



Catholic
Memorial
HIGH SCHOOL

Year Long Course Plan

Department: Science

Course: Chemistry 732/733

Essential Learning Outcomes: After successfully completing this course, students will be able to:

1. Analyze data and draw conclusions relevant to the purpose of an experiment.
2. Become familiar with the language of chemistry.
3. Select and use appropriate equations, and explain the physical relationship described by the equation.
4. Describe the model of atomic structure and its development.
5. Describe the properties of atoms, molecules, and matter during physical and chemical interactions.
6. Explain the design of the periodic table in terms of trends and relationships and its relationship to atomic structure.
7. Explain exchanges of energy in chemical interactions and conservation of mass.
8. Explain how substances interact with one another to produce new substances.
9. Using patterns in chemical and physical properties, predict the outcome of chemical interactions and physical changes.

Quarter 1	Quarter 2
<p>Unit I – Matter and Change (ELO 2,6,8)</p> <ul style="list-style-type: none">• Laboratory Safety• Chemistry and areas of research• Experimental observations• Matter classification• Chemical and physical properties• Measurement• Bunsen burner and equipment• States of matter• Periodic table• ASSESSMENT: Observing a Candle Lab• ASSESSMENT: Measurement Lab• ASSESSMENT: Techniques Lab• ASSESSMENT: Elements Group Presentation• ASSESSMENT: Unit I Quiz I• ASSESSMENT: Metals-Nonmetals Lab• ASSESSMENT: Elements Quiz• ASSESSMENT: Unit I Test <p>Unit II – Measurement and Calculations (ELO 1)</p> <ul style="list-style-type: none">• Measurement and error• Experiment design• Graphical representations of data• SI Units and prefixes• Unit conversions• Accuracy and Precision• Significant figures• Scientific notation• Direct and inverse relationships• ASSESSMENT: Density Lab• ASSESSMENT: Unit II Quiz I• ASSESSMENT: Accuracy and Precision Lab• ASSESSMENT: Unit II Test	<p>Unit III – Atoms: The Building Block of Matter (ELO 2,4,5)</p> <ul style="list-style-type: none">• Development of the theory of the atom• Protons, neutrons, and electrons• Isotopes and nuclear notation• Average atomic mass• Molar mass• Mass-moles-atoms calculations• ASSESSMENT: Unit III Test <p>Unit IV – Arrangement of Electrons in Atoms (ELO 3,4,5,6)</p> <ul style="list-style-type: none">• Waves• Quantum theory and quantum mechanics• Emission spectra and the Bohr model• Quantum numbers and orbitals• Orbital diagrams and electron configurations• ASSESSMENT: Spectrometer Lab• ASSESSMENT: Waves and Quantum Quiz• ASSESSMENT: Unit IV Test

Quarter 3	Quarter 4
<p>Unit V –The Periodic Law (ELO 2,3,6,9)</p> <ul style="list-style-type: none"> • Organization of the periodic table by properties • Development of the periodic table • Electron configuration and properties • Atomic radius and ionization energy trends • Electron affinity, valance electrons, and electronegativity • ASSESSMENT: Periodic Table Construction • ASSESSMENT: Trends Graphing • ASSESSMENT: Unit V Test <p>Unit VI – Chemical Bonding (ELO 1,5,6,8,9)</p> <ul style="list-style-type: none"> • Ionic, covalent, and molecular bonding • Ionic, molecular, and network covalent compounds • Molecular and ionic formulas • Lewis dot diagrams and structures • Bonding and energy diagrams • VSEPR and molecular geometry • Intermolecular forces • ASSESSMENT: Bond Types Activity • ASSESSMENT: Solubility and Bond Type Lab • ASSESSMENT: Lewis Dot Quiz • ASSESSMENT: Unit VI Test 	<p>Unit VII – Chemical Formulas and Chemical Compounds (ELO 1,2,5,9)</p> <ul style="list-style-type: none"> • Formation of ionic compounds and ionic formulas • Naming ionic compounds • Naming binary molecular compounds • Writing formulas from names • Formula and molar mass • Mass-moles-molecules calculations • Percent composition • Empirical and molecular formula determination • ASSESSMENT: Ionic Naming Quiz • ASSESSMENT: Molecular Naming Quiz • ASSESSMENT: Mixed Naming Quiz • ASSESSMENT: Mass-Moles-Molecules Quiz • ASSESSMENT: KClO₃ Lab • ASSESSMENT: Unit VII Test <p>Unit VIII – Chemical Equations and Reactions (ELO 5,7,8,9)</p> <ul style="list-style-type: none"> • Writing chemical equations • Balancing chemical equations • Reaction types and prediction of products • ASSESSMENT: MgO Lab • ASSESSMENT: Reaction Type Lab • ASSESSMENT: Reactions Quiz <p>Unit IX – Stoichiometry (ELO 7,8)</p> <ul style="list-style-type: none"> • Mole ratios • Stoichiometry calculations • ASSESSMENT: Stoichiometry Quiz

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