

Instructional Vocabulary

Chemistry

Unit 1: Laboratory Management

- **Hazard potential** – information contained in the Material Safety Data Sheets (MSDS) for each chemical used in the chemistry laboratory

Unit 2: Matter

- **Matter** – anything that has mass and takes up space
- **Physical property** – a characteristic of a substance that can be observed or measured without changing the substance's chemical composition
- **Chemical property** – a characteristic that describes how a substance changes into a different substance

Unit 3: Atomic Structure and the Periodic Table

- **Isotopes** – atoms of the same element with different numbers of neutrons in the nucleus
- **Valence electrons** – involved in the formation of chemical bonds

Unit 4: Chemical Bonding

- **Valence electrons** – electrons located in the outer electron shell of an atom that are used in bonding with other atoms
- **Ion** – negatively or positively charged atom or group of atoms
- **Ionic bond** – bond in which electrons are given by one atom to another
- **Covalent bond** – bond in which electrons are shared, equally or unequally
- **Metallic bond** – bond in which the valence electrons are shared among all the atoms in the metal
- **Electronegativity** – a measure of the tendency of an atom to attract electrons
- **Ionization energy** – energy required to remove an electron from an atom
- **Electron affinity** – energy released when an electron is added to an atom

Unit 5: Chemical Formulas

- **Chemical formula** – the kind and number of atoms in a representative unit of a substance
- **Law of definite proportions** – in a given compound, elements are combined in proportions by mass that do not vary

Unit 6: Mole Concept

- **Mole concept** – the idea that the number of particles and mass of a substance can be calculated using the SI unit mole
- **Avogadro's number** – the number of representative particles in a mole of a substance - 6.02×10^{23}
- **Molar mass** – the mass in grams of a mole of a substance
- **Molecular formula** – a whole number multiple of the empirical formula

Unit 7: Chemical Equations and Reactions

- **Law of conservation of matter** – matter is not created or destroyed in a chemical reaction; the mass of the products equals the mass of the reactants
- **Balanced chemical equation** – represents quantitatively the reactants and products in a chemical reaction

Unit 8: Stoichiometry

- **Stoichiometry** – calculations using the molar relationships between the products and reactants in a chemical equation
- **Limiting reagent (reactant)** – the substance in a chemical reaction that is used up first and causes the reaction to stop

Unit 9: Gases

- **Gas laws** – variety of laws that are used to describe the relationship between temperature, pressure, volume, and moles in ideal gases

Unit 10: Solutions

- **Molarity (M)** – solution concentration that is calculated by the number of moles of a solute dissolved in a liter of solution
- **Solubility** – the ability of a solute to dissolve in a solvent

Unit 11: Reactivity

- **Acid** – substances that turn blue litmus red and produce hydrogen ions or are proton donors when dissociated in water
- **Base** – substances that turn red litmus blue and produce hydroxide ions or are proton acceptors when dissociated in water
- **Salt** – product formed from the neutralization of an acid with a base
- **pH** – measure of the hydrogen ion concentration of a solution
- **Dissociation** – process of dissolving and forming ions in water; strong and weak acids and bases have different degrees of dissociation when dissolved in water
- **Neutralization** – occurs when an acid reacts with a base to form a salt plus water
- **Oxidation-reduction** – loss and gain of electrons in a reaction
- **Precipitation reaction** – a reaction in which dissolved ions form a substance with low solubility

Unit 12: Thermochemistry

- **Thermochemistry** – the study of heat released or absorbed in a chemical reaction
- **Specific heat** – the amount of heat energy needed to increase the temperature of 1 gram of a substance by 1°C
- **Enthalpy** – the energy content of a chemical system

Unit 13: Nuclear Chemistry

- **Thermochemistry** – the study of heat released or absorbed in a chemical reaction
- **Specific heat** – the amount of heat energy needed to increase the temperature of 1 gram of a substance by 1°C
- **Enthalpy** – the energy content of a chemical system

Unit 14: Chemistry Connections

None Identified