



SCIENCE DEPARTMENT

COURSE: Grade 12 College Chemistry

COURSE CODE: SCH4C0

OVERARCHING LEARNING GOALS

<p>Scientific Investigation and Skills and Career Exploration</p> <ul style="list-style-type: none"> • Demonstrate scientific investigation skills in four areas: initiating and planning, performing and recording, analysing and interpreting and communicating. • Identify and describe a variety of careers related to the fields of science under study, and identify scientists, including Canadians, who have made contributions to those fields. 	<p>Chemical Calculations</p> <ul style="list-style-type: none"> • Describe the quantitative relationships involving the mole chemical reactions. • Analyse chemical compounds and chemical reactions using different methods of quantitative analysis and solve related problems.
<p>Matter and Qualitative Analysis</p> <ul style="list-style-type: none"> • Identify the scientists and experiments that led to the development of different models of the atom. • Describe different types of chemical reactions. • Investigate matter using different methods of qualitative analysis. 	<p>Chemistry and the Environment</p> <ul style="list-style-type: none"> • Understand different chemical reactions that occur in the environment relating to air and water. • Investigate chemical reactions using different methods of qualitative analysis.
<p>Organic Chemistry</p> <ul style="list-style-type: none"> • Analyse and classify the different types of organic molecules. • Identify organic reactions and predict their products. • Understand how the structure of organic compounds affects physical and chemical properties. 	<p>Electrochemistry</p> <ul style="list-style-type: none"> • Identify oxidation and reduction reactions. • Understand the practical applications of redox reactions.

SUCCESS CRITERIA

Matter and Qualitative Analysis

- I can describe the components of an atom and discuss the experimental evidence and theory that supports their existence, charge and location.
- I can describe what isotopes are and calculate the average atomic mass of an element.
- I can predict the products and write the balanced chemical equation including states for synthesis, decomposition, single displacement, double displacement and combustion reactions.
- I understand and can use qualitative analysis to investigate samples and test for the presence of different chemical species.

Organic Chemistry

- I can provide the proper name, diagram, and chemical formula for a compound for different organic families.
- I can compare the structural differences of the each of the organic families and predict their physical and chemical properties based on their structures.
- I can identify the structure of organic molecules that perform an organic reaction, explain the changes that occur, and predict the products of a reaction.

Chemical Calculations

- I can determine the number of particles, moles or mass of a chemical sample given another of these values and can convert between the number of molecules and atoms in a sample.
- I can change information about one chemical into another using stoichiometry including finding the limiting reactant if necessary.
- I can determine the percent yield and discuss sources of error in experiments.
- I can predict the amounts needed to prepare a solution of known concentration accurately, by starting with a solid or by dilution of a stock solution.

Chemistry and the Environment

- I can describe acids and bases and their strength using the Arrhenius and Bronsted-Lowry theories.
- I can explain the pH scale, factors that affect it and write neutralization reactions.
- I understand acid-base titrations and can use titration data to determine the concentration of an acid or base.
- I can identify chemical components in the environment and how they relate to air quality and water treatment.

Electrochemistry

- I can identify when a redox reaction occurs and describe the reaction using proper terminology, oxidation numbers and half reactions.
- I can write a balanced chemical equation for a redox reaction.
- I can describe how redox reactions are used in a variety of applications including the galvanic cell.

ASSESSMENT & EVALUATION

Assessment and evaluation in this course will be based on provincial curriculum expectations. Evaluation throughout the course and the final evaluation will incorporate four broad categories:

Knowledge and Understanding	Thinking/ Inquiry	Communication	Application	Final Summative Evaluation
-knowledge of content -understanding of content	-planning and performing lab investigations -problem solving, critical thinking processes and skills	-expression and organization of ideas and information -use of conventions and terminology	-making connections to society, technology and the environment -transfer of knowledge and skills to unfamiliar contexts	-in-class practical (culminating task) -formal written

***A final grade will be calculated: Term Work = 70%; Final Evaluation = 30%**

Students will also receive descriptive feedback as part of the learning process which may not be assigned a mark. More detailed information regarding the Port Credit Secondary School Assessment and Evaluation policy can be found in the Student Agenda.

LEARNING SKILLS

The following learning skills will be taught and assessed throughout the course and rated on the report card:

***Responsibility**
***Organization**

***Independent Work**
***Collaboration**

***Initiative**
***Self-regulation**

These skills will not be included in the final numeric mark. However, it is important to remember that the development of these skills is critical to academic achievement and does have a direct bearing on the final mark.