

Grade	10-12
Unit of Study	Unit 4: Chemical Bonding
Length of Unit	2 weeks
Sample Essential Questions	Sample Corresponding Big Ideas
What are the fundamental differences in ionic and covalent bonds?	Ionic bonding is an electrostatic attraction that arises from the transfer of electrons between a metal and a nonmetal. Covalent bonding is the overlap of orbitals during the sharing of electrons.
Why do molecules take on different shapes?	Molecules hybridize in different shapes to maximize stability by minimizing potential energy (repulsion from like charges)

Missouri Learning Standards	
Priority Standard(s)	Supporting Standard(s)
I can explain how matter is structured, how its properties are determined by its structure, and how it changes during chemical reactions.	9-12.PS1.A.4
I can explain how forces and interactions between particles affect the behavior and properties of matter.	

Unit 4 Sequence			
MLS	Topic(s)	Learning Targets	Academic Vocabulary
PS1.A.4	Bonding	I can predict the type of bond that will occur between atoms. I can model ionic and covalent bonds using electron configurations.	Ionic Bond Covalent Bond Cation/anion
	Lewis Structures	I can predict stable configurations of molecules by using Lewis Theory.	Lone Pairs Valence Electrons
	VSEPR	I can use Lewis structures to accurately evaluate the shape and polarity of molecules.	Hybridization Sigma/Pi Bonds Polarity Electron Geometry Molecular Shape

MLS	Learning Activities	
PS1.A.4	Modeling Kits Activity (VSEPR)	Must Do ▾

Assessments		
MLS	Description or Location	Rubric/Location
PS1.A.4	Unit 4 Test	Paper

Additional Resources
Phet, OpenStax, Javalab