

COURSE OUTLINE
Grading Systems

CAMOSUN COLLEGE
School of Arts & Science
Department

COURSE OUTLINE

CHEM 110

Foundations of General Chemistry

This course is a prerequisite for students who wish to study chemistry at a higher level. Topics include: thermochemistry; reaction rates; chemical equilibrium; solubility; acids, bases and salts; oxidation and reduction.

(4 Credits)

F, W, P (4,2,0,0,)

Prerequisite: Chemistry 060 or Chemistry 11

The Approved Course Description is available on the web @Camosun.bc.ca

1. Instructor Information

- (a) Howard J. Duncan
- (b) Office hours: See Timetable on Office Door.
- (c) Office Location: F308B
- (d) Phone: (250) 370 - 3445
- (e) E-mail: duncanh@camosun.bc.ca

2. Intended Learning Outcomes

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

1. Identify the general physical and chemical characteristics of gases, liquids and solids (interionic and intermolecular forces; vapourization and condensation; melting and freezing; the specific characteristics of water).
2. Utilize solution terminology and compare the solubilities of ionic and molecular compounds.
3. Describe the characteristics solubility equilibria and use the measurement techniques utilized by chemists in dealing with this phenomenon.
4. Describe and account for the colligative and osmotic properties of solutions.

COURSE OUTLINE

Grading Systems

5. Account for differences in the rates of chemical reactions in terms of collision theory, Le Chatelier's Principle and catalysts.
6. Apply mathematics and equilibrium constant expressions to descriptions of reversible reactions and chemical equilibria.
7. Identify Arrhenius, Bronsted and Lewis acids and bases, and describe the chemical properties of each type of compound.
8. Demonstrate the relationship between the ionization of water, the pH scale, hydrolysis, weak and strong acids and bases, and the actions of buffer solutions.
9. Perform mathematical calculations involving pH, buffers and acid-base titrations.
10. Assign oxidation numbers to the elements within compounds involved in oxidation-reduction reactions. Demonstrate an ability to use oxidation numbers in balancing redox reactions.
11. Describe the characteristics of electrolytic cells, voltaic cells and corrosion.

3. Required Materials

- (a) Chemistry 110 Lab Manual
- (b) Safety Glasses

Course Content

Liquids and Solids: Gases, Liquids and Solids – Some Generalizations; Interionic and Intermolecular Forces; The Liquid State; Vapourization and Condensation; The Solid State; Melting and Freezing; Heating and Cooling Curves; Water – A Most Unusual Liquid.

Solutions: What is a Solution? Solubility Terminology; The Solubility of Ionic Compounds; The Solubility of Covalent Compounds; Solubility Equilibria; Effects of Temperature and Pressure on Solubility; Solution Concentration Expressions; Colligative Properties of Solutions; Colloids; Osmosis and Dialysis.

Reaction Rates and Chemical Equilibrium: Reaction Rates – Collision Theory; Factors That Control Reaction Rates; Reversible Reactions and Equilibrium; Le Chatelier's Principle; Ammonia Synthesis; The Effect of a Catalyst on a System; The Equilibrium Constant Expression.

Acids and Bases: Acids and Bases – The Arrhenius Theory; Strong and Weak Acids; Strong and Weak Bases; Reactions of Acids; Reactions of Bases; Bronsted-Lowry Definitions of Acids and Bases; Lewis Definitions of Acids and Bases; The Self-Ionization of Water; The pH Scale; Hydrolysis – Salts in Water; Buffers – Controlling the pH; Acid-Base Titrations.

Oxidation and Reduction: Oxidation Numbers – A Review; Oxidation and Chemical Properties of Oxygen; Reduction and Chemical Properties of Hydrogen; Some Important Oxidizing Agents – Hydrogen Peroxide, Antiseptics and Disinfectants; Some Important Reducing Agents; Oxidation and Reduction Half-Reactions; Electrolytic Cells; Voltaic Cells; Corrosion.

COURSE OUTLINE

Grading Systems

5. Basis of Student Assessment

- (a) Lab Reports (10%)
- (b) Midterm Exams: (15%) and (25%)
- (c) Comprehensive Final Exam (50%)

6. Grading System

The following percentage conversion to letter grade will be used:

A+ = 95 - 100%	B = 75 - 79%	D = 50 - 59%
A = 90 - 94%	B- = 70 - 74%	F = 0.0 - 49%
A- = 85 - 89%	C+ = 65 - 69%	
B+ = 80 - 84%	C = 60 - 64%	

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at <http://www.camosun.bc.ca>

ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html