



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

CHEM-110-002
General College Chemistry 1
Fall 2019

COURSE OUTLINE

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.

1. Instructor Information

(a) Instructor	David Stuss, M.Sc.
(b) Office hours	Tuesday, Wednesday, Thursday 2:30 – 3:30 <i>or by appointment</i>
(c) Location	Fisher 350A
(d) Phone	(250) 370-3438
(e) E-mail	stussd@camosun.bc.ca

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)	Lab Manual (Mandatory)	CHEM 110 Lab Manual, Fall 2019 Edition. Camosun College Publications.
(b)	Safety Glasses (Mandatory)	Bookstore has "UVEX" safety eyewear – please check if using others
(c)	Lab coat (Optional)	Bookstore has cloth coats available – please check if using another type
(d)	Scientific Calculator (Mandatory)	Smartphones / PDAs or similar devices cannot be used during tests & exams.

Reading materials and course notes will be posted on D2L.

4. Course Content and Schedule

Credits	4 credits	Number of weeks	14
Workload / week	3 h lecture 3 h lab 6 h study	Pre-requisite	CHEM 100 or Chemistry 11

Locations & Times

	Time	Location
Lecture	Tuesday 6:00 – 8:50 PM	Fisher Building, Room F302
Lab	Thursday 6:00 – 8:50 PM	Fisher Building, Room F354

Lecture Plan

Unit	Topic	Unit	Topic
0	Review – Basic Chemistry Principles	5	Acid-Base Equilibrium
1	Overview – Reactions in Aqueous Solution	6	Solubility Equilibrium
2	Thermochemistry	7	Oxidation & Reduction
3	Reaction Kinetics	8	Electrochemistry
4	Chemical Equilibrium	9	Organic Compounds

Important Dates

Date	Event
Thursday Oct. 10 th	Term Test #1 – Room TBA
Thursday Nov. 14 th	Term Test #2 – Room TBA
December 11 th – 19 th	Final Exam Week (Exam date TBA)

Lab & Test Schedule

Week Number	Lab Date (Thursdays)	Experiment No.	Experiment
1	Sep 5	-	Lab Safety & Orientation
2	Sep 12	4	Precipitation Reactions
3	Sep 19	6	Acid-Base Titrations
4	Sep 26	1	Energy Changes
5	Oct 3	-	Review / Lecture
6	Oct 10	-	Term Test I
7	Oct 17	2	Reaction Rate
8	Oct 24	3	Shifting Equilibria
9	Oct 31	7	Vitamin C, Aspirin, Magnesia
10	Nov 7	8	Acid-Base Titration Curves
11	Nov 14	-	Term Test 2
12	Nov 21	10	Oxidation-Reduction Reactions
13	Nov 28	12	Electrochemistry
14	Dec 5	-	Lab Wrap-Up / Exam Review

5. Basis of Student Assessment (Weighting)

Labs (8 x 2.5%)	20%
Midterm Tests (2 x 20%)	40%
Final Exam (comprehensive)	40%

- To write the final exam you must achieve a minimum final score of **50%** on laboratory work.
- You must pass **both** the lecture portion and the laboratory portion in order to pass the course.
- There will be no make-up midterm tests. The weight of a missed midterm will be reassigned to the final exam.
- In the theory section of the course, if the percent score on the final exam mark is higher than the combined midterm marks, it will replace the combined midterm mark.

The Laboratory Mark

- Each lab has 2 components, the Pre-Lab Assignment and the Lab Report.
- 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 or are considered late. Late pre-labs will receive a late penalty (-10% per day). Each pre-lab is worth 20% (5/25) of the marks for a given lab.
- Lab Report worksheets will be provided online (via D2L) for students to print off **prior** to the lab period. Lab reports can usually be completed in-class but are otherwise due the following class. Lab partners must hand in their own separate reports and are expected to share equally in experimental work. **Plagiarized lab reports are subject to academic penalties** – see section 8 below. Each lab report is worth 80% (20/25) of the marks for a given lab.
- Wearing of **safety goggles** is **mandatory** in all labs. Students who forget safety goggles or fail to wear them will **not be allowed** to complete the lab. Students will have the option to store labeled goggles with the instructor in between labs. Covered footwear is also required.
- 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. *Permissions for an exception must be documented by email permission from the instructor and by a submitting the doctor's note.*

6. Grading System

Standard Grading System (GPA)

Competency Based Grading System

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

The Camosun Student Success Centre offers many support services including online Learning Skills Guides, Learning Circles, and one-one-one appointments. Students are encouraged to explore what is available here: <http://camosun.ca/services/writing-centre/learning-skills.html>

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. The policy regarding plagiarism can be reviewed here:

<http://camosun.ca/about/policies/education-academic/e-2-student-services-and-support/e-2.5.1.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.