



PINEWOOD – THE AMERICAN INTERNATIONAL SCHOOL OF THESSALONIKI, GREECE

NAME OF COURSE: Chemistry IB2

GRADE LEVEL: 12

SCHOOL YEAR: 2011 – 2012

COURSE DESCRIPTION

This course is a follow-up to the Chemistry IB 1 course designed for students who intend to take the IB exam in chemistry and covers the second year of the IB program. The experimental nature of chemistry through laboratory investigation is still emphasized. Students are introduced to acid-base reactions, electrochemistry, organic chemistry, environmental chemistry and human biochemistry concepts.

Prerequisites: Chemistry IB1

LEARNING OBJECTIVES

- To solve problems involving equilibrium and acid-base reactions.
- To be introduced to oxidation-reduction reactions, determine the oxidation number of an element in a compound and understand electrolysis of molten salts and aqueous solutions
- To be introduced to organic chemistry concepts: Identify the features of a homologous series, draw the structure of given organic compounds and state their names, outline typical organic chemistry reactions of hydrocarbons, alcohols and esters, outline the formation of polymers, investigate organic reaction mechanisms.
- To identify sources of air pollution, outline the mechanism and consequences of ozone depletion, describe the origin and consequences of the greenhouse effect and acid rain.
- To understand the treatment methods for drinking and wastewater and the significance of dissolved oxygen in water.
- To be introduced to human biochemistry.

SCOPE AND SEQUENCE *

QUARTER I

Calculations involving Equilibrium and Acid-Bases reactions (HL only)

Oxidation and Reduction

- Redox equations and oxidation numbers
- Reactivity
- Standard electrode potentials (HL only)
- Electrolysis of a molten salt and aqueous solutions

QUARTER II

Organic Chemistry

- Homologous series
- Determination of Structure (HL only)
- Naming organic compounds
- Isomerism
- Hydrocarbons
- Compounds of carbon, hydrogen and oxygen
- Polymers
- Reaction mechanisms (HL only)

QUARTER III

Environmental Chemistry

- Air pollution
- Ozone depletion
- Greenhouse effect and global warming
- Acid rain
- Drinking water treatment
- Waste water treatment

Human Biochemistry

- Proteins and carbohydrates
- Fats
- Vitamins
- Hormones
- Enzymes (HL only)
- Nucleic acids

QUARTER IV

Review atomic theory and bonding

Review organic chemistry

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

HOMEWORK POLICY

- All homework assignments must be handed in on due date before class starts. A 10% reduction is applied for assignments handed in one day late, 20% for two days. Assignments that are handed in three days after the due date or later will not be accepted.
- Homework assignments must be written in pen on A4 lined paper with margins on both sides. Graphs must be drawn on graph (millimeter) paper and date, name of the student and the assignment description must be clearly indicated at the top of the first page.
- Lab reports are typed and must be completed within 7 days from the completion of the experiment. Graphs must be drawn by hand on graph (millimeter) paper unless otherwise specified by the teacher. Lab reports not in line with the above may receive reduced marks.
- Lab reports are typed and must be completed within 7 days from the completion of the experiment. All lab reports are marked according to the IB criteria and the IB mark is converted to a percentage grade.

ASSESSMENT

- Homework assignments
- Tests and quizzes on a regular basis
- Laboratory reports
- Two semester exams
- Group science project (Group 4) – experimental project and presentation
 - Tests: 40%
 - Quizzes: 10%
 - Homework: 20%
 - Lab reports: 20%
 - Class Participation: 10%

RESOURCES

- Textbook: C. Brown, M. Ford, *Pearson Bacculaureate: Higher Level Chemistry*, Pearson Education, 2009
- Textbook: C. Brown, M. Ford, *Pearson Bacculaureate: Standard Level Chemistry*, Pearson Education, 2009
- Several Web sites related to Chemistry.

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.