Waterloo Region District School Board
FOREST HEIGHTS COLLEGIATE INSTITUTE

Grade 12 University Chemistry – SCH4UI
Course Overview 2013 - 2014

Course Type: University
Teacher: Mr. White
Textbook: Chemistry 12 by Nelson Publishing

Grade Level: 12
Department: Science

Course Description:

This course enables students to deepen their understanding of chemistry through the study of organic chemistry, the structure and properties of matter, energy changes and rates of reaction, equilibrium in chemical systems, and electrochemistry. Students will further develop their problem-solving and investigation skills as they investigate chemical processes, and will refine their ability to communicate scientific information. Emphasis will be placed on the importance of chemistry in everyday life and on evaluating the impact of chemical technology on the environment.

Prerequisite: Chemistry, Grade 11University Preparation

Big Ideas:

Organic Chemistry
- Organic compounds have predictable chemical and physical properties determined by their respective structures.
- Organic chemical reactions and their applications have significant implications for society, human health, and the environment.

Structure and Properties of Matter
- The nature of the attractive forces that exist between particles in a substance determines the properties and limits the uses of that substance.
- Technological devices that are based on the principles of atomic and molecular structures can have societal benefits and costs.

Energy Changes and Rates of Reaction
- Energy changes and rates of chemical reactions can be described quantitatively.
- Efficiency of chemical reactions can be improved by applying optimal conditions.
- Technologies that transform energy can have societal and environmental costs and benefits.

Chemical Systems and Equilibrium
- Chemical systems are dynamic and respond to changing conditions in predictable ways.
- Applications of chemical systems at equilibrium have significant implications for nature and industry.

Electrochemistry
- Oxidation and reduction are paired chemical reactions in which electrons are transferred from one substance to another in a predictable way.
- The control and applications of oxidation and reduction reactions have significant implications for industry, health and safety, and the environment.

Overall Expectations:

Organic Chemistry

B1. Assess the social and environmental impact of organic compounds used in everyday life, and propose a course of action to reduce the use of compounds that are harmful to human health and the environment;

B2. Investigate organic compounds and organic chemical reactions, and use various methods to represent the compounds;

B3. Demonstrate an understanding of the structure, properties, and chemical behaviour of compounds within each class of organic compounds.

Structure And Properties of Matter

C1. Assess the benefits to society and evaluate the environmental impact of products and technologies that apply principles related to the structure and properties of matter;

C2. Investigate the molecular shapes and physical properties of various types of matter;

C3. Demonstrate an understanding of atomic structure and chemical bonding, and how they relate to the physical properties of ionic, molecular, covalent network, and metallic substances.

Energy Changes and Rates of Reaction

D1. Analyze technologies and chemical processes that are based on energy changes, and evaluate them in terms of their efficiency and their effects on the environment;

D2. Investigate and analyze energy changes and rates of reaction in physical and chemical processes, and solve related problems;

D3. Demonstrate an understanding of energy changes and rates of reaction.

Chemical Systems And Equilibrium

E1. Analyze chemical equilibrium processes, and assess their impact on biological, biochemical, and technological systems;

E2. Investigate the qualitative and quantitative nature of chemical systems at equilibrium, and solve related problems;

E3. Demonstrate an understanding of the concept of dynamic equilibrium and the variables that cause shifts in the equilibrium of chemical systems.

Electrochemistry

F1. Analyze technologies and processes relating to electrochemistry, and their implications for society, health and safety,and the environment;

F2. Investigate oxidation-reduction reactions using a galvanic cell, and analyze electrochemical reactions in qualitative and quantitative terms;

F3. Demonstrate an understanding of the principles of oxidation-reduction reactions and the many practical applications of electrochemistry.

ASSESSMENT AND EVALUATION:

A variety of assessment tasks will be used to evaluate student progress.

- Late and Missed Assignments – To achieve success in this course, all essential course components must be demonstrated. Incomplete work is NOT an option.
- Cheating and Plagiarism – It is important for students to do their own best work. If a student is suspected of cheating or plagiarizing, the teacher in consultation with administration, will determine the next steps and/or consequences.
- Learning Skills and Work Habits – The areas of Responsibility, Organization, Independent Work, Collaboration, Initiative, and Self-regulation are important and will be assessed and reflected on the provincial report card.
- Attendance– Attendance and punctuality in classes are important parts of learning and an expectation of student behaviour. Lates are to be avoided to benefit from full instructional time and not disrupt other's learning time. When a student is absent, a parent/guardian must call the school's attendance line on the date of absence, or provide a note explaining the absence for the student to submit the following day. Students are responsible for missed work during their absence.

Course Evaluation:

Organic Nomenclature---5%	Atomic Theory and Structure --- 11%
Organic Properties and Reactions --- 6%	Acid Base Equilibrium --- 5%
Energy --- 6%	Electrochemistry --- 6%
Rates --- 5%	Labs --- 20%
Equilibrium: K, Ksp --- 6%	Final Evaluation --- 30%

Website: http://dl.dropboxusercontent.com/u/40016123/index.htm

By signing this course outline, I acknowledge that I have read and understood the expectations and requirements for successful completion of this course.

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Student's Name Date

Parent/Guardian Signature | Date