



# COURSE OUTLINE

**Course Name:** Chemistry 1

**Course Number:** CHEM 1121

**Number of Credits:** 4.0

**Effective Date:** September 2016

**Course Description:**

This course emphasizes the basic principles of structural chemistry, with application to the chemistry of the elements. The course introduces quantum mechanics, organic chemistry, polymers, biopolymers and the importance of chemistry to society. The laboratory illustrates the behavior of chemical systems and some of the basic techniques associated with quantitative chemical experimentation. Chemistry 1 is designed for students seeking a degree or diploma in a field of science, technology, or health, among others. Both the lab and lecture portions need to be passed in order to pass the course. It is also suitable as an elective course.

**School or Centre:**

School of Access

**Year of Study:**

1st Year Post-secondary

**Course History:**

Revised Course

**Name of Replacing Course (if applicable):**

**Course Pre-requisites (if applicable):**

Chemistry 12 (or CHEM 0983/0993) with a C+ or equivalent, Precalculus 12 with a C+; or MATH 1020 with a C; or MATH 0993 both with a minimum of a C+; or VCC Math Precalculus Test (MPT) with a 72%.

**Course Co-requisites (if applicable):**

**PLAR (Prior Learning Assessment & Recognition)**

No  Yes (details below):

### **Instructional Strategies:**

The course will be a combination of lectures, discussion, research, and presentation in a classroom and laboratory setting.

### **Course Learning Outcomes:**

At the end of the course the student will be able to

- describe the electron structure of atoms and the relationship between atomic structure and the periodic table.
- describe the basics of introductory quantum mechanics and explain the chemical origin of light.
- use the periodic table to make predictions regarding the properties of elements and the nature of the forces present in simple chemical compounds.
- describe the nature of ionic and covalent chemical bonds, the relationship between chemical bonding and molecular properties and predict the properties of simple covalent molecules.
- write and draw chemical structures and formulae for typical organic and simple inorganic compounds. Provide their IUPAC name.
- apply theories of structure and bonding to polymers, biopolymers and the understanding of chemistry and disease.
- communicate the importance of chemistry to society.
- safely and efficiently perform various chemistry experiments and identify and describe knowledge of common experimental techniques.
- communicate scientific information and solve basic chemistry problems through conceptual and mathematical understanding of chemical theory.
- analyze the connections between chemistry and the other scientific disciplines through critical thinking and conceptualization.

### **Program Learning Outcomes:**

If this course is taken as a requirement or an elective in the following First Year University Transfer Certificate programs, the learning outcomes are found in the Program Content Guides available at the Counselling and Advising Service areas.

University Transfer Arts Certificate

University Transfer Pathway to Health Sciences Certificate

University Transfer Science Certificate

University Transfer Engineering Certificate

University Transfer Computing Science and Software Systems Certificate

## Evaluation/Grading System

Grading System	Specify if 'Other':	Specify Passing Grade:
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## Components and Weighting of the Assessment/Evaluation Plan:

Type	Percentage	Evaluation Plan (provide a brief explanation for each component especially if value exceeds 35%):
Other	5	Class presentation
Assignments	5	
Midterm Exam	35	2 exams (15% and 20%)
Final Exam	25	
Lab Work	30	10 labs
	<b>Total</b>	<b>100</b>

## Learning Environment/Type

Instruction Type	Hours Per Instruction Type	Comments
L - Classroom	60	classroom
B - Lab (Computer, Chemistry...)	60	chemistry lab
	<b>Total</b>	<b>120</b>

## Resource Material(s):

Resources are items in addition to tuition that the student is responsible for purchasing. Course resource information will be supplied by the department/instructor.

## Course Topics:

Chemistry Review (matter and measure; atoms, molecules and ions; mass relationships in chemical reactions; reactions in aqueous solution; gases)  
Periodicity and Atomic Structure  
Basics of Quantum Mechanics  
Chemical Origin of Colour (Spectroscopy)  
Ionic Bonds  
Covalent Bonds and Molecular Structure  
Liquids, Solids and Phase Changes  
Nomenclature of Organic Functional Groups and Simple Inorganic Species  
Applications of Structure and Bonding ( Polymers, Biopolymers, Chemistry and Disease/Drugs)  
Chemistry and Society ( Sustainability, Chemophobia, What Chemists Do)

## VCC Education and Education Support Policies

There are a number of **Education** and **Education Support** policies that govern your educational experience at VCC, please familiarize yourself with them.

The policies are located on the VCC web site at:

<http://www.vcc.ca/about/governance--policies/policies/>

To find out how this course transfers, visit the BC Transfer Guide at [www.bctransferguide.ca](http://www.bctransferguide.ca).

### FOR COMMITTEE USE ONLY

Approved by Curriculum Committee:	Dec. 15, 2015	Approved by Education Council:	Feb. 9, 2016
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