WAUCONDA SCHOOL DISTRICT 118
UNIT PLANNING ORGANIZER

Subject: AP Chemistry

Unit 3: Intermolecular Forces and Properties

Pacing: 15 class pd (75 min periods)

Please see the College Board collegeboard.org. for complete details

STAGE 1 – DESIRED RESULTS

BIG IDEA 1 Scale, Proportion, and Quantity SPQ
BIG IDEA 2 Structure and Properties SAP

Enduring Understanding

SAP-5 Intermolecular forces can explain the physical properties of a material
3.1 Intermolecular Forces
3.2 Properties of Solids
SAP-6 - Matter exists in three states: solid, liquid, and gas, and their differences are influenced by variances in spacing and motion of the molecules.
3.3 Solids, Liquids, and Gases 3.C Represent visually the relationship between the structures and interactions across multiple levels or scales (e.g., particulate to macroscopic).
SAP-7 - Gas properties are explained macroscopically—using the relationships among pressure, volume, temperature, moles, gas constant—and molecularly by the motion of the gas.
3.4 Ideal Gas Law
3.5 Kinetic Molecular Theory
3.6 Deviation from Ideal Gas Law
SPQ-3 - Interactions between intermolecular forces influence the solubility and separation of mixtures.
3.7 Solutions and Mixtures
3.8 Representations of Solutions 3.9 Separation of Solutions and Mixtures Chromatography
3.10 Solubility
SAP-8 Spectroscopy can determine the structure and concentration in a mixture of a chemical species
3.11 Spectroscopy and the Electromagnetic Spectrum
3.12 Photoelectric Effect
3.13 Beer-Lambert Law

STAGE 2 – EVIDENCE

Concepts Learning Objectives	Performance Tasks Skills and Practices	
SAP-5.A Explain the relationship between the chemical structures of molecules and the relative strength of their intermolecular forces when: a. The molecules are of the same chemical species. b. The molecules are of two different chemical species. SAP-5.B Explain the relationship among the macroscopic properties of a substance, the particulate-level structure of the substance, and the interactions. SAP-6.A Represent the differences between solid, liquid, and gas phases using a particulate level model. SAP-7.A Explain the relationship between the macroscopic properties of a sample of gas or mixture of gases using the ideal gas law. SAP-7.C Explain the relationship among non-ideal behaviors of gases, interparticle forces, and/or volumes. SPQ-3.A Calculate the number of solute particles, volume, or molarity of solutions. SPQ-3.B Using particulate models for mixtures: a. Represent interactions between components. b. Represent concentrations of components. SPQ-3.C Explain the relationship between the solubility of ionic and molecular compounds in aqueous and nonaqueous solvents, and the intermolecular interactions between particles.	1. 4.D Explain the degree to which a model or representation describes the connection between particulate-level properties and macroscopic properties. 2. 4.C Explain the connection between particulatelevel and macroscopic properties of a substance using models and representations. 3. 3.C Represent visually the relationship between the structures and interactions across multiple levels or scales (e.g., particulate to macroscopic). 4. 5.C Explain the relationship between variables within an equation when one variable changes. 5. 4.A Explain chemical properties or phenomena (e.g., of atoms or molecules) using given chemical theories, models, and representations. 6. 6.E Provide reasoning to justify a claim using connections between particulate and macroscopic scales or levels. 7. 5.F Calculate, estimate, or predict an unknown quantity from known quantities by selecting and following a logical computational pathway and attending to precision (e.g., performing dimensional analysis and attending to significant figures). 8. 2.C Identify experimental procedures that are aligned to the question (which may include a sketch of a lab setup). 9. 2.E Identify or describe potential sources of experimental error.	