PINEWOOD – THE AMERICAN INTERNATIONAL SCHOOL OF THESSALONIKI, GREECE

NAME OF COURSE: Chemistry

GRADE LEVEL: 10,11,12

SCHOOL YEAR: 2011 – 2012

COURSE DESCRIPTION

The main aim is to develop an understanding of chemistry in the modern world. Concepts and principles of chemistry are developed in a logical yet flexible order to make the student's study of chemistry both challenging and interesting. Emphasis is placed on the evidence on which laws and theories in chemistry are based and of the use of models as an aid to understanding them. Critical thinking and participation is promoted through class discussions. The laboratory part aims to develop adequate skills in common laboratory procedures and techniques as well as the ability to judge and assess their uses and limitation. The ability to devise simple experiments, to make observations, to collect data and to interpret results is also developed.

LEARNING OBJECTIVES

•To understand the nature of chemistry through the relationship between science and human progress.
•To gain knowledge and understanding of basic measurements and related calculations used by chemists
•To understand the ways in which matter is classified and of the changes undergone by matter
•To develop an understanding of the meanings and use of chemical symbols.
•To develop an understanding and techniques in solving simple quantitative chemical problems.
•To gain knowledge and understanding of atomic theory.
•To understand the periodic table and the relationship between the periodic properties of the elements and their electronic structure.
•To become familiar with chemical bonding and factors which affect bonding.

SCOPE AND SEQUENCE *

During the first quarter the emphasis in on measurements and conversion of units, characteristics and properties of matter and naming compounds. In the second quarter the focus is on calculations involving mole and molar mass conversions, chemical reactions and stoichiometry. Work in the third quarter continues on stoichiometry, on properties and behaviour of gases the atomic structure and on energy levels of electrons. In the fourth quarter, the periodic table, chemical bonds, acid-base reactions are examined as well as science projects are carried out.

QUARTER I

Chapter 1
Observation - Matter and Energy - Measurements - Quantities - Units - Metric System - Graphs
Chapter 2

Substances - Mixtures - Compounds - Elements - Physical and Chemical changes - Symbols - Formulas - Naming of Compounds

Chapter 4

Mathematical tools - Unitary Rates - Exponential Numbers - Accuracy and Precision - Significant Digits - Graphs

QUARTER II

Chapter 3

Chemical Reactions - Equations - Types of Reactions - Endothermic and Exothermic - Precipitation and Net Ionic Equations - Limitations to Net Ionic Equations

Chapter 4

Mole - Molar Mass - Empirical and Molecular Formulas - Percent Composition

Chapter 5

Stoichiometry

QUARTER III

Chapter 5

Stoichiometry

Chapter 6&7

Gases - Pressure - Dalton's, Boyle's, Charles Laws - Ideal Gas Law

Chapter 8

Atomic structure - Electrons and Protons and their discovery - Dalton's, Thomson, Rutherford, Bohr Models of the atom - Atomic Number - Mass Number - Isotopes

QUARTER IV

Chapter 10

Energy Levels of Electrons - The Cloud Model of the Atom - Quantum Numbers - Isotopes

Chapter 13

Covalent Bonds - Ionic Bonds - Electron Dot Structures - Octet Rule - Molecules and their Geometric Shapes - Polar Bonds and Polar Molecules - Hydrogen Bonds

Science projects

****Note that the order in scope and sequence is subject to change during the school year.***

HOMEWORK POLICY

All homework must be handed in on time. Late homeworks get minus 10% penalty for their grade. No late homework will be accepted beyond four days.

ASSESSMENT

- Semester exams to test the student's mastery of the semester concepts.
- Chapter tests to test the student's ability to follow the course.
- Quizzes announced and unannounced to test how well the student is keeping up and understands concepts.
- Homework and classwork assignments used for reinforcement, review and evaluation.
- Laboratory reports.
- Participation in class discussion.
- Student effort and application.
- Independent project for the Science Fair.

Quarter grades are calculated as follows:
Tests – 60%
Homework, worksheets, notebook – 20%
Lab work and lab reports – 10%
Quizzes – 5%
Participation, attitude – 5%

RESOURCES

•Text:
Herron J.D., Frank D.V., Sarquis J.L., Schrader C.L. and Kukla D.A. 1996. Heath Chemistry. D.C. Heath and Company, Toronto.
•Resource books and handouts
•School library
•Overhead projector
•Slides
•Computer
•Board

ACADEMIC HONESTY

Academic honesty is fundamental to the integrity and operation of our school. Acts of academic dishonesty, including plagiarism (the act of presenting others' words and ideas as one's own without crediting the source), stealing in quizzes and tests, copying work from other students or allowing their own work to be copied, or using notes during a test, are considered serious offences. The consequences of academic dishonesty will be a zero grade on the specific test/assignment, and additional disciplinary action. The said student will be ineligible or removed from the National Honor Society.