



## Thames Valley District School Board

### London Central Secondary School Course Outline 2019/2020



<b>Course Name:</b> Chemistry, Grade 11	<b>Course Code:</b> SCH 3U	<b>Course Pre-requisite:</b> SNC 2D
<b>Course Type:</b> University Preparation	<b>Grade Level:</b> 11	<b>Credit Value:</b> 1
<b>Textbook:</b> Chemistry 11	<b>Publisher:</b> Nelson	<b>Textbook Value:</b> \$ 106.92
<b>Teachers:</b> A. Jarrett and K. Zuber		

#### Course Description:

This course enables students to deepen their understanding of chemistry through the study of the properties of chemicals and chemical bonds; chemical reactions and quantitative relationships in those reactions; solutions and solubility; and atmospheric chemistry and the behaviour of gases. Students will further develop their analytical skills and investigate the qualitative and quantitative properties of matter, as well as the impact of some common chemical reactions on society and the environment.

**Link 11-12 Science - [http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11\\_12.pdf](http://www.edu.gov.on.ca/eng/curriculum/secondary/2009science11_12.pdf)**

#### Course Overall Expectations:

Strand	Overall Expectations
Scientific Investigation Skills and Career Exploration	<b>As a component of every strand:</b> <ul style="list-style-type: none"><li>● demonstrate scientific investigation skills (related to both inquiry and research) in the four areas of skills (initiating and planning, performing and recording, analysing and interpreting, and communicating);</li><li>● 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.</li></ul>
Matter, Chemical Trends, and Chemical Bonding	<ul style="list-style-type: none"><li>● analyse the properties of commonly used chemical substances and their effects on human health and the environment, and propose ways to lessen their impact;</li><li>● investigate physical and chemical properties of elements and compounds, and use various methods to visually represent them;</li><li>● demonstrate an understanding of periodic trends in the periodic table and how elements combine to form chemical bonds.</li></ul>
Chemical Reactions	<ul style="list-style-type: none"><li>● analyse chemical reactions used in a variety of applications, and assess their impact on society and the environment;</li><li>● investigate different types of chemical reactions;</li><li>● demonstrate an understanding of the different types of chemical reactions.</li></ul>
Quantities in Chemical Reactions	<ul style="list-style-type: none"><li>● analyse processes in the home, the workplace, and the environmental sector that use chemical quantities and calculations, and assess the importance of quantitative accuracy in industrial chemical processes;</li><li>● investigate quantitative relationships in chemical reactions, and solve related problems;</li><li>● demonstrate an understanding of the mole concept and its significance to the quantitative analysis of chemical reactions.</li></ul>
Solutions and Solubility	<ul style="list-style-type: none"><li>● analyse the origins and effects of water pollution, and a variety of economic, social, and environmental issues related to drinking water;</li><li>● investigate qualitative and quantitative properties of solutions, and solve related problems;</li><li>● demonstrate an understanding of qualitative and quantitative properties of solutions.</li></ul>
Gases and Atmospheric Chemistry	<ul style="list-style-type: none"><li>● analyse the cumulative effects of human activities and technologies on air quality, and describe some Canadian initiatives to reduce air pollution, including ways to reduce their own carbon footprint;</li><li>● investigate gas laws that explain the behaviour of gases, and solve related problems;</li><li>● demonstrate an understanding of the laws that explain the behaviour of gases.</li></ul>

## Assessment and Evaluation Strategies:

The purpose of assessment and evaluation is to improve student learning. Assessment and evaluation is based on the provincial curriculum expectations and the achievement levels outlined in the curriculum document. In order to ensure that assessment and evaluation are valid and reliable, and that they lead to the improvement of student learning, teachers use a variety of strategies throughout the course, including: providing students with feedback about their work (known as assessment for learning), helping to set learning goals and monitor their own progress (known as assessment as learning), and evaluation and reporting of progress in the form of grades and marks (known as assessment of learning).

