Chemistry

State Standard Number	State Standard Area/Description	Unit Name	Course Topic Description
CH.1	The student will investigate and understand that experiments in which variables are measured, analyzed, and evaluated produce observations and verifiable data. Key concepts include		
CH.1.a	designated laboratory techniques;	Chemistry All Around	Mixture Separation Lab
CH.1.b	safe use of chemicals and equipment;	Chemistry All Around	Mixture Separation Lab
CH.1.c	proper response to emergency situations;		
CH.1.d	manipulation of multiple variables, using repeated trials;	Chemistry All Around	Mixture Separation Lab
CH.1.e	accurate recording, organization, and analysis of data through repeated trials;	Chemistry All Around	Mixture Separation Lab
CH.1.f	mathematical and procedural error analysis;	Chemistry All Around	Mixture Separation Lab
CH.1.g	mathematical manipulations including SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, and dimensional analysis;		
CH.1.h	use of appropriate technology including computers, graphing calculators, and probeware, for gathering data, communicating results, and using simulations to model concepts;		

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CH.1.i	construction and defense of a scientific viewpoint; and		
CH.1.j	the use of current applications to reinforce chemistry concepts.		
CH.2	The student will investigate and understand that the placement of elements on the periodic table is a function of their atomic structure. The periodic table is a tool used for the investigations of		
CH.2.a	average atomic mass, mass number, and atomic number;	The Periodic Table	Section A
CH.2.b	isotopes, half lives, and radioactive decay;	Nuclear Chemistry	Section A
CH.2.c	mass and charge characteristics of subatomic particles;	Atomic Structure	Section A
CH.2.d	families or groups;	The Periodic Table	Section A

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CH.2.e	periods;	The Periodic Table	Section A
CH.2.f	trends including atomic radii, electronegativity, shielding effect, and ionization energy;	The Periodic Table	Section D
CH.2.g	electron configurations, valence electrons, and oxidation numbers;	Atomic Structure	Section C
CH.2.h	chemical and physical properties; and	Chemistry All Around	Chemical and Physical Changes Lab
CH.2.i	historical and quantum models.	Atomic Structure	Section D
CH.3	The student will investigate and understand how conservation of energy and matter is expressed in chemical formulas and balanced equations.		
CH.3.a	nomenclature;	Elements Form Compounds	Sections A&B
CH.3.b	balancing chemical equations;	Chemical Reactions	Section D

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CH.3.c	writing chemical formulas;	Chemical Reactions	Section D
CH.3.d	bonding types;	Elements Form Compounds	Sections A&B
CH.3.e	reaction types; and	Chemical Reactions	Section C
CH.3.f	reaction rates, kinetics, and equilibrium.	Chemical Thermodynamics and Equilibrium	Section D
CH.4	The student will investigate and understand that chemical quantities are based on molar relationships.		
CH.4.a	Avogadro's principle and molar volume;	Chemical Reactions	Sections A&B
CH.4.b	stoichiometric relationships;	Chemical Reactions	Section E
CH.4.c	solution concentrations; and	Water and Solution Chemistry	Section B

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CH.4.d	acid/base theory; strong electrolytes, weak electrolytes, and nonelectrolytes; dissociation and ionization; pH and pOH; and the titration process.	Water and Solution Chemistry	Section C
CH.5	The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles.		
CH.5.a	pressure, temperature, and volume;	Solids, Liquids, and Gases	Section A
CH.5.b	partial pressure and gas laws;	Solids, Liquids, and Gases	Section B
CH.5.c	vapor pressure;	Solids, Liquids, and Gases	Section B
CH.5.d	phase changes;	Solids, Liquids, and Gases	Section D
CH.5.e	molar heats of fusion and vaporization;	Solids, Liquids, and Gases	Section D
CH.5.f	specific heat capacity; and	Solids, Liquids, and Gases	Section D

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CH.5.g	colligative properties.	Solids, Liquids, and Gases	Section D
CH.6	The student will investigate and understand how basic chemical properties relate to organic chemistry and biochemistry.		
CH.6.a	unique properties of carbon that allow multi-carbon compounds; and	Elements Form Compounds	Section E
CH.6.b	uses in pharmaceuticals and genetics, petrochemicals, plastics, and food.		