Advanced Organic Chemistry
4311- Fall 2015

Tuesdays and Thursdays: 8:05 am
MoSE 1224

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The goal of this course is to provide a deeper physical insight into the principles of organic chemistry discussed in sophomore organic, as well as providing an introduction to organometallic chemistry and synthesis.

Grading:

1st Exam	100
2nd Exam (take home-closed book)	150
3rd Exam	100
Final	200
Total	550

85% of the total point assures an A; 75% assures a B, 65% a C, 55% a D, 54% or below will be a failing grade.

Students are expected to take *ALL* exams.
For Dr. Marder's lectures, Dr. Tim Parker will be holding review sessions at times agreed upon with the class.

	Date	Topic
1	Aug. 18	Acid Base Chemistry, Polarity and Polarizability SRM (read A and D chapter 5)
2	Aug. 20	Acids and Bases-Relation to Chemical structure SRM (read A and D chapter 5)
3	Aug. 25	Introduction to Electronic Structure SRM (read A and D chapter 1 and 14)
4	Aug. 27	Introduction to Electronic Structure of Conjugated Systems SRM (read A and D chapter 1 a 2.5, 14)
5	Sept. 1	Tips for Drawing Reasonable Mechanisms (Do's and Don'ts) SF (read A and D appendix 5, 6)
6	Sept. 3	Concepts of Stereochemistry SF (read A and D chapter 6)
7	Sept. 8	Basic Concepts of Kinetics and Mechanism SB (read A and D chapter 7)
8	Sept. 10	Basic Concepts of Kinetics and Mechanism SB (read A and D chapter 7)
9	Sept. 15	Test 1 lecture 1-8
10	Sept. 17	Frontier Orbitals Donors and Acceptors; Stability of Ions and Radicals SRM (read A and D chapter 2.1-2.5, 11.5.12)
11	Sept. 22	Mechanistic and Orbital Perspectives on the Reactions and Formation of Alkenes SRM (read A and D chapter 10.1, 10.3-10.7, 10.13 and 11)
12	Sept. 24	Mechanistic and Orbital Perspectives on the Additions to Alkynes and Dienes SRM (read A chapter 10.3)
13	Sept. 29	Concepts Associated with Radical Reactions SRM (read A and D chapters 7.3, 10.10, 10.14, 11.7 and 11)
14	Oct. 1	Mechanistic and Orbital Perspectives on the Reactions of Carbonyl and Benzenes SRM (read A and D chapter 10.1-10.2, 10.8, 10.12, 10.18-10.22)
15	Oct. 6	Introduction to Organometallic Chemistry SRM (read A and D chapter 12)
16	Oct. 8	Fundamental Reactions in Organometallic Chemistry SRM (read A and D chapter 12)
	Oct. 13	Fall Break
17	Oct. 15	Catalytic Cycles in Organometallic Chemistry SB (read A and D chapter 12)
18	Oct. 20	Midterm Test 2 lectures Emphasizing 7-15 but 1-7 covered as well (Take Home Due Oct. 31)
19	Oct. 22	Retrosynthetic analysis SF
20	Oct. 27	Carbonyls in Synthesis SF (read A and D chapters 2.4, 10.12, 11.1-11.4)
21	Oct. 29	Carbonyls in Synthesis SF (read A and D chapter 10.15)
22	Nov. 3	Benzene Reactivity in Synthesis SF (read A and D chapters 10.18-10.22)
23	Nov. 5	Stereo-electronic Control (Pericyclic Reactions) SF (read A and D chapters 15, 16.3)
24	Nov. 10	Stereo-electronic Control (Carbonyl addition reactions) SF (read A and D chapter 10.8)
25	Nov. 12	Test 3 Lectures 19-24
26	Nov. 17	Synthesis using Organometallics Coupling Chemistry C-C, CN etc SF
27	Nov. 19	Synthesis using Organometallic Chemistry SF
28	Nov. 24	Synthesis using Carbon-Hydrogen Bond Functionalization SF
	Nov. 26	Thanksgiving
29	Dec. 1	Review TP
30	Dec. 3	Review SF
31	Dec. 8	Finals Week: Final Exam on Tues. Dec. 8, 8:00am-10:50am

Suggested Problems from Ansyln and Dougherty (A and D). (Note: SRM has included on the website a file including additional problems as well).

Lectures 1-2, Chapter 5: 1- 12, 19, 21, 22
Lectures 3-4, Chapter 1: 1-9, 13, Chapter 14: 2
Lecture 5, Appendix 5 questions
Lecture 6, Chapter 6
Lecture 7-8, Chapter 7: 8,
Lectures 9-10, Chapter 1: 22, 32, Chapter 10: 1
Lectures 11-12, Chapter 10: 4, 6, 19, 20, 22, 23, 31, Chapter 11: 3, 52
Lectures 13-14, Chapter 10: 22, 49
Lectures 15-17, Chapter 12: 1, 2, 14
Lectures 20-21, Chapter 10: 44, 45, Chapter 11: 43, 53, 54
Lectures 22, Chapter 10: 16, 19, 21, 22
Lectures 23-24, Chapter 15: 4, 10, 15, 27, 28, 32, 33