

CHM 2210 Organic Chemistry I Topics

Text: Organic Chemistry, 7th Edition Covering CH 1-11 with IR & NMR from CH 12 & 13

Topic	CHM 2210	M = mandatory O = optional V = overview R=review
Review CHM 1 & 2	Lewis dot structures/resonance – VSEPR Bond energies Intermolecular forces Acid-base concepts (Lewis) Electronegativity & polarity Thermodynamics/rxn spontaneity Factors that affect rates and rate constants	M,R R,O M,R M,R M,R M,R M,R
Nomenclature	Alkanes, alkenes, alkynes, cyclo, alkyl halides IUPAC vs common Functional group priorities	M M O
Hybridized Orbitals	Review characteristics of s, p orbitals Discussion of VSEPR relative to hybridized orbitals Hybridization, bond angles, electron pr geometry	M,R M,R M,R
MO Theory	Bonding and antibonding orbitals Stability of molecule	M,R M,R
Alkanes – Conformational Analysis	Conformers of ethane, propane, butane, cyclohexane Newman projections Torsional, steric, bond angle strain Cyclohexane conformers – Draw most stable form of with diaxial & gauche interactions taken into account	M M M M M
Stereochemistry	Fischer projections R/S Optical activity Diastereomers/enantiomers/meso compound	M M M M
Alkyl Halides	Free radicals and halogenations Bond energies Rxn coordinate diagrams/transition state theory Polar vs radical processes Hammond Postulate	M M M M M
S _N 1, S _N 2, E1, E2	Define terms Factors that affect rates/products for each rxn type Stereospecificity Zaitzev products Carbocation stability Mechanisms Rearrangements	M M M M M M M
Alkenes	Nomenclature Cis/trans E/Z Synthesis and reactivity: non-polar, polar, cleavage Mechanisms Markovnikoff and anti markov Regiochemistry	M M M M M M M
Alkynes	Nomenclature Synthesis and reactivity Mechanisms Acidity	M M M M
NMR	Background Uses NMR behavior of common nuclei Chemical shifts Upfield/downfield Shielded/deshielded Shifts of common functionalities	M M M M M M M

	Integration of absorptions	M
	Spin-spin splitting	M
	Analysis of NMR spectra	M
IR	Review of electromagnetic spectrum	M
	How IR works	M
	Actual instrument usage	M
	What is it good for/not good for	M
	Regions of IR spectrum	M
	Differences in IR absorptions	M
	Interpreting IR spectra	M
GC	Background	M
	Fractional distillation similarities	M
	Actual instrument usage	M
	Uses, what is it good for/not good for	M
	Mobile & stationary phases	M
	Retention time as function of BP or VP	M
	Area under curve directly proportional to amount or %	M
Synthesis Problems	1-3 steps	M
	3-5 steps	O
Mechanisms	Do not try to cover all mech, pick the ones you feel are important in each chapter. Mechanisms should be on every exam (with exception of first exam).	M