

Topic	Comments
Covalent Bonding and Shapes of Molecules	
1.1 Electronic Structure of Atoms	
1.2 Lewis Model of Bonding	Concepts and principles and definitions you should know from General Chemistry
How To Draw Lewis Structures From Condensed Structural Formulas	
The Octet Rule	
1.3 Functional Groups	Know the ones presented in lectures
1.4 Bond Angles and Shapes of Molecules	Know the organic examples: alkanes; alkenes; alkynes
1.5 Polar and Nonpolar Molecules	Be able to classify both bonds & molecules as polar or nonpolar
1.6 Quantum or Wave Mechanics	Wave function; orbitals & shapes of orbitals (definitions)
1.7 The Molecular Orbital and Valence Bond Theories of Covalent Bonding	Hybridization-know all 3 types for C & the geometry & bond angles for each
1.8 Resonance	Know how to interconvert structures by moving
How To Draw Curved Arrows and Push Electrons	pairs of e- and charges and double bonds
1.9 Molecular Orbitals for Delocalized Systems	VSEPR & Resonance
1.10 Bond Lengths & Bond Strengths	In Alkanes, Alkenes & Alkynes
2 Alkanes and Cycloalkanes	
2.1 The Structure of Alkanes	C_nH_{2n+2} and sp^3 hybridization
2.2 Constitutional Isomerism in Alkanes	definition and how to draw them
2.3 Nomenclature of Alkanes & The IUPAC System	Basic IUPAC system
2.4 Cycloalkanes	C_nH_{2n}
2.5 Conformations of Alkanes and Cycloalkanes	Butane conformers; chair, boat, twist-boat
2.6 Cis, Trans Isomerism in Cycloalkanes	definition and how to draw them
How To Convert Planar Cyclohexanes to Chair Cyclohexanes	from 2D to 3D chairs
3 Stereoisomerism and Chirality	
3.1 Chirality—The Handedness of Molecules	the concept & recognize chiral carbons
3.2 Stereoisomerism	Definition and how to recognize it
How To Draw Chiral Molecules	enantiomers
3.3 Naming Chiral Centers—The R,S System	know rules of priority
How To Assign R or S Configuration to a Chiral Center	
3.4 Acyclic Molecules with Two or More Chiral Centers	diastereomers; how to recognize them
3.5 Cyclic Molecules with Two or More Chiral centers	use in cycloalkane systems
3.6 Tying the terminology together	
3.7 Optical Activity—How Chirality Is Detected	know concept & definitions