

Rubens' Chemistry

at Golden Valley High School

Second Quarter

MODULE VI The Periodic Table

- 1. Organizing The Elements** *I&E 1f, 1g Chem 1a, 1b,1d, 1g*
Mendeleev's early version of the Periodic Table of the Elements. The relationship between an atom's valence and its position on the periodic table.
- 2. Periods & Groups** *Chem 1a, 1b,1d, 1f, 1g*
Grouping elements by reactivity—families and groups. Identifying metals, nonmetals and metalloids. The representative elements, transition, & inner-transition metals.
- 3. QUIZ 11: The Periodic Table**
- 5. Periodicity—repeating patterns of behavior** *Chem 1c, 1g*
Periodic trends. Atomic Radii, Electronegativity, and other regular patterns of behavior as they relate to position on the Periodic Table.
- 6. QUIZ 12: Periodicity and The Behavior of Elements**

MODULE VII Bonding

- 1. Ionic Bonds** *Chem 2a, 2c, 2g*
How the valence electrons behave when different atoms approach each other. The CATION. The ANION. Bonds between cations and anions. Salts. Common ions. Complex ions—the POLYATOMIC ions. Naming ionic compounds. Crystalline structure and the Crystal Lattice.
- 2. LAB 4: Salts and Crystals**
- 3. QUIZ 13: Ionic Bonding**
- 4. Covalent Bonds** *Chem 2a, 2b, 2g*
How atoms with similar electronegativities bond. The Covalent Bond and Lewis Dot Diagrams. Single, double and triple covalent bonds. Naming covalently bonded molecules. Polar Covalent Bonds.
- 5. QUIZ 14: Covalent Bonding**

6. **The Importance Of Water In Bonding** *Chem 2a, 2h*
The Polar nature of the water molecule. Surface Tension. Solubility of substances. Solubility rules. Understanding the behavior of salts in solution. The precipitation reaction.
7. **LAB 5: Hydrogen Bonding & Surface Tension—The Effect Of Detergents**
8. **LAB 6: Precipitation Reactions**
9. **QUIZ 15: Solubility Rules & The Precipitation Reaction**
10. **Metallic Bonding** *Chem 2a*
The behavior of metals in combination. Alloys. The usefulness of alloys.
11. **LAB 7: Making An Alloy—The “Golden Penny”**

MODULE VIII Chemical Reactions

1. **The Single-Replacement Reaction** *Chem 2a*
Activity Series of metals. Electronegativity and the molecular tug-of-war. Writing single-replacement reactions.
2. **The Double-Replacement Reaction** *Chem 2a*
When molecules “trade partners.” Writing double-replacement reactions. Common examples of double-replacement reactions.
3. **LAB 8: Single and Double Replacement Reactions**
4. **QUIZ 16: Single & Double Replacement Reactions**
5. **The Combustion Reaction** *Chem 2a*
The importance of oxygen in reactions. Naming and combusting Hydrocarbons.
6. **The Acid-Base Reaction** *Chem 2a*
Acids and bases—special ionic substances. The Neutralization reaction.
7. **LAB 9: Combustion and Acid Base Reactions**
8. **QUIZ 17: Combustion & Acid-Base Reactions**
9. **Writing and Balancing Chemical Reactions** *Chem 2a, 3a*
Conservation of Mass. The Steps To A Balanced Reaction.
10. **QUIZ 18: Writing and Balancing Chemical Reactions**

MODULE IX Quantifying and Measuring Atoms & Molecules

- 1. The Mole—How Tiny Atoms Can Be Counted** *Chem 2a, 3b, 3c, 3d*
Avogadro's Number. Atomic Mass and The Mole. Moles of a gas and STP—the relationship between volume, mass and moles.
- 2. Percent Composition, Empirical & Molecular Formulas** *Chem 3a, 3d*
Calculating percent composition of a substance. Using percent composition to determine the empirical and molecular formulas of a substance.
- 3. QUIZ 19: *Molar Masses, Percent Composition & Formulas.***
- 4. Solutions** *Chem 6a, 6b, 6c, 6d, 6e, 6f*
Calculating MOLARITY. Dilutions. Solving problems relating to concentrations and dilutions. Colligative Properties. Vapor Pressure. Molality.
- 5. QUIZ 20: *Solutions and Their Concentrations***