Middlesex County Schools Curriculum Pacing Guide

Grade / Course Chemistry **School Year** 2010-2011

Time Frame	Unit / SOLs	SOL #	Strand
2.5 wks	**Measurement and the Behavior of Gasses**	1	Scientific investigation
	1a) designated laboratory techniques		
	1b) safe use of chemicals and equipment		
	1c) proper response to emergency situations		
	1d) manipulation of multiple variables, using repeated trials		
	1e) accurate recording, organization, and analysis of data through repeated trials		
	1f) mathematical and procedural error analysis		
	1g) mathematical manipulations (SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, and dimensional analysis)		
	1h) use of appropriate technology including computers, graphing calculators, and probeware, for gathering data and communicating results		
	1i) construction and defense of a scientific viewpoint (the nature of science)	2	Atomic structure and periodic relationships
	2a) average atomic mass, mass number, and atomic number		
	2d) families or groups	5	Phases of matter and kinetic molecular theory
	5a) pressure, temperature, and volume		
2 wks	**Phases of Matter and Solutions**	1	Scientific investigation
	1a) designated laboratory techniques		
	1b) safe use of chemicals and equipment		
	1g) equations, graphing, ratio and proportion, significant digits, and dimensional analysis		
	1i) construction and defense of a scientific viewpoint (the nature of science)	2	Atomic structure and periodic relationships
	2a) average atomic mass, mass number, and atomic number		
	2d) families or groups		
	2h) chemical and physical properties	3	Nomenclature, chemical formulas, and reactions
	3a) chemical nomenclature		
	4a) Avogadro's principle (moles)	4	Molar relationships
	4e) solution concentrations		
	4f) chemical equilibrium		
	5b) vapor pressure	5	Phases of matter and kinetic molecular theory
	5c) phase changes and phase diagrams		
	5d) molar heats of fusion and vaporization		
	5e) specific heat capacity		
	5f) colligative properties		
2 wks	**Early Atomic Theory and Nuclear Chemistry**		
	1d) manipulation of multiple variables, using repeated trials	1	Scientific investigation
	1i) construction and defense of a scientific viewpoint (the nature of science)		
	2a) average atomic mass, mass number, and atomic number		

	2b) isotopes, half lives, and radioactive decay 2c) mass and charge characteristics of subatomic particles 2d) families or groups 2h) chemical and physical properties 2i) historical and quantum models	2	Atomic structure and periodic relationships
2 wk	**Quantum Model of the Atom and Chemical bonding** 1b) safe use of chemicals and equipment 1e) accurate recording, organization, and analysis of data through repeated trials 1i) construction and defense of a scientific viewpoint (the nature of science)	1	Scientific investigation
	2a) average atomic mass, mass number, and atomic number 2c) mass and charge characteristics of subatomic particles 2d) families or groups 2e) series and periods 2f) trends including atomic radii, electronegativity, shielding effect, and ionization energy 2g) electron configurations, valence electrons, and oxidation numbers 2h) chemical and physical properties 2i) historical and quantum models	2	Atomic structure and periodic relationships
	3a) chemical nomenclature 3c) writing empirical, molecular, structural formulas for chemicals 3d) ionic and covalent bonding	3	Nomenclature, chemical formulas, and reactions
	4a) Avogadro's principle and moles	4	Molar relationships
	Benchmark/Midterm		
2.5 wks	**Chemical Reactions and Stoichiometry** 1a) designated laboratory techniques 1b) safe use of chemicals and equipment 1d) manipulation of multiple variables, using repeated trials 1e) accurate recording, organization, and analysis of data through repeated trials 1g) mathematical manipulations (SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, and dimensional analysis) 1h) use of appropriate technology including computers, graphing calculators, and probeware, for gathering data and communicating results	1	Scientific investigation
	2a) average atomic mass, mass number, and atomic number 2d) families or groups 2f) trends including atomic radii, electronegativity, shielding effect, and ionization energy 2g) electron configurations, valence electrons, and oxidation numbers 2h) chemical and physical properties	2	Atomic structure and periodic relationships
	3a) chemical nomenclature 3b) balancing chemical equations 3c) writing empirical, molecular, structural formulas for chemicals 3d) ionic and covalent bonding 3e) classifying reactions as endothermic/exothermic, synthesis/decomposition, single or double replacement,	3	Nomenclature, chemical formulas, and reactions

	neutralization, or redox 4a) Avogadro's principle and moles 4b) stoichiometric relationships	4	Molar relationships
2 wks	**Equilibrium, Energy, and Kinetics in Chemical Reactions** 1a) designated laboratory techniques 1b) safe use of chemicals and equipment 1g) mathematical manipulations (SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, and dimensional analysis) 2a) average atomic mass, mass number, and atomic number 2d) families or groups 2f) trends including atomic radii, electronegativity, shielding effect, and ionization energy 2g) electron configurations, valence electrons, and oxidation numbers 3a) chemical nomenclature 3b) balancing chemical equations 3c) writing empirical, molecular, structural formulas for chemicals 3d) ionic and covalent bonding 3f) reaction rates and kinetics (activation energy, catalysis, and degree of randomness) 4a) Avogadro's principle (moles) and molar volume 4b) stoichiometric relationships 4e) solution concentrations 4f) chemical equilibrium 4g) acid/base theory: strong electrolytes, weak electrolytes, and non electrolytes; dissociation and ionization	1 2 3 4	Scientific investigation Atomic structure and periodic relationships Nomenclature, chemical formulas, and reactions Molar relationships
1.5 wks	**Organic Chemistry** 1a) designated laboratory techniques 1b) safe use of chemicals and equipment 2a) average atomic mass, mass number, and atomic number 2d) families or groups 2f) trends including atomic radii, electronegativity, shielding effect, and ionization energy 2g) electron configurations, valence electrons, and oxidation numbers 2h) chemical and physical properties 3a) chemical nomenclature 3c) writing empirical, molecular, structural formulas for chemicals 3d) ionic and covalent bonding 4a) Avogadro's principle (moles) and molar volume 4e) solution concentrations 4f) chemical equilibrium	1 2 3 4	Scientific investigation Atomic structure and periodic relationships Nomenclature, chemical formulas, and reactions Molar relationships
2 wks	**Acid/Base and Redox Chemistry** 1a) designated laboratory techniques 1b) safe use of chemicals and equipment 1d) manipulation of multiple variables, using repeated trials 1e) accurate recording, organization, and analysis of data through repeated trials	1	Scientific investigation

	1g) mathematical manipulations (SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, and dimensional analysis) 2a) average atomic mass, mass number, and atomic number 2d) families or groups 2f) trends including atomic radii, electronegativity, shielding effect, and ionization energy 2g) electron configurations, valence electrons, and oxidation numbers 2h) chemical and physical properties 3a) chemical nomenclature 3b) balancing chemical equations 3c) writing empirical, molecular, structural formulas for chemicals 3d) ionic and covalent bonding 4a) Avogadro's principle (moles) and molar volume 4b) stoichiometric relationships 4e) solution concentrations 4f) chemical equilibrium 4g) acid/base theory: strong electrolytes, weak electrolytes, and non electrolytes; dissociation and ionization	2 3 4	Atomic structure and periodic relationships Nomenclature, chemical formulas, and reactions Molar relationships
1 wk	**EOC/Exam Review**	All	