

Chemistry 238.01

Organic Chemistry

Fall, 2007

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Text: Organic Chemistry, 7<sup>th</sup> Edition  
Brooks/Cole

This is the first semester of a yearlong course in organic chemistry, the chemistry of carbon compounds. The material is fascinating, yet requires study because both the concepts and language are new. However, the familiarization of a few simple concepts will go a long way in understanding and predicting organic chemistry. People may tell you that organic chemistry is a “memorization course” and the only way to get by is to memorize all reactions. They are lying. Memorization without understanding is pointless and frustrating.

The successful students will read the material before coming to class. They will diligently work problems in order to solidify their understanding of organic chemistry. They will study **at least two hours for every hour in class**. And they will work problems **without** an answer book in front of them!

The student's progress in the course will be measured by three exams and a final. These are set up as follows.

Exam One	September 24	100 pts
Exam Two	October 26	100 pts
Exam Three	November 16	100 pts
Final Exam		200 pts

Thus, there will be 500 possible points to be earned.

425-500 = A

350-424 = B

300-345 = C

250-299 = D

A grade of C is required for continuation in the Organic Chemistry 239 course.

### August/September

August 20	Atomic Nucleus, Structure, Electron Configurations, Chemical Bonds	Chapter 1
August 22	Hybrid Orbitals	Chapter 1
August 24	Hybridization of Heteroatoms, MO Theory	Chapter 1
August 27	Electronegativity, Resonance Contributions	
August 29	Acids and Bases	Chapter 2
August 31	Acids and Bases, Molecular Models	Chapter 2
September 3	Alkenes, Structures, Isomers, Names	Chapter 2
September 5	Functional Groups	Chapter 3
September 7	Nomenclature, Properties, and Conformations of Alkenes	Chapter 3
September 10	Nomenclature, Isomerism and Stability of Cycloalkanes	Chapter 4
September 12	Conformations of Cycloalkenes, Axial and Equatorial bonds	Chapter 4
September 14	Conformations of Mono- and Disubstituted Cyclohexanes	Chapter 4
September 17	Reaction Mechanisms, Radical Reactions	Chapter 5
September 19	Polar Reactions in Organic Chemistry	Chapter 5
September 21	Equilibria, Bond Energies, Transition States, Intermediates	Chapter 5
September 24 September 26 September 28	Exam One Alkenes: Uses, Nomenclature E/Z isomers, Electrophilic Addition, Orientation of Addition Reactions	Through 9-21 Chapter 6 Chapter 6

### October

October 1	Hammond Postulate, Cationic Rearrangements	Chapter 6
October 3	Addition to Alkenes: Halogens, Hypohalous Acids	Chapter 7
October 5	Addition Rxs: Water and Carbenes	Chapter 7
October 8	Oxidation Reactions with Alkenes	Chapter 7
October 10	Alkyne Nomenclature, Preparation and Addition Reactions	Chapter 8
October 12	Hydration, Reduction Acidity, and Alkylation Reactions of Alkynes	Chapter 8
October 15	Intro to Organic Synthesis	Chapter 8
October 17	Tetrahedral Carbon, Optical Activity, Enantiomers	Chapter 9
October 19	Sequence Rules, Diastereomers, Meso Compounds, Racemic Mixtures	Chapter 9
October 22	Isomerism, Reaction Stereochemistry	Chapter 9
October 24	Chirality	Chapter 9
October 26	Exam Two	Through 10-24
October 29 October 31	Structure and Nomenclature of Alkyl Halides Radical Halogenation, Resonance Revisited	Chapter 10 Chapter 10

## November

November 2	Reactions of Halides, Grignard and Coupling Reactions	Chapter 10
November 5	Oxidation and Reduction	Chapter 10
November 7	The SN-2 Reaction	Chapter 11
November 9	The SN-1 Reaction	Chapter 11
November 12	The E-2 Reaction: Isotope Effects and Cyclohexane Conformations	Chapter 11
November 14	The E1-CB Mechanism	Chapter 11
November 16	<b>Exam Three</b>	Through 11/14
November 19	Intro to Mass Spectroscopy	Chapter 12
November 21	NO CLASSES - THANKSGIVING	
November 23	NO CLASSES - THANKSGIVING	
November 26	Infrared Spectroscopy	Chapter 12
November 28	Nuclear Magnetic Resonance, Chemical Shifts	Chapter 13
November 30	Proton Equivalence, Chemical Shifts, Integration	

## December

December 3	Spin Spin Splitting	Chapter 13
December 5	Review for Final	

## Homework

Homework is the method by which you learn organic chemistry. It is not by copying homework from somebody else and it is not by scanning the notes a few minutes before the exam. It is the Professor's role to guide you in your studies, to answer questions and explain concepts. It is not the Professor's role to "teach you" organic chemistry. It is the student's job to take advantage of the opportunity to learn. The MINIMAL homework is given below. You should work as many problems as possible to understand both the concepts and the principles of organic chemistry. The homework problems can also be thought of as "practice exams".

Ch. 1: 25, 26, 28, 29, 30, 31, 33, 35, 35, 39, 43, 48, 49, 50,

Ch. 2: 25, 27, 29, 32, 33, 37, 40, 41, 42, 47, 51, 52, 54, 56,

Ch. 3: 21, 24, 25, 27, 28, 33, 37, 38, 40, 49, 53, 54

Ch. 4: 27, 28, 31, 34, 36, 42, 48, 49, 52, 55,

Ch. 5: 19, 20, 21, 24, 27, 29, 31, 37, 39,

Ch. 6: 26, 29, 37, 39, 40, 42, 43, 47, 48, 49, 55, 56,57

Ch. 7: 24-27, 28, 30, 33, 38, 41, 43, 46, 49, 54, 57, 60

Ch. 8: 18, 24, 26, 28, 31, 33, 35, 36, 41, 43, 45

Ch. 9: 37, 42, 44, 47, 51, 53, 54, 60, 61, 64, 68, 80, 82

Ch. 10: 17, 20, 21, 23, 24, 27, 30, 33, 36, 38

Ch.11: 25, 29, 34, 35, 41, 42, 45, 48, 51, 56, 61, 62, 67,

Ch. 12: 24, 26, 30, 32, 33, 35, 36, 41, 44, 46

Ch. 13: 32, 36, 38, 41, 43, 44, 48, 53, 54, 57