Alignment Document

State of Tennessee
And
Aventa Learning Chemistry

Chemistry
2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
0	Chemistry I		
1.0	Atomic Structure		
1.1	compare and contrast various models of the atom as they emerged historically, from the Greeks to the modern electron-cloud model.	Atoms	The Atom
		Nuclear Chemistry	Inside the Atom
1.2	investigate the basic organization of the modern periodic table, including atomic number and atomic properties.	Atoms	The Elements
		Atoms	The Periodic Table
		Atoms	Valence Electrons
		Atoms	Regions of the Periodic Table
		Atoms	Lab: Periodic Table (P/P only)
		Atoms	Trends in the Periodic Table
1.3	describe models of the atom in terms of orbital, electron configuration, orbital notation, quantum numbers, and electron-dot structures.	Atoms	Electrons in Atoms
		Bonding	Lewis Dot Structures
		Bonding	Lab: Bonding (P/P only)
1.4	investigate the composition of the nucleus so as to explain isotopes and nuclear reactions.	Nuclear Chemistry	Radioactive Isotopes
		Nuclear Chemistry	Fission and Fusion
		Atoms	The Atom

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1.5	relate the spectral lines of an atom's emission spectrum to the transition of electrons between different energy levels within an atom.	Atoms	Electrons in Atoms
2.0	Matter and Energy		
2.1	investigate the characteristics of matter.	Bonding	States of Matter
2.2	explore the interactions of matter and energy.	Nuclear Chemistry	Fission and Fusion
3.0	Interactions of Matter		
3.1	investigate chemical bonding.	Bonding	Lab: Bonding (P/P only)
3.2	analyze chemical reactions.	Matter	Classifying Chemical Reactions
3.3	apply the mathematics of chemical formulas and equations.	Bonding	Ionic Bonding
4.0	Solutions and Acids/Bases		
4.1	investigate the characteristics of solutions.	Solutions	The Dissolution Process
		Solutions	Factors that Affect the Dissolution Process
		Solutions	Concentration
		Solutions	Definitions
		Solutions	Lab: make solution of kool-aid
4.2	investigate the characteristics of acids and bases.	Acids & Bases	Acid and Base Strength
		Acids & Bases	The pH Scale
		Acids & Bases	Properties of Acids and Bases
		Acids & Bases	Lab: Test household acids/bases
		Acids & Bases	Definition of Acids and Bases
0	Chemistry II		
1.0	Structure of Matter		
1.1	recognize how electron energy levels relate to atomic spectra, quantum numbers, and atomic orbitals.	Atoms	Electrons in Atoms
1.2	represent electron arrangements in atoms in a variety of ways.	Atoms	Electrons in Atoms
		Atoms	Valence Electrons
1.3	describe periodic relationships including atomic radii, ionization energies, electron affinities, and oxidation states.	Atoms	Trends in the Periodic Table
1.4	investigate the subject of ionic, covalent, metallic bonds, and attractive forces between molecules.	Bonding	States of Matter

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		Bonding	Ionic Bonding
		Bonding	Lab: Bonding (P/P only)
		Bonding	Covalent Bonding
		Bonding	Metallic Bonding
1.5	investigate the relationship of chemical bonding to the state, structure and properties of matter.	Bonding	Lab: Bonding (P/P only)
1.6	explore Lewis structures, characteristics of valence bonds (including hybridized orbitals, resonance, and sigma and pi bonds), bond directionality, and ionic or molecular geometry using the VSEPR theory.	Bonding	Lewis Dot Structures
		Bonding	Lab: Bonding (P/P only)
1.7	investigate the characteristics of simple organic molecules including isomerism.	Organic Chemistry	Amino Acids
1.8	explore nuclear chemistry.	Nuclear Chemistry	Fission and Fusion
2.0	States of Matter		
2.1	apply the kinetic molecular theory to describe solids, liquids, and gases.	Matter	States of Matter
2.2	investigate topics associated with the gaseous state.	Gases	Gas Laws
		Gases	Lab: Observe gas laws by changing P, V, T
2.3	discuss phase diagrams of one-component systems.		
2.4	extend their understanding of solutions that was introduced in Chemistry I.	Solutions	The Dissolution Process
		Solutions	Factors that Affect the Dissolution Process
		Solutions	Concentration
		Solutions	Lab: make solution of kool-aid
		Solutions	Definitions
3.0	Reactions		
3.1	investigate various chemical reactions associated with acids and bases, precipitation, and oxidation and reduction.	Acids & Bases	The pH Scale
		Acids & Bases	Properties of Acids and Bases
		Acids & Bases	Lab: Test household acids/bases
		Acids & Bases	Definition of Acids and Bases
		Acids & Bases	Acid and Base Strength
3.2	expand the study of stoichiometry.	Matter	Atoms, Molecules, and

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			Moles
		Matter	Stoichiometry
		Matter	Lab: Conservation of mass (P/P only)
		Matter	Molar Mass
3.3	explore the concept of physical and chemical equilibrium.	Equilibrium	Pressure
		Equilibrium	Lab: Le Chatelier's Principle (P/P only)
		Equilibrium	Le Chatelier's Principle
		Equilibrium	Temperature
3.4	investigate chemical kinetics and the rate of reaction concept.	Rates	Concentration
		Rates	Lab: Factors affecting Rate of Reaction
		Rates	Temperature
		Rates	Pressure
		Rates	Definition of Reaction Rates
		Rates	Catalyst
		Equilibrium	Temperature
		Equilibrium	Definition of Chemical Equilibrium
		Equilibrium	Pressure
		Equilibrium	Le Chatelier's Principle
		Equilibrium	Lab: Le Chatelier's Principle (P/P only)
		Equilibrium	Concentration
3.5	explore the concept of thermodynamics.	Thermodynamics	Heat Flow

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