Sir Wilfrid Laurier Secondary School

Grade 12 University Chemistry – SCH4U

1.0 credits

Course Outline

Course Description

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

Strands and Subgroups

Energy and Reaction Rates • molar enthalpy and enthalpy of formation • Hess' Law of Additivity of Reaction Enthalpies • factors affecting rates of reaction • collision theory and rates of reaction • potential and kinetic energy diagrams	**Chemical Systems and Equilibrium** • dynamic equilibrium and equilibrium law • Le Chatelier's Principle, the Haber Process • quantitative changes in equilibrium systems • solubility product constant • law of thermodynamics, entropy • acid & base equilibria • salt hydrolysis, acid/base titrations
Electrochemistry • oxidation and reduction • predicting and balancing redox reactions • galvanic cells • cell potential and spontaneity	**Structure and Properties** • early to modern atomic theories • quantum theory & quantum numbers • orbital configurations • Lewis Theory of Bonding, VSEPR Theory • shapes & polarity of molecules • intermolecular forces
Organic Chemistry • organic compounds • classifying and representing hydrocarbon compounds—alkanes, alkenes, alkynes, cyclic hydrocarbons • functional groups—halides, alcohols, ethers, aldehydes, ketones, carboxylic acids, esters, amines, and amides physical and chemical properties of functional groups including organic reactions	

Evaluation

The final report card mark will be determined as follows:

Term Work – 70%	Summative – 30%
Unit Tests Lab Reports Quizzes Classwork	Exam and/or Performance Tasks

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Attendance & Missed Evaluations

Regular attendance is an integral part of learning. Students are responsible for completing all work missed due to absence. Students must complete the missed evaluation immediately upon return to school, as determined by subject teacher. Any missed term evaluation (e.g., test or lab) will result in a mark of zero, unless the absence is excused.

End-of-course evaluations, i.e. the summative activity and final examination are time-sensitive. Attendance is mandatory for these evaluations. Any absence will result in a mark of zero, unless validated by a doctor's certificate.

If a student participates in **academic fraud** (e.g. plagiarism in assignments/lab reports), he / she is deemed not to have met the expectations associated with that particular evaluation.

A mark of zero will be given for late assignments/labs/projects that exceed the limits. (10% deduction per day; mark of zero on fifth day if not handed in)

General Course Information

Students must bring the following materials to each class:

- textbook
- separate Chemistry binder (to hold notes, tests, quizzes, handouts)
- pencil case (to hold pencils, erasers, ruler)
- scientific calculator
- lined paper

Course Text: **Chemistry 12**, Nelson ($124.00, GST included).
The student will be issued a text, and will be responsible for the cost of replacement, or repair, if the text is lost or damaged.

Lab Manual: Supplied to students ($10.00 replacement cost if lost).
