Course Syllabus

SY 2013-14

COURSE TITLE: Chemistry

PREREQUISITE: Algebra I. Students must attain a passing score on the Algebra I SOL Test.

DESCRIPTION: In science, a special emphasis is placed on the research process in all grades. This includes making decisions about the generation and testing of ideas; prediction, measurement, data collection and representation; evaluation of sources of information; collaborative investigation; interpretation and communication of findings; evaluation and verification of findings and considerations relating to the social context of research. Chemistry students develop an appreciation for the interaction between matter and energy. Analytical experimental investigations are conducted using the scientific practices and proper safety precautions are employed. Students investigate kinetic theory, the Periodic Table, stoichiometry, chemical reactions, and chemical equilibrium. Students report findings of both qualitative and quantitative data using effective communication skills, correct expression of significant figures and error, and factor labeling in problem solving.

MAIN TOPICS: Relate Chemistry to matter and energy by applying the scientific method to experiments showing relationships between molecules, elements, and compounds.

Identify physical and chemical changes of matter. Classify and identify matter as homogeneous, heterogeneous, substance, solution, element, compound, or mixture.

Describe Modern Atomic Theory.

Read and interpret a Periodic Table. Investigate and understand the placement of elements on the periodic table related to average atomic mass, mass number, atomic number, subatomic particles, and physical and chemical properties.

Use the Periodic Table to write, spell and symbolize chemical formulas.

Demonstrate proficiency in writing and balancing chemical equations.

Balance equations to show an understanding of chemical reactions.

Demonstrate appropriate use of significant figures.

Demonstrate an understanding of the Mole concept by using it in calculations with chemical formulas, solutions, molecular formulas, and hydrates.

Apply mass-energy relationships in chemical reactions relating to mass-mass, mass-heat, mass-volume, and volume-volume calculations.

Demonstrate an understanding of the various bonding processes and properties associated with each.

Apply the kinetic theory and the appropriate gas laws to describe the behavior of gases.

Recognize characteristics of solutions and ways of expressing their concentration.

Differentiate between the various acid-base theories and the properties of acids, bases, and salts.

Apply the basic principles of chemical equilibrium and kinetics to balanced chemical equations.

CREDIT INFO: 1 Credit. This course provides one of the credits required for the Standard or Advanced Studies Diploma.