



# COURSE OUTLINE

**Course Name:** Principles of Chemistry - Part 1

**Course Number:** CHEM 1083

**Number of Credits:** 3.0

**Effective Date:** January 2018

**Course Description:**

This course examines the properties of matter. Core topics include safety in a laboratory environment, thermochemistry, the gas laws and reaction kinetics. Optional topics include the electronic structure of atoms, the periodic table and properties of elements, chemical bonding and molecular shapes.

Both Chemistry 1083 and Chemistry 1093 are required for covering the chemistry topics contained in high school courses up to and including the Grade 12 level. Chemistry 1083 and Chemistry 1093 may be taken at the same time or in any order.

**School or Centre:**

School of Arts and Sciences

**Year of Study:**

1st Year Post-secondary

**Course History:**

New Course

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

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

- Chemistry 11 or equivalent
- English 10 or equivalent (English 11 is strongly recommended)
- Precalculus 11 (successfully completed within the last 3 years, a minimum score of 72% on the Intermediate Algebra Math Assessment, or equivalent). If the Math prerequisite is not met, MATH 0861 or MATH 1061 must be taken at the same time as CHEM 1083.

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

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

No  Yes (details below):

**Instructional Strategies:**

Class-based: Chemistry 1083 uses a lecture based model. A significant amount of class time will be spent on hands-on activities, concept-development worksheets and problem solving. A minimum of four labs will be conducted and will relate to the core topics.

**Course Learning Outcomes:**

Upon successful completion of this course, the student will be able to:

- Distinguish between the system and the surroundings and calculate internal energy from heat and work
- Relate thermochemical equations to heat energy transferred in reactions involving a set amount of substance
- Calculate the heat transferred in a calorimetry experiment using heat capacities or specific heats
- Use the appropriate units and conversions for pressure, volume and temperature
- Apply Boyle's, Charles', Guy-Lussac's and the Combined Gas Laws to predict pressure, volume, or temperature
- Describe an ideal gas and make calculations using the Ideal Gas Law
- Describe the collision model of chemical reactions
- Describe activation energy, endo and exothermic reactions using potential and kinetic energy diagrams
- Describe the factors that effect reaction rate including temperature, concentration, surface area, and catalysts
- Perform experiments safely, collect and record data effectively, analyze and interpret data, and write formal reports

**Program Learning Outcomes:**

N/A

## Evaluation/Grading System

Grading System	Specify if 'Other':	Specify Passing Grade:
Letter Grades		D

## Components and Weighting of the Assessment/Evaluation Plan:

Type	Percentage	Evaluation Plan (provide a brief explanation for each component especially if value exceeds 35%):
Assignments	10	
Lab Work	25	including formal and informal lab reports
Exam	45	three tests at 15% each
Quizzes/Tests	20	a number of quizzes for a total of 20%
<b>Total</b>		<b>100</b>

## Learning Environment/Type

Instruction Type	Hours Per Instruction Type	Comments
L - Classroom	60	classroom and lab
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<b>Total</b>		<b>60</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:**

Safety Measures in a Laboratory Environment  
Thermochemistry  
Gases  
Reaction Kinetics  
Electronic Structure of Atoms (optional)  
Periodic Table and Properties of Elements (optional)  
Chemical Bonding (optional)  
Molecular Shapes (optional)

### **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**

<b>Approved by Curriculum Committee:</b>	June 20, 2017	<b>Approved by Education Council:</b>	September 12, 2017
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