Week 5	September 19	Lecture 8	Lecture 9	Lecture 10
Week 6	September 26	Problem Solving	Problem Solving	Problem Solving (Q)
Week 7	October 3	Lecture 11	Lecture 12	Lecture 13
Week 8	October 10	Problem Solving	Problem Solving	Exam 1
Week 9	October 17	Lecture 14	Lecture 15	Lecture 16
Week 10	October 24	Problem Solving	Problem Solving	Problem Solving (Q)
Week 11	October 31	Lecture 17	Lecture 18	Lecture 19
Week 12	November 7	Problem Solving	Problem Solving (Q)	Veteran's Day
Week 13	November 14	Lecture 20	Lecture 21	Lecture 22
	November 21	Thanksgiving Break		
Week 14	November 28	Problem Solving	Problem Solving	Problem Solving (Q)
Week 15	December 5	Lecture 23	Lecture 24	Lecture 25/Review
Finals	December 12	Exam 2 TBA		

Lecture Topics by Week (*tentative!*)

1. Intro to 542 – Prof. Ronald
2. Nomenclature and Accessing Chemical Information – Problem Solving
3. Mechanisms and Predictions
4. Mechanisms and Predictions – Problem Solving
5. Electron Delocalization, Aromatic Character, and Pericyclic Reactions
6. Electron Delocalization, Aromatic Character, and Pericyclic Reactions – Problem Solving
7. Planning Multistep Syntheses
8. Planning Multistep Syntheses – Problem Solving
9. Stereochemistry
10. Stereochemistry – Problem Solving
11. Functional Group Transformations
12. Functional Group Transformations – Problem Solving
13. Carbon–Carbon Bond Formation
14. Carbon–Carbon Bond Formation – Problem Solving
15. Physical Influences on Reactions and Review
16. Finals Week

Students with Disabilities:

Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center.

Academic Integrity:

Academic integrity will be strongly enforced in this course. Any student caught cheating on any assignment will be given an F grade for the course and will be reported to the Office Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3). It is strongly suggested that you read and understand these definitions: <http://conduct.wsu.edu/default.asp?PageID=338>

Safety Statement:

The following websites detail the WSU Safety policy and plan. The content of these sites will be discussed on the first day of the term

- <http://safetyplan.wsu.edu>
- <http://alert.wsu.edu>
- <http://oem.wsu.edu>