



**School of Arts & Science**  
**CHEMISTRY AND GEOSCIENCE DEPARTMENT**  
**CHEM 110-01**  
**General College Chemistry 1**  
**2008S**

## COURSE OUTLINE

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The Approved Course Description is available on the web @ [camosun.bc.ca](http://camosun.bc.ca)

Ω Please note: this outline will be electronically stored for five (5) years only.  
It is strongly recommended students keep this outline for your records.

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### 1. Instructor Information

|     |               |   |                    |  |
|-----|---------------|---|--------------------|--|
| (a) | Instructor:   | Blair Surridge  |                    |  |
| (b) | Office Hours: | Tuesday 11:30-1:20 pm<br>Wednesday 11:30-1:20 pm<br>Friday 11:30-1:20 pm  |                    |  |
| (c) | Location:     | F350A   |                    |  |
| (d) | Phone:        | 370-3438  | Alternative Phone: |  |
| (e) | Email:        | <a href="mailto:SurridgeB@camosun.bc.ca">SurridgeB@camosun.bc.ca</a><br><a href="mailto:bsurridge@shaw.ca">bsurridge@shaw.ca</a> (home) |                    |  |

### 2. Intended Learning Outcomes

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

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

1. Identify, describe and account for the general characteristics of gases, liquids and solids - interionic and intermolecular forces; vaporization and condensation; melting and freezing; specific characteristics of water.
2. Utilize solution terminology, account for and compare the solubilities of ionic and molecular compounds, and describe the impact of temperature and pressure on solubility.
3. Describe the characteristics of solubility equilibria and 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 reaction rates.
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 substance.
8. Describe the ionization of water, the pH scale, weak and strong acids and bases, neutralization 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 of substances 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, 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.

### 3. Required Materials

|       |  |
|-------|--|
| Texts | ♦ “Chemistry, Principles and Reactions” 5th Edition, by William Masterton and Cecile Hurley (Thomson-Brookes/Cole) |
| Other | ♦ Chem 110 Lab Manual (Safety glasses mandatory & lab coat recommended)  |

### 4. Course Content and Schedule

#### Lectures:

|           |                          |
|-----------|--------------------------|
| Monday    | 8:30 to 10:20 pm in F210 |
| Wednesday | 8:30 to 10:20 pm in F210 |
| Thursday  | 8:30 to 10:20 pm in F210 |

| Unit      | Topic  | Reference  |
|-----------|--|--|
| 1         | Chemical Matter, Molecules and Ions, Stoichiometry, Atomic and Electronic Structure, Lewis Structure | Chapter 1, 2, 3, 6, and 7 (note: not all sections will be discussed) |
| 2         | Thermochemistry  | Chapter 8. Omit sections 8.6, 8.7                                    |
| 3         | Chemical Kinetics  | Chapter 11. Omit sections  |
| 4         | Chemical Equilibrium   | Chapter 12.  |
| 5         | Solution and Solubility  | Ch 10 and Ch 4.2 precipitation                                       |
| 6         | Acids and Bases  | Chapter 13, 14 (titration)   |
| 7(Part 1) | Oxidation/Reduction  | Ch 4 (section 4.4) and Ch18.   |
| 7(Part 2) | Electrochemistry   | Chapter 18.  |

#### Chem. 110 Lab Schedule, Tuesday and Friday 8:30-11:20 in F354 (Subject to Change)

| Week | Lab Date | Experiment                       |
|------|----------|----------------------------------|
| I    | May 6:   | Orientation & Review (Mandatory) |
| I    | May 9:   | Orientation & Review (Mandatory) |
| II   | May13:   | Review Test                      |
| II   | May16:   | Exp # 1, Energy Changes          |
| III  | May 20:  | No Lab – Hand back Review Test   |
| III  | May 23:  | Exp # 2, Reaction rates          |
| IV   | May 27:  | <b>Test #1 (2.5hrs)</b>          |

|     |          |                                  |
|-----|----------|----------------------------------|
| IV  | May 30:  | Exp # 3, Shifting Equilibria     |
| V   | June 3:  | Exp # 4, Precipitation reactions |
| V   | June 6:  | Exp # 6, Acid Base Titrations    |
| VI  | June 10: | <b>Test #2 (2.5hrs)</b>          |
| VI  | June 13: | Exp # 7, Vitamin C and ASA       |
| VII | June 17: | Exp # 11 Oxidation of Iron       |
| VII | June 20: | Review for Final Exam            |

### 5. Basis of Student Assessment (Weighting)

|                            |                                      |
|----------------------------|--------------------------------------|
| Labs (7 experiments)       | 20%                                  |
| Review Test                | 5% (Week II Lecture, 50min)*         |
| Test I (Units 2 & 3)       | 15% (Week IV Lab Period, 2-hour)*    |
| Test II (Units 4, 5, & 6)  | 20% (Week VI Lab Period, 2-hour)*    |
| Final Exam (comprehensive) | 40% (TBA ~Week XII, 3 hours in June) |

Notes:

- (1) Student must pass the lab portion of the course to obtain credit for Chem 110. All labs are to be attended and individual lab reports completed.
- (2) Immediate contact must be made with instructor for missed labs due to illness or family emergencies for arrangements to be made
- (3) A test score that is not as high as that of the April final exam will be dropped automatically and its weight redistributed to the final exam. For anyone who misses tests, your final exam will then be 80% of the course grade!
- (4) No one is allowed to write late and there will be no exceptions. Early exam is a privilege and not a right; thus, at full discretion of the instructor.

\* Test dates to be confirmed during the first week of classes in May.

### 6. Grading System

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

#### Standard Grading System (GPA)

| Percentage | Grade | Description   | Grade Point Equivalency |
|------------|-------|---|-------------------------|
| 90-100     | A+    |   | 9                       |
| 85-89      | A     |   | 8                       |
| 80-84      | A-    |   | 7                       |
| 77-79      | B+    |   | 6                       |
| 73-76      | B     |   | 5                       |
| 70-72      | B-    |   | 4                       |
| 65-69      | C+    |   | 3                       |
| 60-64      | C     |   | 2                       |
| 50-59      | D     | Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite. | 1                       |
| 0-49       | F     | Minimum level has not been achieved.  | 0                       |

#### Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading

Policy E-1.5 at [camosun.ca](http://camosun.ca) for information on conversion to final grades, and for additional information on student record and transcript notations.

| Temporary Grade | Description   |
|-----------------|---|
| I               | <i>Incomplete:</i> A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.   |
| IP              | <i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. ( <i>For these courses a final grade will be assigned to either the 3<sup>d</sup> course attempt or at the point of course completion.</i> ) |
| CW              | <i>Compulsory Withdrawal:</i> A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.   |

## 7. Important Dates

Week

- III May 19 (Mon): Victoria Day – College Closed  
May 12 (Mon): Fee Deadline Last Day to Withdraw or Change to Audit...
- VIII June 23-25: Exam Period for Spring 2008

## 8. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

### 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, at Student Services or the College web site at [camosun.ca](http://camosun.ca).

### STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, at Student Services and on the College web site in the Policy Section.

**Prerequisite:** Chem 11 (C grade minimum)