

**Tennessee High School Chemistry
Course Level Expectations Mapping**

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CHEMISTRY	Boardworks High School Chemistry Presentation
Chemistry I : Standard 1 – Atomic Structure	
CLE 3221.1.1 Compare and contrast historical models of the atom.	Introducing Atoms
CLE 3221.1.2 Analyze the organization of the modern periodic table.	Electron Structure and the Periodic Table Patterns of Behavior The Periodic Table
CLE 3221.1.3 Describe an atom in terms of its composition and electron characteristics.	Atomic Structure Electron Configuration Electronegativity Energy Sublevels Introducing Atoms Ionization Energy Orbitals
Chemistry I: Standard 2 - Matter and Energy	
CLE 3221.2.1 Investigate the characteristic properties of matter.	Compounds Introducing Atoms Solutions
CLE 3221.2.2 Explore the interactions between matter and energy.	Bonds and Activation Energy Calorimetry Endothermic Reactions Enthalpy Change Exothermic Reactions
CLE 3221.2.3 Apply the kinetic molecular theory to describe solids, liquids, and gases.	Changing State Particles in Action
CLE 3221.2.4 Investigate characteristics associated with the gaseous state.	Gases and Moles Ideal Gas Laws
CLE 3221.2.5 Discuss phase diagrams of one-component systems.	–
Chemistry I: Standard 3 – Interactions of Matter	

CLE 3221.3.1 Investigate chemical bonding.	Comparing Bonding Compound Ions Covalent Bonding Formation of Ions Giant Covalent Structures Ionic Bonding Ionic Compounds Metallic Bonding Naming Compounds Why do atoms form bonds?
CLE 3221.3.2 Analyze chemical and nuclear reactions.	Combustion Neutralization Nuclear Fission Nuclear Fusion Properties of Acids and Alkalis Radioactivity Reacting Masses Redox Reaction Types of Radiation Thermal Decomposition
CLE 3221.3.3 Explore the mathematics of chemical formulas and equations.	Gases and Moles Molar Mass Percentage Composition by Mass Reacting Masses Relative Atomic Mass Relative Formula Mass Types of Formulae What are moles? Yield and Atom Economy
CLE 3221.3.4 Explain the law of conservation of mass/energy.	Conservation of Mass
Chemistry II: Standard 1 – Structure of Matter	
CLE 3224.1.1 Explain and illustrate the arrangement of electrons surrounding an atom.	Energy Sublevels Orbitals
CLE 3224.1.2 Relate the arrangement of electrons surrounding an atom with observed periodic trends.	Electronegativity Ionization Energy Patterns of Behavior

CLE 3224.1.3 Describe the structure, shape, and characteristics of polyatomic ions, ionic and molecular compounds.	Electronegativity Functional Groups Shapes of Molecules
Chemistry II: Standard 2 - States of Matter	
CLE 3224.1 Explain the kinetic-molecular theory.	–
CLE 3224.2 Determine the intermolecular forces that exist between ions and molecules.	Intermolecular Forces
CLE 3224.3 Explain how the physical characteristics of matter are governed by kinetic molecular theory and intermolecular forces.	Intermolecular Forces
Chemistry II: Standard 3 – Reactions	
CLE 3224.3.1 Use the reactants of a chemical reaction to predict the products.	Reacting Masses Redox Reactions
CLE 3224.3.2 Fully analyze the quantitative aspects of a chemical reaction in terms of the amounts of products and reactants.	Gases and Moles Molar Mass Percentage Composition by Mass Reacting Masses Relative Atomic Mass Relative Formula Mass Types of Formulae What are moles? Yield and Atom Economy
CLE 3224.3.3 Analyze the kinetics of a chemical reaction.	Bonds and Activation Energy Concentration, Pressure and Reaction Rates Rates of Reactions Surface Area, Catalysts and Reaction Rates Temperature and Reaction Rates
CLE 3224.3.4 Describe parameters of chemical equilibria.	Dynamic Equilibrium Equilibrium - Changing Conditions Le Chatelier's Principle
CLE 3224.3.5 Explain the thermodynamics of a chemical reaction.	Calorimetry Enthalpy Change