

## Honour Chemistry      Unit 4 Outline: Chemical Bonding

### Chapters 13 & 14: Electrons in Atoms & Chemical Periodicity

Classes	Topics	Suggested Reading	✓	Assignments	✓
1	Dalton, Thomson, Rutherford Models, Bohr Model and Energy Levels, Quantum Mechanical Model, Schrödinger Equation, Atomic Orbitals and Orbital Shapes ( <i>s, p, d</i> orbitals), Orbitals Sublevels	13.1: Models of the Atom (pg. 361 to 366)		pg. 366 #1 to 4	
2	Electron Configurations, Aufbau Principle, Pauli Exclusion Principle, Hund's Rule, Exceptional Electron Configurations	13.2: Electron Arrangement in Atoms (pg. 367 to 370)		pg. 369 #5, 6; pg. 370 #7 to 10 <b>Chapter 13 Review</b> <b>pg. 386–387 #20 to 33;</b> <b>pg. 387 #45 to 48, 52</b>	
2	Classifying Elements by Electron Configuration, Noble Gases, The Representative Elements, The Transition Metals, The Inner Transition Metals	14.1: Classification of the Elements (pg. 391 to 396)		pg. 396 #1 to 5	
3	Shielding Effect, Trends in Atomic Sizes (in Groups and Periods), Ionization Energy (1 <sup>st</sup> and 2 <sup>nd</sup> ), Trends in Ionization Energy (in Groups and Periods), Ionic Size (in Groups and Periods), Electronegativity, Trends in Electronegativity (in Groups and Periods)	14.2: Periodic Trends (pg. 398 to 406)		pg. 406 #6 to 9 <b>Chapter 14 Review</b> <b>pg. 409–410 #10 to 32</b>	
4	<b>Chapters 13 and 14 Quiz</b> <b>(January 11, Friday)</b>				

## Chapters 15 & 16: Ionic Bonding and Ionic Compounds & Covalent Bonding

Classes	Topics	Suggested Reading	✓	Assignments	✓
1	Valence Electrons, Electron Dot Structure, Electron Configurations for Cations, Octet Rule, Electron Configurations for Anions, Halide Ions; Ionic Bonds, Properties of Ionic Compounds	15.1: Electron Configuration in Ionic Bonding (pg. 413 to 418) 15.2: Ionic Bonds (pg. 419 to 424)		pg. 418 #1 to 6 pg. 421 #7 and 8; pg. 425 #9 to 13 <b>Chapter 15 Review</b> <b>pg. 432–433 #20 to 35, 44 to 49, 52, 54, 55</b>	
2	Single Covalent Bond, Structural Formulas, Unshared Electron Pairs, Lewis Electron Dot Structures of Molecules, Double and Triple Covalent Bonds, Coordinate Covalent Bonds, Resonance, Relative Bond Energies, Exceptions to Octet Rule, VSEPR Theory, Bond Angles, Molecule Geometries (Linear, Trigonal planar, V-Shape, Trigonal pyramid, Tetrahedral, Trigonal bipyramid, Octahedral)	16.1: The Nature of Covalent Bonding (pg. 437 to 451) 16.2: Bonding Theories (pg. 455 to 459)		pg. 440 #1 and 2; pg. 446 #3, 4; pg. 447 #5, 6; pg. 451 #7 to 11 pg. 459 #14	
3	Attraction Within Molecules-Intramolecular Forces, Bond Polarity, Non-polar Covalent Bond, Polar Covalent Bond, Polar Bond, Polar Molecules, Dipole, Attraction Between Molecules-Intermolecular Forces (van der Waals Forces, Dispersion Forces, Dipole Interactions, Hydrogen Bonds)	16.3: Bonding Theories (pg. 461 to 466)		pg. 466 #21 to 24, 26 <b>Chapter 16 Review</b> <b>pg. 470–471 #27 to 33, 37, 38, 41, 43, 48, 51, 52, 54, 56 to 58</b>	
4	<b>Lab #5: Molecular Models</b> <b>(January 17, Thursday)</b>			<b>Lab #5 Report</b> <b>(Due January 24, Thursday)</b>	
5	<b>Chapters 15 and 16 Quiz (Take-Home)</b> <b>(January 17, Thursday – Due January 22, Tuesday)</b>				
6	<b>Unit 4 Test</b> <b>(January 25, Friday)</b>			<b>Unit 4 Review:</b> <b>pg. 389 #1 to 3, 5 to 13, 18</b> <b>pg. 411 #1 to 4, 7 to 16</b> <b>pg. 435 #1 to 10</b> <b>pg. 471 #61 to 63; pg. 473 #1 to 12, 14 to 17</b>	