



**CAMOSUN COLLEGE**  
**School of Arts & Science**  
**Department of Chemistry & Geoscience**

**CHEM-110-001**  
**General College Chemistry 1**  
**Winter 2020**

**COURSE OUTLINE**

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The course description is online @ <http://camosun.ca/learn/calendar/current/web/chem.html>

☐ Please note: This outline will *not* be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

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**1. Instructor Information**

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| Instructor:   | James McFarlane  |
| Office Hours: | Tue, Friday 1:00–2:30 or by appointment.   |
| Location:     | Fisher 106 E   |
| Phone:        | 250-370-3374   |
| Email:        | <a href="mailto:mcfarlanej@camosun.bc.ca">mcfarlanej@camosun.bc.ca</a>               |
| Website:      | <a href="#">Check D2L for up-to-date information regarding both lab and lecture.</a> |

**2. Intended Learning Outcomes**

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 - intermolecular and interionic 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 | ◆ Camosun Custom Paperback Chemistry 110 Text. (Optional but highly recommended)   |
| Other | ◆ Chem 110 Lab Manual<br>◆ Scientific calculator<br>◆ Eye protection<br>◆ Lab coat (not required but highly recommended) |

### 4. Course Content and Schedule

Lecture Plan:

| Unit | Topic (Weeks dedicated)                 | Custom Text |
|------|---|-------------|
| 1    | Review (2)                              | -           |
| 2    | Solution Chemistry (1)                  | -           |
| 3    | Thermochemistry (2)                     | Ch. 3       |
| 4    | Kinetics (2)                            | Ch. 1       |
| 5    | Equilibrium (1)                         | Ch. 2       |
| 6    | Acids and Bases (1)                     | Ch. 5       |
| 7    | Solubility Equilibrium (1)              | Ch. 4       |
| 8    | Redox and Electrochemistry (2)          | Ch. 7       |
| 9    | Organic Chemistry (if term permits) (1) | -           |

Students may not use recording devices in the classroom without the prior permission of the instructor. However, the instructor's permission is not required when the use of a recording device is sanctioned by the College's Centre for Accessible Learning in order to accommodate a student's disability and when the instructor has been provided with an instructor notification letter which specifies the use of a recording device. Recordings made in the classroom are for the student's personal use only, and distribution of recorded material is prohibited.

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

|   |   |
|---|---|
| Labs (up to 10 experiments)   | 25%   |
| Test I (Units 1 & 2)  | 20% (Week VI Wed, Feb. 13 Lab Period, approx. 2.5 hours)<br>30% |
| Test II (Units 3 & 4)<br>Take-home Midterm (Units 3,4 & 5)            | 20% (Week XI Wed, Mar. 18 Lab Period, approx. 2.5 hours)<br>30% |
| Final Exam (comprehensive)<br>Take-home Assignment<br>(Comprehensive) | 35% (TBA – Week V, 3 hours in April)<br>15%                     |

Notes:

- (1) Student **must pass the lab portion** of the course to obtain credit for Chemistry 110. Students must attend at least 80% of laboratory experiments to receive a passing grade in the lab component of the course.
- (2) Students are encouraged to attempt both tests. Test scores not as high as that of the April final exam will be dropped automatically and the weight redistributed to the final exam. However, anyone who is caught cheating will receive zero for that test which will not be redistributed. For anyone who misses both tests, your final exam will then be 75% of the course grade!  
Due to the situation with COVID-19, redistribution of weights to the final and dropping of midterms will not be done as there is no longer a final examination.
- (3) Student **must write each test in the lab period as scheduled for his/her section. No one is allowed to write late and there will be no makeup test, no exceptions.** Early exam is a privilege and not a right; thus, at full discretion of the instructor.

## 6. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

## 7. Recommended Materials to Assist Students to Succeed Throughout the Course

The custom paperback textbook is **highly** recommended for extra problem sets as well as preparatory reading material.

## 8. College Supports, Services and Policies



### Immediate, Urgent, or Emergency Support

If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ <http://camosun.ca/about/mental-health/emergency.html> or <http://camosun.ca/services/sexual-violence/get-support.html#urgent>

### College Services

Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at <http://camosun.ca/>

### College Policies

Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at <http://camosun.ca/about/policies/>. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

### Academic Honesty Guidelines

<http://camosun.ca/learn/school/arts-science/images/Arts%20and%20Science%20Academic%20Honesty%20Guidelines.pdf>

## A. GRADING SYSTEMS <http://camosun.ca/about/policies/index.html>

The following two grading systems are used at Camosun College:

### 1. 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     |                                      | 1                       |
| 0-49       | F     | Minimum level has not been achieved. | 0                       |

### 2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

| Grade | Description   |
|-------|---|
| COM   | The student has met the goals, criteria, or competencies established for this course, practicum or field placement.   |
| DST   | The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement. |
| NC    | The student has not met the goals, criteria or competencies established for this course, practicum or field placement.  |

## B. 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 at <http://camosun.ca/about/policies/index.html> 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 are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.   |
| 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. |