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# CHEM 1121: Chemistry 1

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## EFFECTIVE DATE

September 2016

## DEPARTMENT

UT Sciences

## 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.

## CREDITS

4.0

## YEAR OF STUDY

1st Year Post-secondary

## PREREQUISITES

Chemistry 12 (or CHEM 0983/0993) with a minimum 'C+' grade or equivalent Pre-calculus 12 with a minimum 'C+' grade; or MATH 1020 with a minimum 'C' grade; or Math 0983 and Math 0993 both with a minimum 'C+' grade; or VCC Math Pre-calculus Test (MPT) with a minimum 72%

## COREQUISITES

None

## COURSE LEARNING OUTCOMES

Upon successful completion of this course, students 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.

## **PRIOR LEARNING ASSESSMENT & RECOGNITION (PLAR)**

None

## **HOURS**

Lecture: 60

Lab: 60

## **INSTRUCTIONAL STRATEGIES**

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

## **GRADING SYSTEM**

Letter Grade (A-F)

## **PASSING GRADE**

D

Final Exam	25	
Lab Work	30	10 labs

## 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)

## LEARNING RESOURCES

None

Notes:

- Course contents and descriptions, offerings and schedules are subject to change without notice.
- Students are required to follow all College policies including ones that govern their educational experience at VCC. Policies are available on the VCC website at:  
<https://www.vcc.ca/about/governance--policies/policies/>.
- To find out how this course transfers, visit the BC Transfer Guide at <https://www.bctransferguide.ca>.

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