THS Chemistry Curriculum Unit Coversheet

Course: Chemistry-G

Grades: 10-12

Unit name: Unit 2: Periodicity

Essential Questions/ Focus Questions:

• Why and how are the elements arranged in the periodic table?

Suggested time frame: 2 weeks

Corresponding HSCE's:.

- C4.9A Identify elements with similar chemical and physical properties using the periodic table.
- C4.9b Identify metals, non-metals, and metalloids using the periodic table.
- C4.9c Predict general trends in atomic radius, first ionization energy, and electonegativity of the elements using the periodic table.
- C4.10A List the number of protons, neutrons, and electrons for any given ion or isotope.
- C4.10B Recognize that an element always contains the same number of protons.
- C4.10d Predict which isotope will have the greatest abundance given the possible isotopes for an element and the average atomic mass in the periodic table.

Materials Used: Various lab equipment, text, lab book, etc.

Major Themes/Concepts:, periodicity, atomic size, electron affinity, electronegativity, ionization energy, ion size, periodic table

THS Chemistry General Curriculum Unit 3 Coversheet

Course: Chemistry G

Grades: 10-12

Unit name: Unit 3: Chemical Bonding

Essential Questions/ Focus Questions:

- Valence electron and electron dot notation.
- Stable electron configurations.
- Ionic and covalent bonding.
- The naming of ionic and covalent compounds.
- The writing of chemical formulas.

Suggested time frame: 3 weeks

Corresponding HSCE's:

Chapters 7-9: Bonding

- P4.p2A Distinguish between an element, compound, or mixture based on drawings or formulae. (prerequisite)
- P4.p2B Identify a pure substance (element or compound) based on unique chemical and physical properties. (prerequisite)
- P4.p2D Recognize that the properties of a compound differ from those of its individual elements. (prerequisite)
- C4.2A Name simple binary compounds using their formulae.
- C4.2B Given the name, write the formula of simple binary compounds.
- C4.2c Given a formula, name the compound.
- C4.2d Given the name, write the formula of ionic and molecular compounds.
- C5.5A Predict if the bonding between two atoms of different elements will be primarily ionic or covalent.
- C5.5B Predict the formula for binary compounds of main group elements.
- C5.5c Draw Lewis structures for simple compounds.
- C5.5d Compare the relative melting point, electrical and thermal conductivity, and hardness for ionic, metallic, and covalent compounds.

Materials Used: Various lab equipment, text, lab book, etc.

Major Themes/Concepts: chemistry, matter, change, measurement, significant figures, accuracy, precision, scientific method, energy

THS Chemistry Curriculum Unit 4 Coversheet

Course: Chemistry CP

Grades: 10-12

Unit name: Unit 4: The Mole Concept

Essential Questions/ Focus Questions:

- · Problem solving in chemistry.
- The use of dimensional analysis to solve problems.
- The concept of the mole.
- The relationship between masses of substances and moles of substances.
- The relationship between moles and the volumes and densities of gases.
- The calculation of empirical and molecular formulas.

Suggested time frame: 3 weeks

Corresponding HSCE's:

Chapter 10: Mole concept and chemical quantities

- C4.1a Calculate the percent by weight of each element in a compound based on the compound formula.
- C4.1b Calculate the empirical formula of a compound based on the percent by weight of each element in the compound.
- C4.1c Use the empirical formula and molecular weight of a compound to determine the molecular formula.
- C4.6a Calculate the number of moles of any compound or element given the mass of the substance.
- C4.6b Calculate the number of particles of any compound or element given the mass of the substance.

Materials Used: Various lab equipment, text, lab book, etc.

Major Themes/Concepts: mole, mass, representative particles, empirical formulas, molecular formulas

THS Chemistry Curriculum Unit 5 Coversheet

Course: Chemistry CP

Grades: 10-12

Unit name: Unit 5: Chemical reactions and Stoichiometry

Essential Questions/ Focus Questions:

- Writing and balancing chemical equations.
- Types of chemical reactions.
- Stoichiometry.
- Limiting reagents and percent yield.
- Energy changes in chemical reactions.

Suggested time frame: 4 weeks

Corresponding HSCE's:

Chapters 11, 12and 17: Chemical reactions and Stoichiometry

- C5.2A Balance simple chemical equations applying the conservation of matter.
- C5.2B Distinguish between chemical and physical changes in terms of the properties of the reactants and products.
- C5.2C Draw pictures to distinguish the relationships between atoms in physical and chemical changes.
- C5.2d Calculate the mass of a particular compound formed from the masses of starting materials.
- C5.2e Identify the limiting reagent when given the masses of more than one reactant.
- C5.2f Predict volumes of product gases using initial volumes of gases at the same temperature and pressure.
- C5.2g Calculate the number of atoms present in a given mass of element.

Materials Used: Various lab equipment, text, lab book, etc.

Major Themes/Concepts: chemical change, chemical reactions, stoichiometry, limiting reactants, enthalpy