Sir John A. Macdonald Collegiate Institute Course Brief 2020-2021

Course Name	**CHEMISTRY – GRADE 12 UNIVERSITY**	**Grade**	**12**
Course Code	**SCH 4U**	**Credit Value**	**1**
Pre-Requisite	**SCH 3U**	**Or Recommended Pre-Requisite**	
Type of Course	**UNIVERSITY**		

TEXTBOOKS — REPLACEMENT COST (if lost or damaged)

Chemistry 12, Di Giuseppe et. al. — $95.34

Nelson Canada, Toronto ©2012

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.

Curriculum Strands

Structure and Properties

- 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;
- investigate the molecular shapes and physical properties of various types of matter;
- 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

- analyse technologies and chemical processes that are based on energy changes, and evaluate them in terms of their efficiency and their effects on the environment;
- investigate and analyse energy changes and rates of reaction in physical and chemical processes, and solve related problems;
- demonstrate an understanding of energy changes and rates of reaction.

Chemical Systems and Equilibrium

- analyse chemical equilibrium processes, and assess their impact on biological, biochemical, and technological systems;
- investigate the qualitative and quantitative nature of chemical systems at equilibrium, and solve related problems;
- demonstrate an understanding of the concept of dynamic equilibrium and the variables that cause shifts in the equilibrium of chemical systems.

Electrochemistry

- analyse technologies and processes relating to electrochemistry, and their implications for society, health and safety, and the environment;
- investigate oxidation-reduction reactions using a galvanic cell, and analyse electrochemical reactions in qualitative and quantitative terms;
- demonstrate an understanding of the principles of oxidation-reduction reactions and the many practical applications of electrochemistry.

Organic Chemistry

- 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;
- investigate organic compounds and organic chemical reactions, and use various methods to represent the compounds;
- demonstrate an understanding of the structure, properties, and chemical behaviour of compounds within each class of organic compounds.

Assessment and Evaluation of Student Achievement

Unit	Unit Title/Description	Evaluation Task	Achievement Chart Focus
Unit 1	Structure and Properties	- Flame Test Lab - Atomic Structure Assignment - UnitTest (Chapter 3 and 4)	A, C T, C K, T
Unit 2	Energy Changes and Rates of Reaction	- Calorimetry Lab - Energy and Kinetics Assignment - Unit Test (Chapter 5 and 6)	A, C T, C K, A
Unit 3	Chemical Systems and Equilibrium	- Ksp Lab - Quiz/Test (Chapter 7) - Quiz/Test (Chapter 8)	T, C K, A T, A

Unit 4	Electrochemistry	- Building Redox Table Lab - Unit Quiz/Test (Chapter 9 and 10)	T K, A
Unit 5	Organic Chemistry	- Nomenclature and Reaction Quiz (Chapter 1) - Building Organic Molecules	K C

Levels of Achievement

For Grades 9 to 12, a student's achievement of the overall curriculum expectations will be evaluated in accordance with the achievement charts in the provincial curriculum and will be reported using percentage marks.

Achievement Level	Percentage Mark Range	Achievement Description
HL4/L4+ L4 LL4/L4-	95 – 100 87 – 94 80 – 86	Level 4 identifies achievement that surpasses the provincial standard. The student demonstrates the specified knowledge and skills with a high degree of effectiveness.
HL3/L3+ L3 LL3/L3-	77 – 79 73 – 76 70 – 72	Level 3 represents the provincial standard for achievement. The student demonstrates the specified knowledge and skills with considerable effectiveness. Parents of students achieving at level 3 can be confident that their children will be prepared for work in subsequent grades/courses
HL2/L2+ L2 LL2/L2-	67 – 69 63 – 66 60 – 62	Level 2 represents achievement that approaches the provincial standard. The student demonstrates the specified knowledge and skills with some effectiveness. Students performing at this level need to work on identified learning gaps to ensure future success.
HL1/L1+ L1 LL1/L1-	57 – 59 53 – 56 50 – 52	Level 1 represents achievement that falls much below the provincial standard. The student demonstrates the specified knowledge and skills with limited effectiveness. Students must work at significantly improving learning in specific areas, as necessary, if they are to be successful in the next grade/course

Students who achieve below 50% have not met curriculum expectations; a credit will not be granted.

Learning Skills	**Assessment of Learning Skills**
Responsibility Organization Independent Work Collaboration Initiative Self-Regulation	Excellent (E) Good (G) Satisfactory (S) Needs Improvement (N)

Weighting by Strands/Categories			
Knowledge and Understanding	34%	Communication	22%
Thinking	22%	Application	22%

Assessment and Evaluation Strategies: the following is a list of potential A/E strategies used within the course; the list may not be exhaustive and is subject to change

Paper & pencil quizzes & tests
Formal examination
Practical lab performance
Written assignment/projects
Research presentations
Library/Internet research projects
Formal lab reports
Scientific illustration
Graphical analysis & presentation
Portfolio assessment

CALCULATION OF FINAL MARK

→ 70% for evaluations conducted throughout the course

→ 30% for a Culminating Activity – the CA will occur in the final 6 weeks of the course - CA-10%
- Exam part I-8%
- Exam part II-12%