

Camosun College
Department of Chemistry and Geoscience
Chemistry 110

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Texts: There is a required text book and laboratory manual for this course and they are available in the bookstore.

Fundamentals of Chemistry by R. A. Burns 4th edition
Laboratory Manual for Chemistry 110

In addition, the library has many introductory text books that students can borrow and use to gain a different view or approach to the material covered in this course.

Required: A laminated periodic table, a duotang binder for laboratory reports and safety glasses.

Review From Chem 11 or Chem 060

Chapters 2, 3, 4, 5, 8(8-1 to 8-4), 9 (9-1 to 9-6), 11

Assessment: The final grade in the course will be assigned on the basis of the following components:

a	Quiz 1 (chapters 12, 13, 14)	15%
b	Quiz 2 (chapters 15, 16)	15%
c	Quiz 3 (Chapters 17, 18,)	15%
d	Comprehensive final	35%
e	Laboratory	20%

A range	85%	to	100%
B range	70%	to	85%
C range	60%	to	70%
D range	50%	to	60%
F	<50%		

The percentages in the outline refer to the composite total obtained at the end of the course. This table is given only as a guideline and the exact equivalency will be determined by the instructor when all the marks are available. In particular, the instructor reserves the right to adjust the final grade, up or down, if the student's performance on the final examination differs significantly from their overall performance. The passing grade is C and students must obtain passing grades in both the lecture and the laboratory portions of the course.

Intended learning outcomes

At the end of this course students will possess an enhanced ability to:

- 1 Identify, describe and account for the general characteristics of gases liquids and solids as well as the processes of vaporization / condensation, melting / freezing and the specific characteristics of water in terms of interionic and intermolecular forces.
- 2 Utilize solution terminology to account for and compare the solubilities of ionic and molecular compounds: Describe the impact of temperature and pressure on solubility.
- 3 Describe the characteristics of solubility equilibria and the use mathematical techniques employed in dealing with this phenomenon.
- 4 Describe and account for the colligative and osmotic properties of aqueous solutions.
- 5 Account for differences in the rates of chemical reactions, apply Le Chatelier's Principle to equilibrium processes and explain how catalysts influence the rates of chemical reactions.
- 6 Apply mathematical and equilibrium constant expressions to descriptions of reversible reactions and chemical equilibria.
- 7 Identify Arrhenius, Bronsted-Lowery, and Lewis acids and bases Describe the chemical characteristics of each type of substance.
- 8 Describe the ionization of water, the pH scale, weak and strong acids and bases. In addition, describe the process of neutralization, the characteristics of conjugate acid-base pairs and the actions of buffer solutions.
- 9 Perform mathematical calculations involving pH, hydronium ion concentrations and acid base titrations.
- 10 Define oxidation and reduction and assign oxidation numbers to the elements involved in oxidation-reduction reactions. Demonstrate the ability to use oxidation numbers in balancing redox reactions.
- 11 Demonstrate an understanding of electrochemistry and account for the characteristics and uses of the standard hydrogen electrode, standard reduction potentials as well as electrolytic and voltaic cells.
- 12 Describe the characteristics of the major types of organic compounds: alkanes, alkenes, alkynes, aromatic hydrocarbons, alcohols, ethers. aldehydes, and ketones, carboxylic acids and esters, amines and amides.