<b>Unit Overview</b> Students will work with related scientific investigation skills and explore scientific careers as part of each unit.	<b>Assessment and Evaluation Methods</b> (May include major evaluations)
Matter, Chemical Trends, and Chemical Bonding Topics <ul style="list-style-type: none"> <li>• atomic number; mass number; isotopes; radioisotopes; isotopic abundance; relative atomic mass; physical and chemical properties of elements, periodic law and periodic trends; Lewis diagrams, ionic and covalent bond formation and properties; physical properties of ionic and molecular compounds; compound/molecular models, formulae and nomenclature; and properties, impacts and potential alternatives of common used chemicals</li> </ul>	<ul style="list-style-type: none"> <li>• assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
Chemical Reactions Topics <ul style="list-style-type: none"> <li>• balancing chemical equations; identify reactions by type and properties; predict products of reactions; complete combustion versus incomplete combustion; reactions that form acids and bases; and benefit, impact and safety of industrial reactions and reactions used to address social and environmental needs/problems</li> </ul>	<ul style="list-style-type: none"> <li>• assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
Quantities in Chemical Reactions Topics <ul style="list-style-type: none"> <li>• law of definite proportions; relationships between Avogadro's number, number of particles, the mole concept, and molar mass; percentage composition; empirical and molecular formula; quantitative relationships of balanced chemical equations; yields of chemical reactions and limiting reagents; interpret/apply quantitative relationships in the home, workplace/industry and environmental sector; and potential impact if quantitative accuracy is not observed</li> </ul>	<ul style="list-style-type: none"> <li>• assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
Solutions and Solubility Topics <ul style="list-style-type: none"> <li>• properties of water as a solvent; process of solution formation; factors affecting dissolving and solubility; precipitate formation; ionic equations; Arrhenius theory of acids and bases; degree of ionization; solution concentration; solution preparation; qualitative and quantitative properties of solutions; quantitative relationships of reactions involving solutions and solubility; titration; factors affecting water quality and economic, social, and environmental issues related to drinking water</li> </ul>	<ul style="list-style-type: none"> <li>• assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
Gases and Atmospheric Chemistry Topics <ul style="list-style-type: none"> <li>• chemical components of Earth's atmosphere; compare states of matter, kinetic molecular theory; quantitative and graphical relationships between the pressure, volume, and temperature and amount of gas; Dalton's law of partial pressures, Boyle's law, Charles's law, Gay-Lussac's law, the combined gas law, and the ideal gas law; Avogadro's hypothesis; quantitative relationships of reactions involving gases; molar volume/molar mass of a gas; effects on air quality of technologies and human activities; personal carbon footprint; and assessment of and initiatives to improve Canadian air quality conditions</li> </ul>	<ul style="list-style-type: none"> <li>• assignments, debates, exam, group work, laboratory investigations, presentations, projects, quizzes, reports and tests</li> </ul>
<b>Course Culminating Activity/Independent Study</b> <ul style="list-style-type: none"> <li>• Portfolio To Develop Application of Abstract Thinking/Problem Solving and Approaches to Learning Chemical Concepts</li> <li>• Performance Task</li> </ul>	<ul style="list-style-type: none"> <li>• ongoing and due eight weeks prior to the conclusion of the course</li> <li>• due within the last four weeks of the course</li> </ul>
<b>Exam</b>	<ul style="list-style-type: none"> <li>• written exam in June</li> </ul>

## Assessment and Evaluation Categories and Weights:

Achievement Chart Categories	
Term Achievement Category	Comprises
Application/Making Connections	<ul style="list-style-type: none"> <li>● transfer of concepts between self and science</li> <li>● transfer of concepts between science and other subjects</li> <li>● transfer of concepts between subjects and the world outside</li> <li>● access impacts of science</li> </ul>
Communication	<ul style="list-style-type: none"> <li>● oral, writing, listening and visual skills</li> <li>● mathematical/data communication, presentation and precision/accuracy</li> <li>● journals, portfolios and models</li> </ul>
Knowledge/Understanding	<ul style="list-style-type: none"> <li>● facts, terms and relationships between concepts</li> <li>● transfer of concepts to new contexts</li> <li>● solving math/formula problems</li> </ul>
Thinking/Inquiry	<ul style="list-style-type: none"> <li>● design skills (formulate hypotheses, create and test procedures)</li> <li>● thinking skills (inductive reasoning, deductive reasoning and data analysis, interpretation and evaluation)</li> </ul>

Evaluation/Weight of Marks			
Evaluation	Components	Component Percentage	Overall Percentage
Term Evaluation	Application/Making Connections	25	<b>70</b>
	Communication	25	
	Knowledge/Understanding	25	
	Thinking/Inquiry	25	
Final Evaluation	Culminating Activity	10	<b>30</b>
	Exam	20	

## Learning Skills and Work Habits Assessment:

The development of learning skills and work habits is an integral part of student learning. These skills are:

- Responsibility
- Organization
- Independent Work
- Collaboration
- Initiative
- Self-Regulation

Learning skills and work habits influence student achievement and are included as a formal part of the assessment and evaluation process. Learning skills and work habits will be assessed through a variety of teacher strategies. ( e.g. observation, student /teacher conference, self-reflection, checklists, exit cards, etc.) These important learning skills and work habits will be formally reported on the Provincial Report Card according to the following scale: E- Excellent, G- Good, S- Satisfactory, N- Needs Improvement.

## Academic Dishonesty - Cheating and Plagiarism:

Learning tasks that students complete as well as the assignments, tests and exams that students submit for evaluation must be their own work. Cheating and plagiarism is a serious offence that will not be condoned. Academic consequences will result.

## Late and Missed Assignments - Student Roles and Responsibilities - Students are expected to:

- be responsible for providing evidence of their achievement of the overall expectations within the time frame specified by the teacher, and in a form approved by the teacher;
- understand that there will be consequences for not completing assignments for evaluation and/or for submitting those assignments late;
- use class time productively;
- in extenuating circumstances, request an extension from the teacher before the due date.

Mark deductions for late and missed assignments may apply to **major assignments only**.

**References:** *TVDSB Assessment & Evaluation Policy, September 2011; Growing Success - Assessment and Evaluation, and Reporting in Ontario Schools, 2010. Student Planner and School Web site*