



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

**CHEM-110-004**  
**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>

Ω 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	Dr. Tatiana Popa
(b) Office hours	Tue, Wed, Thur 5:00 - 5:50 pm (Lansdowne) Thur 1:30 - 2:20 pm (Interurban) or by appointment
(c) Location	F106E Lansdowne Campus CC118A Interurban Campus
(d) Phone	(250) 370-3374 Alternative: _____
(e) E-mail	<a href="mailto:PopaT@camosun.bc.ca">PopaT@camosun.bc.ca</a>
(f) Website	<a href="#">D2L</a>

### 2. Intended Learning Outcomes

(If any changes are made to this part, then the Approved Course Description must also be changed and sent through the approval process.)

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

#### Minimum

- **Mastering Chemistry Course Code.** \$50. A Mastering Chemistry Access Code can be purchased from the Pearson Website. <http://www.pearson.com.au/9781442563902> If you choose to purchase a new textbook or ebook (see below) then this includes a Mastering Chemistry Course Code. It is valid for 24 months after activation.
- **CHEM 110 Lab Manual**, Camosun College Publications.

#### Other Recommended Materials for the Course

- CHEM 110 General College Chemistry 1, Edvantage Science (2018).
- “Chemistry, The Central Science” by Brown, LeMay & Bursten, 3<sup>rd</sup> Australian Edition. (*Also required for students going on to CHEM 120/121*). The 2nd and 1st Australian editions are also acceptable if you have a used book. **If you buy a used book that is not the most recent edition you will still need to purchase a Mastering Chemistry access code.**

Students are responsible for obtaining their own safety glasses and lab coat from the bookstore. It is not the responsibility of the College to provide you with safety equipment.

### 4. Course Content and Schedule

#### Lecture Plan

Unit	Topic	Unit	Topic
0	Review – Basic Chemistry Principles	4	Solutions & Solubility Equilibrium
1	Thermodynamics & Thermochemistry	5	Acid-Base Equilibrium
2	Reaction Kinetics	6	Oxidation & Reduction
3	Chemical Equilibrium	7	Electrochemistry

Lecture	Tuesday	6:00 pm – 8:50 pm	Fisher Building - Room 208
Laboratory	Thursday	6:00 pm – 8:50 pm	Fisher Building - Room 354

Test I	Thursday	February 13 <sup>th</sup> (Lab period)	Fisher Building - Room 202
Test II	Thursday	March 19 <sup>th</sup> (Lab period)	Fisher Building - Room 202

## 5. Basis of Student Assessment (Weighting)

- (a) (Online Mastering Assignments: **20%**  
Homework 1 - 6 : total of 125 points

Online assignment marks may not be carried over so you must **complete these before the due date. You usually have several weeks to do these assignments so no excuses will be accepted, no exceptions.**

- (b) Laboratory Work: **20%**

To write the final exam you must achieve a minimum final score of **50%** on laboratory work, and you must pass **both** the lecture portion and the laboratory portion in order to pass the course.

### The Laboratory Grade

Each lab has 2 components, the Pre-Lab Assignment and the Lab Report. Lab schedule on D2L.

**Pre-Lab Assignments** can be found in the lab manual, and can be completed after reading through the lab protocol. They must be submitted at the **beginning** of the lab period. Late pre-labs are not accepted. Pre-lab assignments count 10% toward the final lab grade.

**Lab Reports** are either written during the lab (Expt. 3, 6, 10 and 12) or submitted the following lab period (Expt 1, 2, 4 and 7). Templates are provided online (on D2L) for the reports that are to be submitted the following lab period. Lab partners must hand in their own separate reports and are expected to share equally in experimental work. Lab reports count 80% toward the final lab grade. **Plagiarized lab reports are subject to academic penalties** – see section 8 below

An evaluation mark that counts 10% toward the final lab grade will be assigned at the end of the term.

Wearing of **safety glasses** is **mandatory** in all labs.

**Punctual attendance in all the lab periods is mandatory.** There are no exceptions other than an official doctor's note. Missed labs without adequate reasons will result in a mark of zero for that lab.

- (c) 2 Midterm Tests: **15% each**

In the event of a midterm test being missed due to illness/other commitments the weight of the missed test will be carried over to the final. There are no make-up dates for midterms.

- (d) A 3 hour written Final Examination covering all the material in the course: **30 %**

If it is advantageous to the student the theory mark will be solely derived from the final examination, or a combination of midterm with the final.

## 6. Grading System

*(If any changes are made to this part, then the Approved Course description must also be changed and sent through the approval process.)*

*(Mark with "X" in box below to show appropriate approved grading system – see last page of this template.)*

Standard Grading System (GPA)

Competency Based Grading System

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

Hard copies of the 1<sup>st</sup>, 2<sup>nd</sup>, & 3<sup>rd</sup> Australian Editions of B-L-B are available in the Library Reserve Room.

## 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.

**Laboratory schedule Winter 2020**

<b>Week Number</b>	<b>Date of lab</b>	<b>Experiment</b>
I	Thursday, <b>Jan 9<sup>th</sup></b>	<i>Laboratory &amp; Safety Orientation</i>
II	Thursday, <b>Jan 16<sup>th</sup></b>	<b>Expt 4.</b> Precipitation Reactions (Template on D2L; due at the <u>beginning</u> of next lab)
III	Thursday, <b>Jan 23<sup>rd</sup></b>	<b>Expt 6.</b> Acid – Base Reactions (Written during the lab; due at the <u>end</u> of the lab)
IV	Thursday, <b>Jan 30<sup>th</sup></b>	<b>Expt 1.</b> Energy Changes (Template on D2L; due at the <u>beginning</u> of next lab)
V	Thursday, <b>Feb 6<sup>th</sup></b>	<b>Expt 2.</b> Rates of Reactions (Template on D2L; due at the <u>beginning</u> of next lab)
VI	Thursday, <b>Feb 13<sup>th</sup></b>	<b>Term Test #1</b>
VII	Thursday, <b>Feb 20<sup>th</sup></b>	Reading Break
VIII	Thursday, <b>Feb 27<sup>th</sup></b>	<b>Expt 3.</b> Shifting Equilibria (Written during the lab; due at the <u>end</u> of the lab)
IX	Thursday, <b>Mar 5<sup>th</sup></b>	<b>Expt 7.</b> Vitamin C, Aspirin, Magnesia (Template on D2L; due at the <u>beginning</u> of next lab)
X	Thursday, <b>Mar 12<sup>th</sup></b>	Midterm Review
XI	Thursday, <b>Mar 19<sup>th</sup></b>	<b>Term Test #2</b>
XII	Thursday, <b>Mar 26<sup>th</sup></b>	<b>Expt 10.</b> Oxidation – Reduction Reactions (Written during the lab; due at the <u>end</u> of the lab)
XIII	Thursday, <b>Apr 2<sup>nd</sup></b>	<b>Expt 12.</b> Electrochemistry (Written during the lab; due at the <u>end</u> of the lab)
XIV	Thursday, <b>Apr 9<sup>th</sup></b>	Lab wrap-up; Final Exam Review