SCH4U – Chemistry

GENERAL INFORMATION

Name of School: Rosedale Academy

Department: Science

Course Developer: Eli Fogle

Course Title: Chemistry, Grade 12

Course Type: University Preparation

Course Code: SCH4U

Credit Value: 1

Curriculum Policy Document: The Ontario Curriculum Grades 11 and 12 Science, Ministry of Education 2008 (Revised)

Prerequisite: Chemistry, Grade 11, University Prep

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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.

Overall Expectations:

- A1. demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, analyzing and interpreting, and communicating)
- A2. identify and describe careers related to the fields of science under study, and describe the contributions of scientists, including Canadians, to those fields.
- 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.
- 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.
- 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.
- 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.
- F1. analyse 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 analyse 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.

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OUTLINE OF COURSE CONTENT

Unit	Time (Hours)
Structure & Properties of Matter	25
Organic Chemistry	21
Energy Change & Rates of Reaction	26
Chemical Systems & Equilibrium	18
Electrochemistry	19

TEACHING / LEARNING STRATEGIES

Strategies used are varied to meet the needs and the range of learning styles encountered and they include the following:

- Demonstrations
- Simulations
- Labs
- Problem Solving
- Decision Making
- Direct Instruction
- Homework
- Work and Task Sheets
- Teacher Led Review
- Problem- based Learning

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FINAL GRADE

The percentage grade represents the quality of the students' overall achievement of the expectations for the course and reflects the corresponding achievement as described in the achievement chart for mathematics.

1. Term work will be 70% of the overall grade for the course;

2. The final written exam will be worth 30% of the grade.

Achievement Categories

- Application: 25%
- Knowledge and Understanding: 25%
- Communication: 25%
- Thinking/Inquiry: 25%

Achievement Chart

A Summary Description of Achievement in Each Percentage Grade Range And Corresponding Level of Achievement

Percentage Grade Range	Achievement Level	Summary Description
80–100%	Level 4	A very high to outstanding level of achievement. Achievement is above the provincial standard.
70–79%	Level 3	A high level of achievement. Achievement is at the provincial standard.
60–69%	Level 2	Moderate level of achievement. Achievement is below, but approaching the provincial standard.
50–59%	Level 1	A passable level of achievement. Achievement is below the provincialstandard
Below 50%	Level R	Insufficient achievement of curriculum expectations. A credit will not be granted

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PROGRAM PLANNING CONSIDERATION

Role of Technology in the Curriculum

Rosedale Academy offers courses that leverage the power of computers and the Internet to provide a rich and dynamic learning experience. Students will be encouraged to effectively and critically navigate, evaluate and create information using a range of online tools. Through the continual use of these technologies, students will also hone their computer skills in ways that are useful in other academic and professional pursuits. All students are required to have adequate and reliable access to a computer and the Internet. The minimum software and hardware requirements are outlined in the Rosedale Academy Course Calendar. As a member of the Rosedale community, students are expected to act responsibly and to follow the online guidelines, policies, and procedures in using information technology and electronic networks accessed by such technology.

English as a Second Language

Rosedale Academy serves students from a variety of diverse backgrounds, including English as a Second Language (ESL) students. Teaching strategies and online resource are used throughout this course to help ESL students understand the content and improve their understanding of the English language. The self-paced delivery method of this course also allows all students to take the time that they require to engage in meaningful participation while still enjoying the enriching experience of working alongside peers from other cultures.

Late and Missed Assignment

Rosedale Academy provides a flexible, self-paced learning opportunity, which allows students to proceed through each course at their own speed. Students may submit any assignment from any unit while he or she is enrolled in this course. Assignments will not be accepted once the student's enrolment period has ended. Students must complete and submit all course requirements prior to booking their final exam. Course requirements include but are not limited to: assignments, tests, and learning log.

Career Education

Teachers can promote students' awareness of careers involving mathematics by exploring applications of concepts and providing opportunities for career-related project work. Such activities allow students the opportunity to investigate mathematics-related careers compatible with their interests, aspirations, and abilities. Students should be made aware that mathematical literacy and problem solving are valuable assets in an ever-widening range of jobs and careers in today's society. The knowledge and skills

students acquire in mathematics courses are useful in fields such as science, business, engineering, and computer studies; in the hospitality, recreation, and tourism industries; and in the technical trades.

Academic Honesty

Students are expected to maintain high standards of honesty and academic integrity throughout their participation in all courses. This includes avoiding any instance of fraud, plagiarism and cheating. When a teacher has reasonable grounds to believe that a student has violated these standards, the school principal will review the incident and, if needed, enforce disciplinary procedures. More information about Academic Honesty may be found in section 1.3.2 of the school calendar.