



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

**CHEM-110-003**  
**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

(a) Instructor	Larry Lee		
(b) Office hours	M,Thurs (9:30–11:30)		
(c) Location	F344B		
(d) Phone	250–270–3463	Alternative:	
(e) E-mail	<a href="mailto:leel@camosun.bc.ca">leel@camosun.bc.ca</a> (email response is faster)		
(f) Website	Online.camosun.ca (Desired 2 learn – D2L)		

### 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 - 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

- (a) Texts The Central Science, Brown, Lemay, Bursten, Prentice Hall, Australian 3<sup>rd</sup> edition
- (b) On-line Desired to Learn (D2L) [www.online.camosun.ca](http://www.online.camosun.ca)
- (c) Lab Chemistry 110 lab manual (in house)
- (d) Lab Laboratory Safety Glasses and lab coat

### 4. Course Content and Schedule

Unit	Topic (approx. # of lecture hours)	3 <sup>rd</sup> Australian Ed.	Custom Text
1	Review (3) Measurement and matter Periodic Table Chemical compounds Quantity of compounds Chemical equations	Ch 1 and 2	Ch 1 and 2
2	Thermochemistry (9)	Ch. 14	Ch. 3
3	Chemical Kinetics (4)	Ch. 15	Ch. 1
4	Chemical Equilibrium (5)	Ch. 16	Ch. 2
5	Solution & Solubility (4)	Ch. 2, 4, 18	Ch. 4
6	Acid-Base Equilibria (5)	Ch. 4, 17, 18	Ch. 5,6
7	Ionization & Neutralization (3)		
8	Oxidation & Reduction (4)	Ch. 4 & 19	Ch. 7
9	Electrochemistry (2)		

Unit 1 will be a short review and covers selected topic

Class schedule:      Mon Tues                                      15:30 –16:50                                      F202

Lab schedule:        Thurs    14:30 –17:20                                      F354

- a) **Scheduled lectures** are 80 minutes a class on Mondays and Tuesdays
- b) **Scheduled laboratory experiments** are three hours per week. The first hour will be may be dedicated towards one hour lecture or tutorial/quiz. The remaining two hours will be used to conduct hands-on experimental work. Each student will be expected to conduct their **own work** unless otherwise instructed. No student will be allowed to conduct experiments without safety glasses or wearing open toe footwear. If you miss a scheduled experiment, you will be assigned a mark of zero unless you have a medical reason accompanied with an official medical note for your absence.
- c) **Assignments:** end of chapter questions are assigned and available on D2L. They are not marked so hand-in is not required. However, students are strongly encouraged to do them because the tests will **relate strongly** to these assignment questions. Solutions will be on D2L.
- d) Weekly quizzes through D2L (Desired to Learn) – There will be weekly quizzes 10–20 questions with specific due dates. These question will mainly be multiple choice based.

## 5. Basis of Student Assessment (Weighting)

(a)	2 mid terms exams	25% (12.5 % each)
(b)	On-line (D2L)	15%
(c)	In class Quiz	5%
(d)	Final Exam	30%
(e)	Lab work	25 %

- a) Quizzes and assignments are posted on D2L. For minimum work, quizzes should be completed. For best results, both quizzes and assignments should be completed and self-assessed. Assignments are not graded by the instructor.
- b) On-line homework is from D2L. There will be 10–15 questions per week.
- c) Midterms are 120 minutes in length and will be given during the first two hours of a lab period (F354)

The midterm schedule is below:

Midterm 1 – Thurs February 13, 2020

Midterm 2 – Thurs March 19, 2020

- c) Final exam is written the week following the end of the term. The final is a maximum **180 minutes** in duration and **all** the material covered in class will be examined.

Exam notes:

1. All exams count and an absence from an exam will result in a zero unless a medical note or equivalent is provided. In the event that an excuse is given for a missed quiz or midterm, the weighting for that quiz or midterm will be transferred to final exam. Missed final exam will result in an incomplete grade and student will need to receive the Dean's permission to write a deferred exam.
2. Non-programmable calculators are allowed during any quiz or exam.
3. Exams can be written in pencil or pen. If written in pencil, no remarking will be allowed.
4. If you obtain a mark in the final exam which is better than the sum of the marks obtained in the lecture portion of the course and with the condition that you completed all two midterms and the mastering chemistry on-line work, I will count only the final exam. If the final exam is worst then the lecture portion, the final exam will count as 35% of the overall grade.

## Laboratory notes:

1. You must not be late for the lab period. A safety orientation is given at the beginning of the lab. You may be dismissed from the lab if you are late and receive a grade of zero for that lab.
2. You must complete at least 75% of the lab work and obtain a mark of at least 50% in order to pass the overall course. If you fail to hand in more than three lab reports, you will not pass the lab portion of the course and you will not be allowed to write the final exam.
3. Lab reports must be submitted (primarily using D2L dropbox unless otherwise instructed no later than one week after the completion of the experimental. No ungraded lab reports will be accepted after the return of graded reports.
4. Proper laboratory conduct is required while in the lab. Students must wear safety glasses and footwear (as described above). Students are expected to prepare for the lab by reading the experiment and drawing relevant diagrams and flowcharts. The laboratory must be clean (dishes washed and stored back in drawers or shelves), and lab bench wiped clean before leaving the lab. A student evaluation will be given at the end of term.

## 6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

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

Mastering Chemistry on-line tutorial is available. There are also self-assess quizzes and assignments with answers posted on desired to learn (D2L). Alternative on-line sources are Khan Academy. BC open text <https://opentextbc.ca/chemistry/front-matter/preface/> and <https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=22>

Alternatively, I am available outside my office hours. Please email to schedule appointment.

## 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.

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.