



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

**CHEM-110-001**  
**General College Chemistry 1**  
**Winter 2019**

## 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	Blair Surridge
(b) Office hours	Tues 12:30 – 1:30, Wed and Fri: 10:00 – 11:00am
(c) Location	F348C
(d) Phone	250-370-3201 <b>Alternative:</b>
(e) E-mail	<a href="mailto:SurridgeB@camosun.bc.ca">SurridgeB@camosun.bc.ca</a>
(f) Website	<a href="http://camosun.ca/learn/programs/chem/surridge.html">http://camosun.ca/learn/programs/chem/surridge.html</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 - 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 (Available from the Lansdowne Campus Bookstore)

(a)	Coursebook	Chemistry 110 General College Chemistry 1 Edvantage Interactive
(b)	Safety Glasses	Book store has "Uvex" safety eyewear – please check if using others
(c)	Lab coat	Bookstore has cloth coats available – please check if using another type
(d)	Lab Manual	Chem 110 Laboratory Manual

### 4. Course Content and Schedule

#### Lectures:

Monday	3:00 to 4:20 pm in WT226
Wednesday	3:00 to 4:20 pm in WT226

Chapter #	Topic	Readings Course Book <u>OR</u> D2L
See D2L*	<b>REVIEW ON YOUR OWN:</b> Units of measure Uncertainty Matter Atomic Theory and Electronic Structure and Basic Bonding	D2L*: Sec 1.1 Sec 1.2 Sec 1.3 Sec 1.4 Sec 1.14 to 1.17
See D2L*	<b>REVIEW IN CLASS:</b> Subatomic Particles, Nuclear Atom, and Isotopes Periodic Table Atomic Mass, Molecular Mass Mole Naming Molecules and Ions, Stoichiometry Solutions and Molarity, Ionic Equations	D2L*: Sec 1.6, 1.7 Sec 1.8 Sec 1.9 and 1.10 Sec 1.11 and 1.12 Sec 1.13 Sec 1.19 Sec 1.22&23 Sec 1.24
1.0	Chemical Kinetics	Ch. 1 Plus extra material on Rate Laws
2.0	Chemical Equilibrium	Ch. 2 Focus on Equilibrium Constant Problems
3.0	Thermodynamics	Ch. 3 3.5 only
4.0	Solubility Equilibrium	Ch. 4 (Inclusive)
5.0	Acid-Base Equilibrium	Ch. 5 (Inclusive)
6.0	Acid-Base Applications	Ch. 6 Sec 6.1 and 6.2
7.0	Oxidation/Reduction and Electrochemistry	Ch. 7 Sec 7.5 may not be covered

\*PDF – Review of Basic Chemical Principles

Note: Lectures will not be covering the chapters from the text completely.  
(Specifics are given in the class)

**Chem. 110 Lab Schedule, Thursday 8:30-11:20 in F354  
(Subject to Change)**

Week	Lab Date	Experiment
I	Jan 10 <sup>th</sup>	Lab Orientation/Review
II	Jan 17 <sup>th</sup>	Exp # 4, Precipitation Reactions
III	Jan 24 <sup>th</sup>	Exp # 2, Reaction rates
IV	Jan 31 <sup>st</sup>	Exp # 3, Shifting Equilibria
V	Feb 7 <sup>th</sup>	Energy Lab (handout)
VI	Feb 14 <sup>th</sup>	<b>Tutorial and Lecture</b>
VII	Feb 21 <sup>st</sup>	<b>Reading Week</b>
VIII	Feb 28 <sup>th</sup>	Exp # 6, Analysis of Vinegar
IX	Mar 7 <sup>th</sup>	<b>Midterm (2.0hrs)</b>
X	Mar 14 <sup>th</sup>	Exp # 7 Analysis of tablet products
XI	Mar 21 <sup>st</sup>	Exp # 8 Acid Base Titration Curves
XII	Mar 28 <sup>th</sup>	Exp # 10 Oxidation/Reduction Reactions
XIII	April 4 <sup>th</sup>	Exp# 11 Oxidation of Iron
XIV	April 11 <sup>th</sup>	Review for Final Exam

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

Labs	20%
Quizzes*	20%
Midterm Test (Chapters 1, 2, & 3)	20% (Week VIII Lab Period, 2.0 hours)
Final Exam (comprehensive)	40% (TBA ~Week XV, 3 hours in April)

\* Tentatively five quizzes scheduled. You will receive at least 4 days of notice before a quiz and details will be posted on D2L!!

Important Notes:

- (1) This course **cannot** be done as an online course and student are expected to come to class. Missing classes typically leads to an F grade in the course.
- (2) Students are expected to check D2L every couple of days for the following;
  - News postings for announcements (e.g. – info regarding to labs, Sapling, and exams)
  - Accessing homework information and answers (blair's questions and end of chapter questions)
  - Handouts and notes that were provided in class

- (3) **Students must pass the lab portion and the lecture portion** of the course to obtain credit for Chem 110. All labs are to be attended and individual lab reports completed. A zero grade is given if the report is not handed in. If a lab is missed contact must be made with the instructor to make arrangements. No exceptions.
- (4) *At the discretion of the instructor a student who is repeating this chemistry course may apply for lab exemption.*
- (5) Immediate contact must be made with instructor for missed labs and tests due to illness or family emergencies for arrangements to be made.
- (6) 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 example, if the midterm test is missed your final exam will then be 55% of the course grade!
- (7) No one is allowed to write tests late and there will be no exceptions. Early writing 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

## 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://www.camosun.bc.ca/policies/policies.php>

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://www.camosun.bc.ca/policies/E-1.5.pdf> 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.

