DEPARTMENT: SCIENCE			COURSE TITLE: CHEMISTRY COURSE NUMBER: 234		
GRADE(S): 11			PRE-REQUISITES (IF ANY): ALGEBRA I		

UNIT	LENGTH	CONTENT	SKILLS	METHODS OF ASSESSMENT	FRAMEWORK STRAND(S) & STANDARD(S)
Introduction and Nuclear Chemistry	45 Days	• Lab safety • Metric measurement • Density • Structure of atom • Periodicity • Activity series • Molar conversions • Radiation • Nuclear reactions • Nuclear power • Atomic weapons • Commercial uses of radiation	Students will: • Demonstrate and/or explain proper use of safety stations. • Use metric system to measure length, volume and mass. • Convert between English and metric as well as within metric units. • Calculate and predict density of different materials. • Explain the structure of an atom and differentiate between elements. • Predict the behavior of elements based on arrangement in the periodic table. • Perform molar conversions. • Compare and contrast the four basic types of radiation. • Manipulate and solve nuclear equations. • Explain the structure and function of a nuclear power plant. • Explain the structure and "function" of nuclear weapons. • Discuss various commercial uses of radiation.	• Unit exams • Essays • Measurement lab • Density lab • Periodicity lab • Intro to graphing with Excel • Area graphing lab • Density and the nucleus lab • Daily homework • Quizzes • Essay on video • Activity series lab • Cooperative research and presentations	Inquiry LS 1-11 Domain LS 1-3,6 Sci-Tech and Human affairs LS 1-4
Natural Resources	45 days	• Valence • Electromagnetic radiation • Ionic vs. covalent bonding • Diatomic elements • Lewis structures • Molecular formulas • Monatomic ions • Polyatomic ions • Naming ionic compounds • Percent composition • Determing simple and molecular formulas • Balancing chemical equations • Stoichiometry • Distillation of crude oil	Students will: • Use valence electrons to determine oxidation states and write chemical formulas. • Explain the relationship between energy and atomic spectra. • Draw and build representations of molecules. • Determine names of compounds from formulas. • Calculate percent composition. • Calculate simple and molecular formulas. • Balance chemical equations. • Calculate the unknown masses of reactants and products. • Explain the process of crude oil distillation. • Give examples of U.S. dependence on petroleum products. • Explain the process of recycling plastics.	• Unit exam • Percent composition lab • Stoichiometry lab • Electromagnetic spectrum lab • Quizzes • Daily homework • Cooperative research and presentations • Model building lab	Inquiry LS 1,2,3,5,6,7,8,9,10,11 Domains LS 1,2,3,4,8,17,19 Sci-Tech and Human Affairs LS 1-4

		• Petro chemicals and society • Plastic recycling • Refining iron • Importance of metals to U.S. society • Recycling metals	• Explain how iron is refined. • Give examples of U.S. dependence on metals. • Explain the process of recycling metals.		
The Atmosphere	45 Days	• Molecular motion • Relationships between pressure, temperature and volume of gases • Barometers and pressure units • Molar volume and Avogadro's Principle • General and ideal gas law • Greenhouse effect • Natural and industrial sources of CO_2 • Ozone and the stratosphere • CFC's	Students will: • Use molecular motion principles to explain pneumatic phenomenon. • Explain qualitatively and quantitatively the relationships between temperature, volume and pressure of gases. • Explain the construction and function of a barometer. • Calculate molar volumes of gases using Avogadro's Principle. • Use the general and ideal gas laws to solve for unknowns. • Explain global warming and the factors contributing to it. • Explain ozone depletion and the contributing factors.	• Unit exam • Absolute zero lab • Molar volume lab • Sources of CO_2 lab • Quizzes • Daily homework • Group research and presentations	Inquiry LS 1,2,3,4,5,6,7, 8,9,10,11 Domains LS 3,4, Sci-tech and Human Affairs 1-4
Water and Solutions	45 Days	• Changes of state • Heating and cooling curves • Solubility • Concentration and molarity • Freezing point depression and boiling point elevation • Acids and bases; pH,pOH, titration • Formation of nitrogen and sulfur oxides • Formation of acid rain • Biological effects of acid rain • Politics of acid rain	Students will: • Explain changes of state according to the Kinetic Molecular Theory. • Construct and explain heating and cooing curves. • Predict solubility of given compounds. • Interpret solubility graphs. • Calculate unknown concentrations of solute, solvent and solutions. • Calculate freezing and boiling points for various electrolytes and non-electrolytes. • Explain pH, pOH and the relationship between [H+] and [OH-] of strong acids and bases. • Interpret equations for the formation of nitrogen and sulfur oxides. • Interpret equations for the formation of acid rain. • Understand the structure of clay minerals, cation exchange and aluminum toxicity. • Explain the conflict between coal burning regions of the U.S. and those that get dumped on.	• Unit exam • Heating and cooling curve lab • Solubility labs (2) • Boiling points lab • Polarity lab • Concentration of solutions lab • Titration of unknown acid lab • Antacid lab • Quizzes • Daily homework • Group research and presentations	Inquiry LS 1,2,3,4,5,6,7, 8,9,10,11 Domains LS 3, 4,10,17,19 Sci-tech and Human Affairs 1-4