

FRANKLIN-SIMPSON HIGH SCHOOL

Course Name: AP Chemistry

Unit Name: Bonding

Days: 10

AP Chemistry Objectives:

I. Structure of Matter (20%)

B. Chemical bonding

1. Binding forces

- a. Types: ionic, covalent, metallic, hydrogen bonding, van der Waals (including London dispersion forces)
- b. Relationships to states, structure, and properties of matter
- c. Polarity of bonds, electronegativities

2. Molecular models

- a. Lewis structures
- b. Valence bond: hybridization of orbitals, resonance, sigma and pi bonds
- c. VSEPR

3. Geometry of molecules and ions, structural isomerism of simple organic molecules and coordination complexes; dipole moments of molecules; relation of properties to structure

Purpose of the Unit:

Students will review different concepts associated with chemical bonding in this unit. In addition to the different types of binding forces, both intermolecular and intramolecular, students will also examine different molecular models, including Lewis structures, hybridization, resonance, bonds, isomers, geometry, etc. Students will integrate this knowledge into their existing knowledge to assist them in answering various multiple choices and free response questions.

Prerequisites:

Students will need an understanding of:

- Lewis structures
- VSEPR theory
- Sigma and pi bonds
- Molecular geometry

Daily Lesson Guide

Day	Lesson Content and Objectives	Focus Questions	Critical Thinking (High Yield / Literacy /LTF/etc.)	Engagement	Assessment and/or Accommodations
1-2	Coulomb's Law, Ionic Bonding & Lewis Structures I.B.2	* What is Coulomb's law? * How do you represent ionic bonding and covalent bonding with Lewis structures?	* Summarizing and note taking * I Do – We Do – You Do * Analysis/ Application * Learning with others	* ACT bell ringer * Take notes on modeled notes * Solve problems within notes solo and in small groups (formative)	* Evaluate student sample problems for understanding

2-3	Resonance Structures, Bond Order, π and σ Bonds, & ΔH I.B.2	<ul style="list-style-type: none"> * What are resonance structures? * How do you determine bond order? * How do you determine enthalpy change based on bond energies? 	<ul style="list-style-type: none"> * Summarizing and note taking * I Do – We Do – You Do * Analysis/ Application * Learning with others 	<ul style="list-style-type: none"> * ACT bell ringer * Take notes on modeled notes * Solve problems within notes solo and in small groups (formative) 	<ul style="list-style-type: none"> * Evaluate student sample problems for understanding
4-5	VSEPR, Molecular Geometry, Dipole Moment, & Formal Charge I.B.2, 3	<ul style="list-style-type: none"> * Can the shape of a molecule be predicted? * How can you determine if a molecule is polar? * How do you determine the most prevalent structure if a molecule has resonance? 	<ul style="list-style-type: none"> * Summarizing and note taking * I Do – We Do – You Do * Analysis/ Application * Learning with others 	<ul style="list-style-type: none"> * ACT bell ringer * Take notes on modeled notes * Solve problems within notes solo and in small groups (formative) 	<ul style="list-style-type: none"> * Evaluate student sample problems for understanding
5-6	Valence Bond Theory (Hybridization) I.B.1	<ul style="list-style-type: none"> * If actual orbitals do not take on the shape of s, p, d, or f orbitals, what shape do they take on? * How can we predict the shape? 	<ul style="list-style-type: none"> * Summarizing and note taking * I Do – We Do – You Do * Analysis/ Application * Learning with others 	<ul style="list-style-type: none"> * ACT bell ringer * Take notes on modeled notes * Solve problems within notes solo and in small groups (formative) 	<ul style="list-style-type: none"> * Evaluate student sample problems for understanding

7-8	Bonding FRQs and MC questions I.B.1, 2, 3	<ul style="list-style-type: none"> * How will I be tested over bonding on the AP Chemistry Exam? * How does everything I just learned fit together with what I already know? 	<ul style="list-style-type: none"> * Learning with others * Choice * Clickers 	<ul style="list-style-type: none"> * ACT bell ringer * Work independently, then in small groups, then as whole class to solve and grade FRQ's with AP rubrics * Use clickers and Turning Point to answers MC Questions from retired AP exams (summative) 	<ul style="list-style-type: none"> * Evaluate student responses and provide immediate feedback on FRQ's and MC's with rubrics and keys
9-10	Unit Exam I.B.1, 2, 3	<ul style="list-style-type: none"> * Can I use my knowledge to take an AP-like exam covering bonding? 	<ul style="list-style-type: none"> * Evaluation * Analysis * Application * Synthesis * Authenticity 	<ul style="list-style-type: none"> * ACT bell ringer * Solve retired AP Chemistry MC and FR Questions * Graded by AP standards and rubrics (summative) 	<ul style="list-style-type: none"> * Evaluate exam